Contents

RESIDENT FELLOWS – RESEARCH PAPERS

CALIFORNIA PODIUM PRESENTATION - RESEARCH Timothy Yang, MD

Empowering Physicians to Address Caregiver Burden: A Novel Educational Module

Title

Empowering Physicians to Address Caregiver Burden: A Novel Educational Module

Authors

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Introduction

Caregiver burden is a public health crisis. In 2020, there were 53 million caregivers comprising about 21% of the US population. Surveys indicate that 40% reported high caregiver burden and 16% medium burden, which can be associated with detrimental effects on physical, psychosocial, and emotional health. Physicians-in-training may have limited knowledge of caregiver burden and its multidimensional effects. However, with increased awareness of this care gap, young physicians are well-poised to take impactful action, contributing to improved quality of life and health outcomes for caregivers and their care recipients. We created a novel educational seminar designed to provoke physician awareness, empathy, and action in the field of caregiver burden. The module was pre-recorded and presented to resident physicians on a virtual platform due to the COVID-19 pandemic, demonstrating its versatility and capacity to be shared with remote learners.

Methods

Our program consisted of a short, character-driven documentary film, produced and directed by a palliative care specialist (Jessica Zitter, MD), followed by a didactic session based on a systematic literature review, with time for live discussion. The 25-minute film entitled “Caregiver: A Love Story” (https://caregiveralovestory.com/) served as a front row seat to a

couple's lived reality as one partner endured terminal cancer during the last nine weeks of her life. The program capitalizes on the visceral response evoked by storytelling, emotionally mobilizing learners to action before equipping them with a heuristic approach for addressing caregiver burden. The 20-minute post-film didactic session reinforced themes from the film and communicated key learning points. A post-program survey conducted among learners gathered feedback for future refinement of this program.

Results

The pilot of this educational module was presented to a group of 30-35 Internal Medicine residents during their noon conference. While the film illuminated the individual experiences of a caregiver-care recipient duo, the post-film discussion explored the broader context in which challenges to caregiving arise. Key learning points included (1) the risk factors for caregiver burden, (2) the sequelae of unchecked burden, (3) evidence-based screening and assessment tools, and (4) resources for caregivers. Summarizing these pearls, we developed the concept of a "Caregiver Bundle", aimed to both guide and remind physicians in their clinical practice. The bundle included four elements: Identify, Assess, Support, and Follow. The post-program survey found that among respondents, 53% agreed and 47% strongly agreed that they were more confident about their knowledge on this topic (n=15). 89% valued both the film and post-film discussion, while 5% valued either the film or the post-film discussion (n=19).

Conclusion

Our project addresses the key realization that physician awareness and desire for change are important first steps towards mitigating the rising public health crisis of caregiver burden. Narrative medicine, especially in the form of film, can serve as a powerful educational tool by generating emotional investment among learners. Our program successfully created a unique and effective educational activity for trainees, demonstrating a promising strategy for introducing similar complex topics. Future implementation should evaluate changes in understanding and practice among program participants.

CONNECTICUT PODIUM PRESENTATION - RESEARCH Alex Carlos, MD

Role of Chest X-Ray Severity Score as an Independent Predictive Factor for Mortality of Patients With COVID-19; A Single-Center Retrospective Study

Title

Role of Chest X-Ray Severity Score as an Independent Predictive Factor for Mortality of Patients With COVID-19; A Single-Center Retrospective Study

Authors

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Introduction

Coronavirus Disease 2019 (COVID-19) first emerged in China in December 2019 and soon became a global pandemic. Although the majority of patients are asymptomatic or have a mild disease, some progress to severe disease, requiring hospitalization and ventilatory support. Identifying patients with worse prognosis is beneficial for treatment planning as well as resource allocation. Chest X-ray is part of the initial evaluation, and it may have the potential to be used as a prognosticating factor on admission. Our study aims to assess the value of a simple chest X-ray scoring system in predicting the mortality of COVID-19 patients.

Methods

We conducted a single-center retrospective observational study using an EMR review. Consecutive patients admitted to Lincoln Medical Center from March 5 to April 16, 2020, with a confirmed COVID-19 infection by RT-PCR test were included in the study. Information was collected on their demographic characteristics, comorbidities, and their clinical course. The first chest x-ray on admission, obtained portably in the anteroposterior view, was reviewed by three radiologists blinded from the patient. They assigned a score based on two parameters: the extent of lung involvement (Unilateral unilobar, unilateral multilobar, bilateral, and bilateral diffuse) and density of lung opacities (hazy and dense). The final score ranged from 0-8, derived from the product of the two parameters. Logistic regression analysis was used to assess the correlation between covariates and mortality. The dataset was then randomly split into training

and testing datasets (70:30). A predictive model was developed on the training dataset, and its predictive value was then compared with COVID severity in the testing dataset using the Hanley and McNeil's method for comparing areas under the curve (AUC).

Results

A total of 628 patients (58.1% male, 65.1% Hispanic, 50.3% obese) were included in this study. The most common comorbidity was diabetes reported in 269 cases. Prevalent symptoms included fever (65.0%), cough (71.2%), and dyspnea (69.3%). The COVID severity was moderate in 259, severe in 178, and critical in 191 patients. 134 patients (21.3%) required mechanical ventilation on admission. Our analysis found that the Chest X-ray severity score is an independent predictive factor for mortality (p=0.005). Other significant factors were age (p

Conclusion

Chest X-ray is a constant in the initial evaluation of COVID-19 patients, and it can be used more than just as a diagnostic test. This study showed that by using a simple scoring system, Chest X-ray severity is an independent predictive factor for mortality. Combined with age, sepsis on admission, S/F ratio, and mechanical ventilation on admission, it can provide a model that outperforms the COVID severity score in predicting mortality.

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CONNECTICUT PODIUM PRESENTATION - RESEARCH Rita K Kuwahara, MD

Prescription Drug Affordability as a New Vital Sign: Policy and Practice-Based Opportunities to Routinely Assess Medication Affordability among Adult Patients at a Federally Qualified Health Center

Title

Prescription Drug Affordability as a New Vital Sign: Policy and Practice-Based Opportunities to Routinely Assess Medication Affordability among Adult Patients at a Federally Qualified Health Center

Authors

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Introduction

Nationwide, there have been significant rises in patients' out-of-pocket costs for medications, as well as heightened Congressional interest in lowering prescription drug costs. In 2018, U.S. prescription drug spending was $335 billion, and 1 in 4 people had difficulty affording their medications. During the COVID-19 pandemic, this situation is worsening. With sharply rising rates of unemployment nationwide due to COVID-19, families are losing employer-based health insurance at unprecedented rates, significantly threatening financial access to medicines. The purpose of this study was to assess how frequently patients at a Federally Qualified Health Center have difficulty affording their medicines and identify policy and practice-based opportunities to address issues of medication affordability.

Methods

After reviewing health insurance status of patients seen at a Connecticut community health center's internal medicine clinic, we surveyed adult patients on their ability to afford their medications during the routine appointment intake process. We then surveyed the health center's internal medicine physicians on their clinical practice adjustments when caring for patients unable to afford their medications and conducted brief interviews of area pharmacies to determine additional cost barriers patients encounter when obtaining their prescriptions.

Results

In 2019, the health center's internal medicine clinic cared for 1,582 patients with Medicaid coverage, 360 with Medicare, 252 with Medicaid and Medicare, 750 with private insurance, and 639 with no insurance, with 391 uninsured patients receiving 340B drug pricing assistance. Of the 50 patients surveyed, 22% reported difficulty affording their medications in the past year and 16% reported difficulty affording their medications since their last appointment. One patient paid $700 for prescriptions sent to one pharmacy, which later cost $16 when refilled at another pharmacy. Of the 18 physicians surveyed, 89% changed patients' medications because their patients could not afford the medicines, and 100% stated it would be helpful to know if a patient could not afford their medications. Interviewed pharmacies reported that pharmacies must pay each time a prescription drug is run through the system to inform patients with medication coverage what their medication copay is. Further, pharmacies are not required to automatically inform patients if a medication's cash price is cheaper than the insurance copay.

Conclusion

Patients' inability to afford their medicines is a common problem and system-wide targeted approaches are urgently needed to identify and alert staff of patients having difficulty affording their medications, particularly during the COVID-19 pandemic. In addition, we must advocate for comprehensive federal and state policy reform to make medicines affordable and increase transparency of medication costs, including overturning policies that disincentivize pharmacies from informing patients of actual out-of-pocket costs for medications prior to dispensing the medicines. At the clinic level, by routinely asking patients during the clinic visit intake process if they are having difficulty affording their medicines, patients requiring medication changes due to cost can be quickly identified, allowing providers to change medications during the appointment to improve patients' access to medicines and health outcomes.

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CONNECTICUT PODIUM PRESENTATION - RESEARCH
Abhirami Janani Raveendran, MD

Impact of a Multidisciplinary Diabetes Clinic on Resident Education

Title

Impact of a Multidisciplinary Diabetes Clinic on Resident Education

Authors

Janani Raveendran MD, MEd, Green Chung MD, Tamara Malm Pharm.D., MPH, BCPS, Stephen Huot MD, PhD, Tracy L. Rabin MD, SM

Introduction

Background: Diabetes mellitus (DM) is one of the most prevalent chronic medical conditions in the U.S. The Centers for Disease Control and Prevention estimates that 26.8 million U.S. adults are living with diabetes, and that type 2 diabetes accounts for 90-95% of these cases. However, graduating residents in internal medicine training programs often feel underprepared to manage such chronic conditions. In fact, experts in graduate medical education have called for curricular redesign to emphasize longitudinal patient-centered care. Since 2004, the resident-faculty practice of the Yale Primary Care Internal Medicine (YPC) Residency Program has employed a novel, targeted primary care-based approach to diabetes care. A multidisciplinary referral-based Diabetes Clinic is incorporated within the practice and provides an opportunity for patients with difficult-to-control diabetes to receive dedicated diabetes care. Under this model, residents have the opportunity to conduct longer patient visits with an exclusive focus on providing comprehensive diabetes care; partner in real-time with a pharmacist, dietitian, and social worker to enhance patient care; and receive mentorship from a general medicine faculty with expertise in comprehensive diabetes care. The objective of this study was to examine the impact of the Diabetes Clinic in the YPC Residency Program on the educational experience of residents.

Methods

Methods: We conducted an online survey of all residents in the YPC Residency Program in the 2019-2020 academic year, who completed at least one half-day session in the Diabetes Clinic. Participation was voluntary and anonymous. The survey included a combination of multiple-choice, Likert scale, and free-response questions that assessed resident perception of the impact of the Diabetes Clinic on their education.

Results

Results: Data included responses from 29 of 52 eligible participants. Greater than 85% of respondents indicated that participation in Diabetes Clinic "increased" or "slightly increased" their: comfort level with counseling patients on target glycemic range (92.9%) and using insulin in the outpatient setting (89.3%); awareness of the need to assess for ASCVD risk and to screen for complications of DM (92.9%); appreciation for psychosocial aspects of diabetes care (85.2%); understanding of roles of pharmacists, dietitians and social workers (88.9%); and likelihood of managing difficult-to-control DM as a future primary care physician instead of referring to a specialist (85.7%).

Conclusion

Conclusions: Our findings indicate the multidisciplinary referral-based Diabetes Clinic had a positive impact on the overall educational experience of internal medicine residents. The majority of participants reported increased comfort with counseling patients and prescribing insulin in outpatient setting; more awareness of the need to screen for comorbidities and complications of diabetes; and greater appreciation for the psychosocial aspects of diabetes care and team member roles. Most residents also indicated a greater likelihood of being able to manage complex diabetes as future independent providers. Notably, residents indicated that the Diabetes Clinic experience could be strengthened by including more opportunities to apply practical medication counseling skills as well as to work with and learn from clinical pharmacists and dietitians. The YPC Diabetes Clinic should serve as a model for resident-faculty practices to bolster trainee preparedness in managing chronic conditions.

ILLINOIS PODIUM PRESENTATION - RESEARCH Waddah Malas, MD

Economic Disparities Increase Cardiovascular Risk in African American Women: Results from the 10,000 Women Study

Title

Economic Disparities Increase Cardiovascular Risk in African American Women: Results from the 10,000 Women Study

Authors

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Introduction

The relationship between economic disparities and cardiovascular health have been reported previously, but information on the impact of economic status on atherosclerotic cardiovascular disease (ASCVD) risk in African-American (AA) women is limited. We sought to determine the impact of economic status on ASCVD risk factors in AA women.

Methods

AA women (N=847) were screened from 2015-2019 in a community health screening project in Atlanta. Using the pooled cohort ASCVD 10-year risk calculator, 481 women without history of ASCVD had complete values and self-reported sociodemographic information. Subjects were classified into 4 groups based on the US economic poverty level data for 2015. Kruskal-Wallis test and chi square analysis were performed.

Results

Of the total 481 AA women, 46% had low 10-year ASCVD risk, 12% had borderline risk, 33% had intermediate risk, and 9% had high risk, based on 2018 primary prevention guidelines from AHA/ACC. The mean age was (56.3 ± 9.4) and mean 10-yr ASCVD score was (8.7%). AA women with the lowest income living under poverty limit (

Conclusion

AA women with a low income have a significantly higher ASCVD risk score. Interventions targeting socioeconomic needs in addition to the traditional cardiovascular risk factors may benefit those most in need and help achieve health equity.

ILLINOIS PODIUM PRESENTATION - RESEARCH Shil Punatar

Telemedicine Education Amidst COVID-19: Review of Literature and Call to Action

Title

Telemedicine Education Amidst COVID-19: Review of Literature and Call to Action

Authors

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Introduction

Intro and Objective: In the presence of COVID-19, telemedicine is being utilized to limit person-to-person spread while increasing healthcare access. While telemedicine use is increasing, a mismatch exists with the amount of training to deliver care. For this, the American Medical Association has called for an increase in formalized training for telemedicine. This literature review provides recent examples of telemedicine education techniques to provide guidance for telemedicine training in this time of immediate need.

Methods

Methods: The authors conducted a literature review by searching the PubMed (MEDLINE) database for publications pertaining to telemedicine education and training. After review, 12 pieces of literature were analyzed for methods and skills taught in telemedicine, means to assess competency, and future directions.

Results

Results: This study identified a broad scope of skills to be taught from orientation to technology, to patient interaction methods, as well as the current medico-legal guidelines. Using standardized assessments and being supervised by trained physicians, there is a role of telemedicine incorporation into formal curricula. As the field of telemedicine continues to adapt, so should the mechanisms by which training is delivered.

Conclusion

Conclusions/Discussion: While accepted that telemedicine provides access to care, especially in the time of COVID-19, this is not synonymous with quality of care if telemedicine training is lacking. The results of this work provide many current examples of telemedicine teaching to be incorporated across all healthcare disciplines. With this, we emphasize the need for growth in the area of telemedicine education and published data in the field.

MICHIGAN PODIUM PRESENTATION - RESEARCH Laxman Yashwant Byreddi

Metformin use in Hospitalized Type 2 Diabetic patients- High-Value Care Quality Improvement Project

Title

Metformin use in Hospitalized Type 2 Diabetic patients- High-Value Care Quality Improvement Project

Authors

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Introduction

Metformin use in hospitalized patients is safe and is supported by evidence-based medicine practice guidelines(EBMPG)[1][2][3] but is not being currently practiced. Our quality improvement (QI) team has recognized this gap in implementing EBMPG, which is evident from the observation of metformin being discontinued on hospital admission by the providers in the absence of any contraindications, on all type 2 Diabetic Mellitus (T2D) patients and initiation of sliding scale insulin. This led to an increase in the number of glucose checks being conducted every six hours in addition to daily basic metabolic profile(BMP). This project aims at improving the appropriate use of metformin at least by 20% from baseline in hospitalized T2D patients admitted to internal medicine resident staff service in accordance with EBMPG. We anticipated the secondary outcome of reducing inappropriate glucose checks within the iterate 1-month PDSA cycles.

Methods

Our team gathered baseline one-month data about the number of T2D patients using metformin at home, who were inappropriately discontinued on metformin on admission to McLaren Flint internal medicine resident staff service. We examined the total number of glucose checks being done on these patients during the hospital stay. QI team created a diabetes checklist using EBMPG use of metformin. Residents, faculty, nurses, and pharmacists were educated about appropriate in-hospital metformin use through noon conferences and high-value care committee meetings. Residents were told to fill out checklist forms to ensure

the continuation of metformin if contraindications were absent. The filled out checklist forms were secured and provided the post-QI data.

Results

Our pre-QI intervention period data was collected from 1st July 2019 to 31st July 2019. Total admitted patients who use metformin at home were 13. Out of which, five patients were eligible for inpatient metformin use according to EBMPG but none of them were continued on metformin. The number of glucose checks done on these five patients during their hospital course was 48. They would have received a total of 80 glucose checks if they were done every 6 hours. Our post-QI intervention period data was collected from 15th June 2020 to 15th July 2020. Total admitted patients who use metformin at home were 13. Out of which, five patients were eligible for inpatient metformin use according to EBMPG and all of them were continued on metformin. The number of glucose checks done on these five patients during their hospital course was 14. They would have received a total of 132 glucose checks if they were done every six hours. The percentage of the appropriate use of Metformin increased from 0% to 100%, and the percentage of the inappropriate number of glucose checks decreased from 60% to 10.6%.

Conclusion

This study helped educate providers, residents, nursing, and pharmacy staff regarding current guidelines for Metformin use in hospitalized type 2 diabetes patients. It demonstrated the potential to reduce unwarranted costs, resources/manpower, wasted time as the patients were receiving glucose checks every 6-hours in addition to daily BMP. The decreased number of daily glucose checks, subcutaneous insulin injections increased patient safety and satisfaction.

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NEVADA PODIUM PRESENTATION - RESEARCH Rajkumar Doshi

Early Intervention versus Conservative Management for Asymptomatic Severe Aortic Stenosis: Systematic Review and Meta-analysis

Title

Early Intervention versus Conservative Management for Asymptomatic Severe Aortic Stenosis: Systematic Review and Meta-analysis

Authors

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Introduction

Currently, in the United States (US), aortic stenosis (AS) is the most common valvular heart disease, representing a significant public health burden. The management of asymptomatic severe AS is controversial and guidelines have not been updated based on recently available evidence. Given newer prosthetic valves, advancement in surgical precision, and the advent of TAVR; the risk of perioperative complications and early mortality have been reduced for AVR. The main objective is to determine the optimal strategy for the management of asymptomatic severe AS between early intervention versus conservative management.

Methods

We performed a systematic electronic search of the PubMed and Cochrane databases from the inception of the database to May 31st, 2020. All patients in the included studies underwent SAVR in the intervention arm. We used the Mantel Haenszel method with the Paule-Mandel estimator of Tau2 and Hartung-Knapp adjustment to calculate relative risk (RR) with a 95% confidence interval (CI) and 95% prediction interval (PI). We used P curve analysis to assess publication bias and estimate the true effect of an intervention. All analysis was carried out using R version 3.6.2.

Results

A total of nine studies were included in the final analysis, consisting of 1,213 patients with early intervention and 2,601 patients with conservative management. Eight were observational

studies, and one was a randomized controlled trial (RCT). Most studies had a mean age of included patients over 60 years. Early intervention as compared to conservative management was associated with reduced risk of all-cause mortality (RR: 0.32, 95% CI: 0.21-0.48), cardiac mortality (RR: 0.36, 95% CI: 0.27-0.48) and non-cardiac mortality (RR: 0.40, 95% CI: 0.28-0.56). There was no difference in the risk of sudden cardiac death (RR: 0.46, 95% CI: 0.15-1.40), stroke (RR: 0.79, 95% CI: 0.17-3.64), myocardial infarction (RR: 0.44, 95% CI: 0.01-16.82) or heart failure hospitalization (RR: 0.18, 95% CI: 0.01-5.29) between the groups. The pooled estimate for all the outcomes was associated with low-moderate heterogeneity for all-cause mortality. There was no heterogeneity for any other outcome included in this study.

Conclusion

Results of the current meta-analysis highlight the unreliability of symptoms as a guide to the timing of intervention in patients with severe AS, especially in the elderly or when coexisting co-morbidities limit activity or confound symptoms attributable to valvular disease. Among asymptomatic severe AS patients, early intervention is associated with reduced mortality without increasing any procedure-related clinical outcomes. Hence, this meta-analysis supports early intervention as opposed to watchful waiting for the management of asymptomatic severe AS.

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PENNSYLVANIA PODIUM PRESENTATION - RESEARCH
James Kamau

Should Acute Pancreatitis Be Included in Venous Thromboembolism (VTE) Risk Assessment Models? A Retrospective Analysis of VTE Risk Assessment Scores and VTE in Acute Pancreatitis

Title

Should Acute Pancreatitis Be Included in Venous Thromboembolism (VTE) Risk Assessment Models? A Retrospective Analysis of VTE Risk Assessment Scores and VTE in Acute Pancreatitis

Authors

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Introduction

Research has demonstrated that inflammatory pathways activated during pancreatitis share a pathway with the coagulation cascade[1]. Population studies have identified that incidence of venous thromboembolism (VTE) is roughly 1% in those patients diagnosed with acute pancreatitis (AP)[2], much like the incidence of VTE in Crohn's disease[3]. In the general population the incidence of VTE is 0.1%[4]. Given the 10-fold difference and the significant risk reductions offered by VTE chemical prophylaxis[5], our objective is to identify the role of VTE risk assessment models (RAM) in patients with AP.

Methods

We conducted a retrospective chart review of hospitalized patients from 2015-2019 to identify patients with AP and VTE and compared them to randomized hospitalized patients without pancreatitis. We collected data on patients' demographics, length of stay, VTE risk scores, qSOFA and VTE anticoagulation status. This study excluded patients with an active cancer diagnosis, recent surgery less than 1 month, acute stroke and/or ongoing hormonal therapy. All statistical analysis was conducted using SPSS for statistical analysis to look at descriptive statistics and compare cohorts using parametric testing (T-test &Chi square).

Results

We reviewed 2772 patients with a diagnosis of AP and found 171 patients (6.2%) were associated with VTE. A total of 90 patients with a concurrent diagnosis of VTE and AP were identified with only 30 included in this study after application of the exclusion criteria. 48 of the 60 randomly selected hospitalized patients without pancreatitis were included in this study as controls after application of the exclusion criteria. Of note, none of these patients developed a VTE. Overall, our study included included a total of 78 patients with 33% females in the pancreatitis group and 56% in the control group. The patients with AP were younger at 47.80 years (versus 62.18, p=0.0009) with higher disease severity, qSOFA >1 in 13% (versus 2% p 0.0005). However, they tended have lower VTE risk scores, 2.16 (versus 4 p=0.0002) and were less likely to receive chemical VTE prophylaxis 70% (versus 76%, p 0.014). Length of stay was also notably longer 13.29 days (versus 4.09 p=0.001) however, the standard deviation varied remarkably as well (61 versus 4 days).

Conclusion

Our limited study shows that despite having an increased risk for VTE, patients with AP are often flagged as low risk by VTE RAM. Their average VTE risk was below the cut off for qualifying for VTE chemical prophylaxis, which is usually 3 or more points. This is because AP misses crucial points for “infection.” Inclusion of AP into the VTE RAM would gain them the extra needed point to qualify for necessary prophylaxis. This is similar to the correlation with inflammatory bowel disease and VTE risk requiring prophylaxis. Given the significant morbidity and mortality associated with VTE, AP needs to be included on VTE RAM.

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TEXAS PODIUM PRESENTATION - RESEARCH James Hubley

Communication and Care Coordination Re-Design: An inpatient initiative to improve care for patients hospitalized by COVID-19

Title

Communication and Care Coordination Re-Design: An inpatient initiative to improve care for patients hospitalized by COVID-19

Authors

Santiago Diaz MD, Karen de la Garza MD, Oscar Garcia MD, James M Hubley DO, Suely Roman Lopez MD MPH, Kirsten Nieto MD, Snehal Patel MD

Introduction

Within the first week of the COVID-19 pandemic, it was apparent that vulnerable populations in our community were being affected disproportionately. Of the first 10 COVID-19 patients admitted to our hospital, 9 identified as Latinx/Hispanic, all 10 spoke Spanish as their primary language; 4 were employed in construction, 2 in food services; 4 were concerned about losing housing; and 6 had no primary care home. It is well-known that the Hispanic population already faces many disparities, including less access to care, limited health literacy, and in some cases a language barrier.1 Despite our familiarity with patient/family communication, social needs, and care transition at discharge, we recognized that current processes would require rapid improvement to better serve those affected and curb the rapid rise in viral spread among this vulnerable population.

Methods

We convened a multi-disciplinary team consisting of medicine, infectious diseases, nursing, social work, and case management to identify critical service gaps that needed to be addressed, emphasizing communication, social needs evaluation, and transitions of care. An admission-to-discharge process map for COVID-19 patient admissions was created to delineate the timing in which these service gaps would be addressed. Once implemented, the process underwent rapid improvement after multiple iterations over several weeks by requesting feedback from wards teams, nursing staff and case management. Throughout this, data for relevant process and outcome measures was collected. The following service gaps were identified and addressed: · Creation of a contact tracing protocol for admitted patients. · Language-concordant communication plans to build trust with patients and families and facilitate patient education

and counseling. · Assessment of health-related social needs using the PRAPARE tool.2 · Rapid outpatient follow-up for unestablished, unfunded patients. · Development of a checklist to ensure completion of all tasks during patient's hospitalization and discharge.

Results

This process went from creation to implementation in 7 days and continued rapid improvement for multiple iterations during the following weeks. For the first 100 COVID-19 patients admitted to our hospital (>1-day length of stay): · Contact tracing tool completed, sent to health department for 94% patients · Language-concordant communication with 97% of patient families, including review of quarantine procedures, symptom check, and public health education · Health-related social needs assessment with PRAPARE tool for 56% patients · Of patients who followed up within our local FQHC system (70% of total), 73% had inpatient-outpatient "warm-handoffs" and 96% followed up with PCP after discharge

Conclusion

During public health emergencies, agile process improvement that focuses on effective communication, support of public health efforts, addressing social needs, and transitions of care can lead to improved patient care and outcomes. This work requires robust interprofessional engagement with nursing, social work/case management, language access consultants, and inpatient/outpatient medical teams. After our experiences, we anticipate that this strategy can be scaled and/or amended to address the needs of vulnerable populations especially impacted by future healthcare crises.

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QATAR - POSTER FINALIST - RESEARCH Zohaib Yousaf, MBBS

Comparative analysis of Euglycemic and Hyperglycaemic diabetic ketoacidosis in type 2 diabetic patients taking SGLT-2 inhibitors: A multicentre study from Qatar

Title

Comparative analysis of Euglycemic and Hyperglycaemic diabetic ketoacidosis in type 2 diabetic patients taking SGLT-2 inhibitors: A multicentre study from Qatar

Authors

Adeel Ahmad Khan, Fateen Ata, Zohaib Yousaf, Almurtada Razok, Jaweria Akram, Elrazi Awadelkarim Hamid Ali, Ahmed Abdalhadi, Mohammed I Danjuma, Dabia Hamad S H Al Mohanadi

Introduction

Euglycemic diabetic ketoacidosis (EuDKA) is characterized by ketoacidosis (pH12 mmol/L) in the presence of euglycemia (RBS

Methods

This is a multicentre retrospective (2009-2020) cross-sectional data analysis on type 2 diabetic patients on SGLT2i who developed either EuDKA or hyperglycemic DKA (hDKA). We compared demographics, possible triggers, relevant laboratory investigations and outcomes. Mean (standard deviation) and median (interquartile range) were calculated as appropriate. Moreover, all the characteristics were described based on a comparison between different SGLT-2i.

Results

Out of total 43 patients, 25 had EuDKA (10 males,15 females) and 18 had hDKA (9 males,9 females). Mean age in EuDKA and hDKA were 52.4+/-12.8 and 58.9+/-12.9 respectively. 32 patients belonged to the Middle East-North Africa (MENA) (20 EuDKA,12 hDKA). Mean BMI in EuDKA and hDKA was 30.2+/-7.19 and 29.4+/-6.17 respectively. Mean RBS was 10.1+/-2.56 in EuDKA and 23.1+/-7.45 in hDKA. Mean HbA1c was 9.54+/-1.82 in EuDKA and 10.1+/-2.12 in hDKA. EuDKA patients had a mean pH of 7.08+/-0.846, while hDKA had 7.18+/-0.181. The median length of stay was 5 days in both groups (IQR 4-12 in EuDKA and 3-7.75 in hDKA).

Median DKA duration was 2 (2-3) days in EuDKA and 2.5 (2-4) days in hDKA. Infection was the most common trigger overall (32.6%), followed by insulin non-compliance (13.7%), pancreatitis (4.7%) and surgery (2.3%), with a similar trend in both EuDKA and hDKA. The intensive care unit admission rate was similar in both groups. The most common SGLT 2i used was dapagliflozin(72%), followed by empagliflozin(20.9%) and canagliflozin(7%). EuDKA was most prevalent in patients using canagliflozin (100%,n=3), followed by empagliflozin (77.7%) and dapagliflozin(48.3%). MICU admission rate was 66.6% in patients on canagliflozin, 45.1% in dapagliflozin and 33.3% in the empagliflozin group. In-hospital mortality was only noted in the dapagliflozin group(3.2%). The median length of stay in canagliflozin, dapagliflozin and empagliflozin was 4(3-4.5), 5(3-9) and 9(2-16) days respectively. Median DKA duration was 2(2-2.5) in canagliflozin, 3 (2-4) in dapagliflozin and 2(2-3) days in the empagliflozin group. Median pH was 7.17(7.17-7.22) in canagliflozin, 7.21(7.21-7.31) in dapagliflozin and 7.29(7.29-7.34) in the empagliflozin group.

Conclusion

In our cohort of type II diabetic patients using SGLT2i who developed DKA, the prevalence of EuDKA was 58.1%. EuDKA was most prevalent in patients using canagliflozin, followed by empagliflozin and dapagliflozin. Most severe acidosis was also observed in patients with canagliflozin, which correlated with the highest intensive care admission rate in this group. However, there was no mortality in patients on canagliflozin. Overall, the infection was the most common trigger for DKA, followed by insulin non-compliance. There was no significant difference noted in the outcomes between EuDKA and hDKA. However, empagliflozin was associated with the longest duration of hospital stay. Larger studies on this specific cohort are needed for external validation of our results.

ARKANSAS POSTER FINALIST - RESEARCH Jordan Torres, DO

The Neutropenic Diet and The Need to Shift Perspective

Title

The Neutropenic Diet and The Need to Shift Perspective

Authors

Torres, Jordan DO; Holtmann, Maxwell MD; Roth, William DO; Braaten, Suporn PhD, Zimmerman, Stacy MD

Introduction

Neutropenia can develop in patients with malignancies who are receiving treatment (22). Chemotherapy, radiation, and antibiotics are all implicated in the destruction of the normal composition of an individual's intestinal microbiota (17). The neutropenic diet was introduced in the 1960s as part of comprehensive measures to protect immunocompromised patients from bacterial infections (14). The theory was that without the introduction of food-borne bacteria into the gastrointestinal (GI) tract, bacterial translocation through the compromised intestinal lining would be minimized (11) .However, decades of observation and multiple studies have failed to support this intervention (1-23).

Methods

This systematic review required one main researcher to complete the initial literature review. One researcher was assigned to assess chosen articles for 1) outcomes consistent with those decided upon by all researchers 2) impact factor of the journals in which chosen articles were published. A third researcher was involved in the editing process. Multiple databases were searched using keywords "neutropenic diet" "microbiome" and "gut". Randomized controlled trials (RCT), meta-analyses, systematic reviews, clinical trials, comparative studies, and observational studies dating within the past fifteen years were reviewed. Initial search revealed over 1700 articles. The date range and types of articles were specified and abstracts were screened for outcomes that included infection rates, infection-related mortality, and all-cause mortality. The total number of articles chosen for this review was twenty-three.

Results

Detailed investigation shows that the neutropenic diet does not decrease the risk of infection in neutropenic patients and that it could contribute to malnutrition in a vulnerable population. It does not address what has been found to be the primary etiology of food borne illnesses - unsafe handling of foods (6,12). In studies comparing the neutropenic diet to a normal hospital diet following food safety guidelines, no significant difference was found between infection rates (1,10,19,12,21,22). Hospitals with strict and reliable safe food handling procedures following FDA standards can prevent infection without enforcing restrictive dietary plans. In patients undergoing and after allogeneic HSCT, the neutropenic diet has also not been shown to reduce infection rates (20). Trifilio et al found that infection rates were higher in HSCT patients on a neutropenic diet after the resolution of neutropenia.

Conclusion

The preponderance of evidence reviewed lies against the use of the neutropenic diet. More benefit to these patients may be found in the study of interventions that would sustain the intrinsic barrier of the intestinal mucosal lining and tight junctions between cells. While the neutropenic diet is a widely and variably applied dietary intervention, it is a low-value practice that does not add benefit to a patient's care. The neutropenic diet must be abandoned as a mainstay of cancer care.

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ARKANSAS POSTER FINALIST - RESEARCH Kayla Williams

Pregnancy in Residency: What Are We Risking?

Title

Pregnancy in Residency: What Are We Risking?

Authors

Kayla Williams, Resident Physician, ACP member, University of Arkansas for Medical Sciences (UAMS) Mikaila Calcagni, Resident Physician, ACP member, University of Arkansas for Medical Sciences (UAMS) Jordan Powers, Resident Physician, ACP member, University of Arkansas for Medical Sciences (UAMS) Thomas Schulz, Attending Physician, ACP member, University of Arkansas for Medical Sciences (UAMS)

Introduction

In February 2020, the ACGME held their annual educational conference in San Diego. One topic addressed during this conference was the need for more progressive maternity leave policies in residency. We would like to open this topic to further discussion by presenting evidence that supports the need for change in current policies. Female residents often experience professional ramifications due to pregnancy, such as targeting via increased hours or workload, toxic changes in their work environment, and adverse consequences on evaluations. They must also be concerned for health risks to themselves and their unborn child such as miscarriage, pre-term labor and delivery, low birth weight, and hypertensive disorders due to stress, hours, and physical demand. Given the health risks associated with pregnancy in advanced maternal age - chromosomal abnormalities, miscarriage, preterm labor/delivery, and stillbirth - delaying pregnancy until after training is not a reasonable option either. We are currently forced to decide if we want to risk poor pregnancy outcomes while in training or wait and risk the consequences associated with advanced maternal age. This combined with the burden of workplace prejudice takes a mental and emotional toll and limits our vision for our family. It is imperative that we make changes to address these issues, both for the well-being of our female residents, as well as for patient safety, as ensuring the well-being of our residents is essential for quality patient care. The ABMS recently announced an initial step toward change with a progressive leave policy of 6 weeks, however we feel that more can be done. We will present these recommendations as well, based on the cases of pre-eclampsia, pre-term labor, and spontaneous abortion personally experienced by three residents in our program, whose stories we will share.

Methods

N/A

Results

N/A

Conclusion

N/A

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CALIFORNIA POSTER FINALIST - RESEARCH Timothy Collins

Outcomes in Inflammatory Arthropathy Patients Hospitalized for COVID-19

Title

Outcomes in Inflammatory Arthropathy Patients Hospitalized for COVID-19

Authors

Tim Collins 1 , Vishal Patel 1 , Andre Babajanians 2 , Hyunju S. Heineke 1 , Napatkamon Ayutyanont 1 , Scott Kubomoto 1,3 1 HCA Healthcare, Nashville, TN; Riverside Community Hospital, Riverside, CA. 2 Riverside Medical Clinic, Riverside, CA 3 University of California Riverside School of Medicine, Riverside, CA

Introduction

This is a retrospective cohort analysis of patients with Rheumatoid arthritis, Ankylosing spondylitis, or Psoriatic arthritis who were hospitalized for COVID-19 infection across 165 HCA hospitals from 1/1/2020 to 5/30/2020. We compared endpoints and calculated odds of ICU admission, invasive ventilation, mortality compared to control as well as length of stay and discharge location.

Methods

We analyzed 86,217 patients admitted with COVID-19 comparing 751 patients who had inflammatory arthropathy to patients who did not. T tests were used for parametric outcome and chi square tests for non-parametric outcomes. Multivariate analysis included potential confounders such as age, and comorbidities such as diabetes, heart disease, etc.

Results

The odds ratio for mortality in the arthropathy arm was 1.37 with a confidence interval of 1.09 to 1.71 with a p value of 0.006. The odds ratio for ventilation was 1.35 with CI of 1.09 to 1.67 and p value of 0.006. The odds ratio of ICU admission was 1.46 with CI of 1.24 to 1.72 and P value of 0.000. The average length of stay of the arthropathy arm was 8.51 days +/- 10.02 vs 4.59 days +/- 8.26 of the control, p< 0.001. The discharge disposition of the arthropathy arm vs control group is as follows, 13.32% died inpatient vs 5.87% in the control, 56.72% were discharged home vs 77.19%, 6.79% went to hospice care vs 3.10%, 4.79% remained inpatient at

the end of the study interval vs 3.45%, 17.18% were discharged to rehab vs 8.43%, and other discharges not included in the above groupings were 1.2% vs 1.96%, $p<0.001$.

Conclusion

This is a large analysis of inflammatory arthropathy patients hospitalized with COVID-19. While the arthropathy group was older, and had more co-morbidities, when adjusting for potential confounders, inflammatory arthropathy patients had a higher risk of death and mechanical ventilation, as well as longer length of stay.

CALIFORNIA POSTER FINALIST - RESEARCH Benjamin Hambro

Orthostatic Hypotension: A commonly under-diagnosed and unnecessarily worked up problem

Title

Orthostatic Hypotension: A commonly under-diagnosed and unnecessarily worked up problem

Authors

Benjamin Hambro MD, Manpreet Singh MD, Phison Pham MD, Jesse Kellar MD, Bisharah Rizvi MD

Introduction

Orthostatic hypotension (OH) is a common cardiovascular disorder, with or without signs of underlying neurodegenerative disease. Its prevalence is age dependent, ranging from 5% in patients 70 years of age. Causes include volume depletion, disorders of the neurologic, cardiovascular, or endocrine systems, and medication-induced. The 2017 ACC/AHA/HRS Guideline for the Evaluation and Management of Patients With Syncope recommends initially taking a detailed history and physical examination including orthostatic blood pressure and pulse. Cardiac or neurologic imaging is recommended if the patient has cardiac or neurologic symptoms respectively. A prospective study of 611 patients presenting to an emergency department following a syncopal episode found that 24% had orthostatic hypotension. We propose that orthostatic hypotension is a common cause of syncope that can be missed if evaluation of orthostatic vital signs is not part of a hospital's established syncope admission protocol.

Methods

In collaboration with the Emergency Department physicians and staff, a retrospective chart review was performed using the ICD codes for syncope and dizziness, spanning from January 2018 to January 2020. Inclusion criteria consisted of a chief complaint of syncope or dizziness, age greater than 65, severity warranting inpatient hospitalization, and a final diagnosis of orthostatic hypotension. Exclusion criteria were age less than 65, patients presenting with known head trauma, patients with a known medical condition responsible for syncope, patients with a known GI bleed, patients with an infectious etiology for syncope, and patients who did not require inpatient hospitalization.

Results

A total of 428 patients with the ICD codes of syncope and dizziness were included in this study, and from these a total of 48 patients met the inclusion criteria. 58% (28/48) were females with mean age of 80.8 and 42% (20/48) were males with mean age of 82.3. 10% (5/48) had orthostatic vitals checked prior to fluid boluses and a total of 58% (28/48) of these patients had fluid resuscitation during their first encounter in the ED without any orthostatic vitals checked. 22% (11/48) of these patients had a final diagnosis of orthostatic hypotension but only 27% (3/11) of these patients had orthostatic vitals measured on admission. Comorbidities in this group included 27% (3/11) with diabetes and 55% (6/11) with hypertension. 64% (7/11) were given fluid boluses without orthostatic vitals checked. Echocardiogram was performed on 45%(5/11), carotid ultrasound was performed on 55%(6/11), and CTA head and neck was performed on 9% (1/11) of the patients with final diagnosis of orthostatic hypotension, all with unremarkable results. The diagnosis of orthostatic hypotension without documented orthostatic vitals was made on 73% (8/11) of the patients and was established based on negative workup.

Conclusion

Early measurement of orthostatic vital signs should be performed when a patient first arrives with complaints of syncope. As demonstrated by the data collected, this would aid in early diagnosis, avoidance of inappropriate and unnecessary diagnostic testing, and overall conservation of hospital resources. Future directions of this study will include creation of an EMR-based syncope admission order set that includes measurement of orthostatic vital signs, and implementation of staff reminders.

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California Research Poster Finalist - Dayna Isaacs

Title

Outpatient Management of Adults Diagnosed with Acute Pulmonary Embolism in Primary Care: An Interim Analysis of a Retrospective Cohort Study

Authors

Isaacs DJ, Johnson EJ, Hofmann ER, Rangarajan S, Huang J, Shan J, Wallace KL, Reed ME, Mark DG, Vinson DR

Introduction

Select ambulatory adults with acute pulmonary embolism (PE) can be safely managed as outpatients, as demonstrated by studies in emergency departments (EDs) and specialty clinics. Little has been published, however, on outpatient management in the primary care setting. We sought to describe the characteristics, management, and outcomes of primary care adults diagnosed with acute PE. We hypothesized that patients managed comprehensively by primary care physicians (clinic only) would demonstrate no significant difference in short-term health outcomes when compared with patients who were referred to the ED and subsequently discharged home (clinic-plus-ED).

Methods

This retrospective cohort study included adults diagnosed with acute PE by primary care physicians across 60 community-based facilities in a northern California integrated health care system during 2018-2019. No pathways were in place to guide ED referral. We excluded patients already on anticoagulation and those receiving comfort-focused care. We combined electronic health record extraction with structured manual chart review. Chi-squared and Wilcoxon test analyses were used to compare clinic-only with clinic-plus-ED patients. Variables included demographics, history of venous thromboembolism (VTE), PE Severity Index, proximal clot location, specialty consultation, and 7-day follow-up. The primary outcome was 7-day PE-related hospitalization; secondary outcomes were 30-day adverse events, including recurrent VTE, major hemorrhage, and all-cause mortality.

Results

Among 208 adults, we excluded 18 who were already anticoagulated and 1 receiving comfort-focused care. Of 189 study-eligible patients, 69 (37%) were hospitalized and 120 (63%) were managed as outpatients: 36 in the clinic-only (30% of outpatients) and 84 in the clinic-plus-ED

(70% of outpatients) group. Among outpatients, median age was 64 y (IQR 50-73), 60% were male and 65% were non-Hispanic white. Overall, their PE Severity Index Class was predominantly lower risk (93% were Classes I-III), 31% of those who underwent computed tomography pulmonary angiography (n=115) had a proximal clot, 46% received specialty consultation prior to home care, and 81% were treated with a direct oral anticoagulant. Seven-day follow-up was common: 67% with physicians and 90% with pharmacists for telephone-based anticoagulation care. The two outpatient groups were similar in demographics and the above clinical characteristics, except proximal clot: 14% in the clinic-only vs 38% in the clinic-plus-ED gro up (P

Conclusion

Almost two-thirds of adults diagnosed with acute PE in primary care were managed without hospitalization. Approximately one-third of these were treated without ED referral. The clinic-only patients were similar to those discharged home after brief ED evaluation, except more patients with proximal clot were referred to the ED. Adverse events were rare in both outpatient groups. Outpatient management of select primary-care PE patients appears to be safe and effective in this setting with and without ED referral.

California Research Poster Finalist - Amanda Nguyen

Title

Presence and Severity of Pulmonary Arteriovenous Malformations in Fontan Patients

Authors

Amanda Nguyen, David Geffen School of Medicine, UCLA Jeannette Lin, MD, Department of Medicine Cardiology, UCLA

Introduction

The Fontan procedure is a palliative surgery performed in patients with congenital heart defects that results in a single ventricle circulation. Although variants of the Fontan procedure can be performed, each technique involves anastomoses between the caval veins and the pulmonary arteries to passively direct deoxygenated venous blood to the lungs. Over time, changes in systemic venous and pulmonary pressures can cause pulmonary arteriovenous malformations (PAVM) to form [2,4]. Differential flow distribution and hepatic factor produced in the liver may be protective against PAVM [5]. Agitated saline contrast studies (ASCS) can be performed to explore if the type of Fontan or duration of time since surgery influences PAVM development [1,3].

Methods

Retrospectively, 47 adult Fontan patients who underwent simultaneous cardiac catheterization and saline contrast transesophageal echocardiogram at UCLA since January 1st, 2016 were identified. The ASCS for these patients were reviewed for presence and severity of PAVM. The ASCS were graded as follows: 0 (no bubbles seen); 1+ (1-20 bubbles); 2+ (>20 bubbles without chamber opacification); 3+ (bubbles resulting in chamber opacification). Patient history, cardiac anatomy, years since Fontan surgery, and type of Fontan were considered.

Results

Of the 47 patients, 8% had a RA-PA Fontan, 47% had a lateral tunnel Fontan, and 45% had an extracardiac Fontan. Of RA-PA Fontans, 25% had equal ASCS grades in the RPA and LPA; 25% had a 1 grade difference; and 50% had a 2 grade difference. Of lateral tunnel Fontans, 50% had equal ASCS grades in the RPA and LPA; and 50% had a 1 grade difference. Of extracardiac Fontans, 57% had equal ASCS grades in the RPA and LPA; 24% had a 1 grade difference; and 19% had a 2 grade difference. Three patients had bilateral bidirectional Glenn shunts, and all three patients had a higher grade bubble study on the side opposite of the Fontan. 2% of

patients had a Fontan circulation for 0-10 years with an average ASCS grade of 1.50; 30% of patients 11-20 years after Fontan had an average ASCS grade of 1.60; 49% of patients 21-30 years after Fontan had an average ASCS grade of 1.20; 19% of patients 30-40 years after Fontan had an average ASCS grade of 0.96.

Conclusion

We found that patients with lateral tunnel Fontans were more likely to have similar PAVM burdens between the LPA and RPA. Patients with RA-PA and Extracardiac Fontans were more likely to have considerably different PAVM burdens between the LPA and RPA. However, the duration of time since the original Fontan surgery did not correlate with differential PAVM burden, and actually had a trend towards decreased PAVM burden. Presence of bilateral bidirectional Glenns correlated with higher PAVM burden in the lung contralateral to the Fontan, suggesting less protective hepatic factor in this lung due to flow dynamics. Confounding factors, such as amount of exercise, other collaterals, or degree of hepatic fibrosis may have influenced PAVM development. Further elucidation on venous return is needed to draw conclusions about whether differential blood flow in the Fontan variants truly influences PAVM development.

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CALIFORNIA POSTER FINALIST - RESEARCH Muhammad Majeed

Necrotizing Soft Tissue Infections of Proximal Limb in IV Drug Users: An Ominous Sign

Title

Necrotizing Soft Tissue Infections of Proximal Limb in IV Drug Users: An Ominous Sign

Authors

Muhammad Majeed MD, Ghazal Bahri MD, Mohsen Saadat DO, Siamak M. Seraj, MD, MPH
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Introduction

Necrotizing Soft Tissue Infections (NSTI) is a spectrum of life-threatening fulminant infections involving tissues extending from skin to the bone [1]. Despite optimal treatment, the mortality still ranges between 20-34% [2]. Various preexisting conditions, clinical and laboratory measures had been associated with increased morbidity and mortality in NSTI [3]. IV drug use is the most prevalent clinical condition associated with NSTI and is typically linked to monomicrobial infections with contradicting evidence of differences in clinical course, morbidity and mortality in different studies [4,5,6]. Extremities are the most common location of infection and is associated with higher mortality in IV drug users [4]. The data on the area of involvement in an extremity (distal vs proximal) is limited in literature. With rising prevalence of substance use disorders, an increase in incidence of NSTI has been reported indicating a need for further delineation of site of infection and prognostication of the factors associated with morbidity and mortality [4]. Here, we investigated possible predictors of death and stratified the location of infection in terms of mortality especially in intravenous (IV) drug users.

Methods

A historical retrospective cohort of 106 adults with all types of diagnosed NSTI in a community hospital from 2010 to 2020 were included in the study. Location of soft tissue infection (STI) was categorized under proximal, distal, groin, and trunk, based on the site mostly involved. Data was collected from electronic medical records. Univariate and multivariate logistic regression models were utilized to study associations using S.A.S 9.3.

Results

Mean age of cohort was 50.8 ±11.4 years (n=106, 27-75, 32% Females) and BMI 30.4 ±8.5 (16-61). A very high prevalence of substance use was noted 38% (n=41) excluding smoking and alcohol use. Univariately, the location of STI was found to be proximal 16% (n=18), distal 51% (n=55), groin 21% (n=23), and trunk 10% (n=11). Overall, 16% (n=17) died of causes directly related to NSTI. More patients died in cohort with history of substance use 10.5% (n=11) compared to 5.7% (n=6) with no history of drug use with OR 4.1 (p=0.013). Similarly, more patients died with proximal limb involvement 28% (n=5) compared to non-proximal involvement cohort 14% (n=12) (OR 1.5, p=

Conclusion

Advanced age, substance use, and proximal limb involvement are independent predictors of mortality in patients with NSTI in our cohort. Proximal limb involvement may require more aggressive treatment approach in IV drug users as it has significantly higher mortality compared to distal involvement.

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CONNECTICUT POSTER FINALIST - RESEARCH Rita K Kuwahara, MD

Addressing Hepatitis B within the Opioid Epidemic and COVID-19 Pandemic: Policy and Practice-Based Strategies to Increase Adult Hepatitis B Vaccination in Primary Care

Title

Addressing Hepatitis B within the Opioid Epidemic and COVID-19 Pandemic: Policy and Practice-Based Strategies to Increase Adult Hepatitis B Vaccination in Primary Care

Authors

Rita K. Kuwahara, MD, MIH, Connecticut Institute for Communities, Inc. - Greater Danbury Community Health Center and Association of Asian Pacific Community Health Organizations

Introduction

Only 25% of U.S. adults are vaccinated against hepatitis B, and up to 2.2 million people in the U.S have chronic hepatitis B. The opioid epidemic has caused alarming rises in acute hepatitis B infection, despite hepatitis B being a vaccine-preventable disease. Acute hepatitis B increased 729% in Maine from 2015-2017, 114% in Kentucky, West Virginia and Tennessee from 2009-2013, and 78% in southeastern Massachusetts in 2017, largely fueled by low adult hepatitis B vaccination rates, and 25% of those with unmanaged chronic hepatitis B will develop liver cancer, liver failure, and/or cirrhosis. The purpose of this study was to determine primary care physicians' awareness of current adult hepatitis B vaccination rates and identify opportunities to increase adult hepatitis B testing and vaccination within primary care.

Methods

We first implemented advocacy techniques to closely collaborate with Members of Congress to develop and introduce a Congressional Resolution in the U.S. House of Representatives and U.S. Senate to designate April 30 as National Adult Hepatitis B Vaccination Awareness Day to increase adult hepatitis B vaccination rates in the setting of the opioid epidemic (H.Res. 331/S.Res. 177 – 116th Congress). In the investigative phase of this project, primary care internal medicine resident and faculty physicians at a Connecticut Community Health Center were surveyed on their adult hepatitis B testing and vaccination practices. They then attended a session on current hepatitis B testing and vaccination guidelines, and later completed another

survey to determine their anticipated practice changes regarding adult hepatitis B testing and vaccination.

Results

Of the physicians surveyed, 86% incorrectly believed that 75% of adults are vaccinated against hepatitis B, rather than the actual vaccination rate of 25%, and 0% realized how low the current U.S. adult hepatitis B vaccination rate is. Fourteen percent were unaware that chronic hepatitis B can cause liver cancer without cirrhosis. Eighty six percent reported caring for 10-19 adults with at least one hepatitis B-associated risk factor in the past month, with 43% caring for over 20 adults with at least one risk factor in the past month. However, 43% reported never considering testing their adult patients for hepatitis B, and 29% reported never considering vaccinating their adult patients for hepatitis B. After the educational session, 71% reported they were much more likely to consider testing, vaccinating, and ordering hepatitis B vaccinations for their adult patients, and 100% reported they were a little or much more likely to order adult hepatitis B testing and vaccination.

Conclusion

Based on this study's findings, there is significant opportunity to increase adult hepatitis B vaccination and testing within primary care, subsequently preventing chronic hepatitis B and hepatitis B-associated liver cancer. With recent reports showing that the current COVID-19 pandemic has resulted in decreased hepatitis B testing and vaccination, as well as a worsening opioid crisis and declining overall childhood and adult vaccination rates, this study further highlights the need for implementing national policies and innovative clinical practices that increase adult hepatitis B testing and vaccination, particularly within the dual opioid epidemic and COVID-19 pandemic.

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CONNECTICUT POSTER FINALIST - RESEARCH Rita K Kuwahara, MD

Telehealth and the Delivery of High Value Care: Assessing Opportunities and Limitations of Telephone and Video Encounters in a General Internal Medicine Practice during the COVID-19 Pandemic

Title

Telehealth and the Delivery of High Value Care: Assessing Opportunities and Limitations of Telephone and Video Encounters in a General Internal Medicine Practice during the COVID-19 Pandemic

Authors

Rita K. Kuwahara, MD, MIH, Connecticut Institute for Communities, Inc. - Greater Danbury Community Health Center

Introduction

The rapid emergence of the global COVID-19 pandemic has changed several aspects of primary care delivery. The introduction of widespread reimbursement for telehealth services and the need for patients to access healthcare without potential exposure to COVID-19 has resulted in many outpatient clinics adopting telehealth as a new model of healthcare delivery. The purpose of this study was to assess the role telehealth plays in the ability to practice high value care within general internal medicine, and identify what types of patient conditions may be more suitable for management via telehealth visits versus conditions or symptoms requiring in-person office visits for more optimal assessment and management.

Methods

Internal medicine resident and faculty physicians at a Connecticut Community Health Center completed questionnaires on 100 telehealth patient encounters, reporting whether they ordered more labs, imaging, antibiotics and/or referrals to emergency care for patients during each telehealth encounter than they otherwise would have, had they seen the patient in the office and conducted a physical exam or ordered a point of care test for the patient. All assessed telehealth encounters were conducted during a 2-week period in May 2020 during moderate COVID-19 pandemic activity in the state. Data was collected on both telephone and video telehealth encounters.

Results

Of the 100 telehealth encounters assessed, 24 were video appointments and 76 were telephone appointments. Sixteen visits were exclusively COVID-19 related, 32 visits were initial encounters for non-COVID-19 diagnoses, and 52 visits were encounters for follow up of non-COVID-19 diagnoses. Overall, 20% of encounters reported ordering additional labs, imaging, antibiotics and/or emergency care referral because the visit was virtual (31% for initial encounters for non-COVID-19 conditions and 17% for follow up encounters for non-COVID-19 conditions). In addition, 30% of all telehealth encounters reported that a point of care test would have been helpful in managing the patient, and 44% reported concerns that their diagnosis was less accurate due to only virtually assessing the patient.

Conclusion

While telehealth appointments offer patients expanded opportunities to access essential healthcare services, practicing internal medicine through telehealth can be challenging and may result in less accurate diagnoses or increased ordering of labs, imaging, antibiotics and/or referrals to emergency care due to the inability to perform a physical exam or order a point of care test during a virtual visit. In the era of telehealth, internal medicine physicians must balance practicing high value care with ordering the necessary investigations to most accurately diagnose and care for patients and prevent misdiagnoses and patient safety events which may occur with increased frequency during virtual visits.

DISTRICT OF COLUMBIA POSTER FINALIST - RESEARCH
Sneha Shah, DO

Acute Kidney Injury in a U.S. Cohort of COVID-19 Patients

Title

Acute Kidney Injury in a U.S. Cohort of COVID-19 Patients

Authors

Sneha Shah, D.O., Lei Lynn, M.D., Shant Ayanian, M.D.

Introduction

The novel coronavirus disease 2019 (COVID-19) has demonstrated a range of presentations and outcomes affecting multiple organ systems. Acute kidney injury (AKI) associated with hospitalized patients with COVID-19 and related outcomes vary widely according to early reports. This study aimed to determine the prevalence of AKI, AKI in the setting of chronic kidney disease (CKD) and AKI requiring hemodialysis (HD) in patients with COVID-19 in a U.S. cohort. We also evaluated the association between markers of abnormal kidney function and death in patients with COVID-19. Finally, we determined pre-disposing factors that lead to AKI, such as: cardiac history, diabetes mellitus, hypertension and cerebrovascular disease.

Methods

A single-center retrospective analysis was conducted involving all patients greater than 18 years of age with a confirmed diagnosis of COVID-19 via reverse transcriptase-polymerase chain reaction assays (RT-PCR) or molecular PCR via nasopharyngeal swab between March 15 and May 31, 2020. Initial descriptive statistics were used to summarize the data and represent basic patient population characteristics. Univariate logistic regression and chi square analysis was performed to study the odds of the different outcomes with respect to AKI. AKI and its severity were defined according to the KDIGO criteria.

Results

Out of 368 hospitalized patients with COVID-19, 177 patients (56.7%) had AKI; of this, 35%, 10.9% and 10.3% had stage 1, 2 and 3 respectively. 2.4% of all patients who developed AKI required renal replacement therapy (RRT). Initial analysis demonstrated that patients with increasing severity of kidney disease had a significantly higher risk of in-hospital death (AKI

stage 1 OR 1.07 [95% CI, 0.67, 1.72], AKI stage 2 OR 2.75 [95% CI, 1.47, 5.13], AKI stage 3 OR 3.47 [95% CI, 1.90, 6.34]). Overall, patients with AKI were found to have increased mortality, compared to those patients who did not have AKI (OR 5.82 [95% CI, 3.31, 10.27]). Patients with AKI on CKD had a mortality rate of 3.06 [95% CI, 1.33, 4.11]. There was not enough power to see a significant effect on ESRD. Next, several comorbid factors were found to increase risk of AKI. Cardiac history (coronary artery disease, congestive heart failure, arrhythmias and valvular disease) was found to be significant in increasing risk of AKI (OR 1.62 [95% CI, 1.07, 2.46]). Hypertension, diabetes and cerebrovascular accident were also found to be statistically significant (OR 2.64 [95% CI, 1.65, 4.26], OR 1.82 [95% CI, 1.20, 2.77], OR 2.50 [95% CI, 1.59, 3.93], respectively). We hypothesize that these comorbidities increase COVID-19 disease severity and in turn, increase risk of AKI.

Conclusion

Our findings highlight a prevalence of AKI in COVID-19 patients on admission. The development of AKI during hospitalization in patients with COVID-19 is high and is associated with in-hospital mortality. Furthermore, we found that patients with comorbidities including cardiac history, hypertension, diabetes and cerebrovascular accident are all factors that lead to higher risk of AKI in COVID-19 patients. Going forward, clinicians should aim to increase their awareness of and factors posing an increased risk of kidney disease in patients with severe COVID-19.

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Florida Research Poster Finalist - Sonam Parag

Title

COVID-19 Pathogen (SARS-CoV-2) Viral Evolution Leading to Increased Infectivity

Authors

Sonam Parag, MS-II, Nova Southeastern University Dr. Kiran C. Patel College of Allopathic Medicine; Kate Carnevale, Ph.D., Nova Southeastern University Dr. Kiran C. Patel College of Allopathic Medicine

Introduction

Human coronaviruses were first identified in the mid-1960s by D.A.J Tyrrell and were not considered to be highly pathogenic until the outbreak of Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV-1) in 2003. The SARS virus was first isolated in Guangdong, China after transmission to humans from an animal host, and quickly spread around the world. This virus rapidly disappeared, despite having a replication rate (R0) of ~2. A related virus, Middle East Respiratory Syndrome Coronavirus (MERS-CoV), emerged in Saudi Arabia in 2012 and assumed to originate from camels. While MERS was more lethal than SARS, it was less transmissible, making it self-limiting with a R0

Methods

Amino acid sequences of the spike protein of each virus (SARS-CoV, MERS-CoV, and SARS-CoV-2) were obtained from the NCBI Virus Database and analyzed, along with their known receptors, for sequence changes and peptide properties to determine the characteristics of virus-receptor binding. Crystal structures were retrieved from the Protein Data Base for each virus and receptor, and visualized using proteomic analysis software (PyMOL 2.1).

Results

SARS-CoV-2 displayed the largest magnitude difference (+32.4) in net charge between the virus and its receptor, angiotensin-converting enzyme 2, suggesting stronger electrostatic binding. SARS-CoV-2 also had the largest RBD (7140.29 angstroms^2), indicating more surface area for interaction with the ACE2 receptor.

Conclusion

Evolution of SARS-CoV-2 for a larger and more electrostatically “sticky” RBD compared to other pathogenic Betacoronaviruses may contribute to observations of SARS-CoV-2 having stronger or more stable binding, leading to transmissibility and infectivity. Further directions of this project include enlarging the scope of viruses analyzed to the bat and pangolin strains to create a phylogenetic tree displaying the evolution of the virus. In addition, identifying conserved regions may facilitate the development of viable vaccines and treatments to combat the current pandemic as well as potential future pathogenic mutations.

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FLORIDA POSTER FINALIST - RESEARCH Tarig Elhakim

Threadworm; The Importance of Eradicating Strongyloides Stercoralis before Initiation of immunosuppressive therapy in High Risk Persons.

Title

Threadworm; The Importance of Eradicating Strongyloides Stercoralis before Initiation of immunosuppressive therapy in High Risk Persons.

Authors

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Introduction

While often asymptomatic, Strongyloides Stercoralis(threadworm) can cause a fatal syndrome in immunocompromised patients, reaching a mortality-rate of 80-100%. Strongyloides-Hyperinfection/dissemination-syndrome(SHS) results from an excessive auto-infective cycle that generates a massive worm burden causing meningitis, gram-negative sepsis, DIC, shock, and/or respiratory-failure. Unfortunately SHS is commonly triggered iatrogenically by the use of corticosteroids in chronic undetected carriers. In one study of 133-patients with SHS, 83% of the cases were related to the use of corticosteroids. In another case report, a single injection of subconjunctival dexamethasone triggered SHS. Many report that the diagnosis of SHS can be difficult to establish, especially with the lack of familiarity among healthcare providers. Chronic carriers can stay lifelong since childhood and eventually reactivate later in life. In the United-States, studies in immigrant populations showed a high percentage of carriers reaching 46.1%. To prevent SHS, an approach to address infection early prior to the use of corticosteroid is suggested. Although eosinophilia is a helpful marker, unfortunately it lacks accuracy even with the occurrence of SHS. As such historical markers like the country of origin, rural residence or soil-associated labor are helpful to guide screening.

Methods

By mid-2020, a second surge of the Coronavirus-2019(COVID-19) hit our facility. Many qualified for corticosteroid early on presentation. Therefore, we screened these patients to identify

those with risk factors for previous Strongyloides infection. Positive patients qualified for screening with Strongyloides-IgG serology, and those positive received a 2-4doses of ivermectin. Later, we retrospectively identified those positive cases and performed a retrospective-chart review to collect pertinent data for further analysis.

Results

During a two month period 12-cases, 10-males and 2-females, were identified positive for Strongyloides-IgG serology. All were hispanic and age ranged from 45-89. None had eosinophilia, which can be related to the dysregulated immunity seen in COVID-19. 9-patients had an extended hospital course above 10-days. All patients received steroids within the first day of presentation and continued throughout hospitalization. The turnaround time for Strongyloides-IgG serology was 3-5days, a national average. All patients received Ivermectin 15mg within an average of 5-day's from presentation. Within the first 3-day's of hospitalization, all patients had a worsening respiratory status and 10-patients had worsening Chest-Xray infiltrates. 6-patients died, especially those with longer corticosteroid therapy and late ivermectin initiation.

Conclusion

The mortality-rate in those patients is 50% which could be explained by COVID-19 and/or reactivation of Strongyloides. All had a worsening respiratory status after initiation of corticosteroid suggesting the importance of Strongyloides eradication before immunosuppressive therapy. Therefore, we recommend a proactive test-and-treat strategy. Since eosinophilia lacks accuracy and most patients are asymptomatic, one can use the demographic risk factors to identify potential carriers. Those with risk factors for chronic Strongyloides can presumptively be treated with ivermectin or further screened with Strongyloides-IgG serology. Ivermectin is considered an inexpensive, safe and effective therapy against strongyloides with an average cure rate of 83.3%. SHS is a highly fatal condition that is difficult to diagnose especially within an era of uncertainties from COVID-19. As such it's important to eradicate it early and include it in your differential diagnosis.

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FLORIDA POSTER FINALIST - RESEARCH Shayan sinha Mahapatra, MBBS MD

Are we overusing the diagnostic testing for Heparin-Induced Thrombocytopenia (HIT) without additional clinical benefit? A Single-Center Quality Improvement Study

Title

Are we overusing the diagnostic testing for Heparin-Induced Thrombocytopenia (HIT) without additional clinical benefit? A Single-Center Quality Improvement Study

Authors

Authors: Shayan Mahapatra MD, Jinesh Mehta MD, Darby Sider MD. Chelsea Garcia MD, Mike Castillo MD, Rajaganesh Rajagopalan MD

Introduction

Thrombocytopenia is a common occurrence in hospitalized patients. HIT is often suspected when thrombocytopenia is temporally associated with heparin administration. The 4T score is a well-validated tool to stratify the pretest probability of HIT. ELISA for PF4 antibodies is the initial test in the workup for HIT. SRA is indicated only if the ELISA is inconclusive. SRA is usually a 'send out' test at most hospitals. This leads to a trend of concurrently ordering ELISA and SRA to expedite results. Our aim was to assess adherence to HIT diagnostic testing guidelines based on 4T score and to determine the cost expenditure associated with inappropriate HIT testing.

Methods

A retrospective chart review was performed on 206 consecutive patients who underwent laboratory testing (PF4 and SRA) for suspected HIT. This data was further processed for cost-benefit analysis. The following parameters were accessed: age, gender, and documentation of 4 T Score (low, intermediate, high), HIT result (Positive and Negative), anti-PF4/heparin antibodies result, SRA testing and treatment initiation

Results

During the study period, February 2017 – February 2018, 206 patients were suspected of HIT and the pretest probability based on 4Ts score was 22%, 60%, and 18 % for low, intermediate, and high probability, respectively. All 46/206 patients in the low probability group underwent

HIT work up with anti-PF 4 Antibody testing. , Of patients in the low, intermediate, and high probability group, 6%, 4.8%, 36% underwent both SRA and PF4 testing respectively. None of the patients categorized as low probability were diagnosed with HIT. Among patients in the intermediate and high probability groups, 5.6 % and 22.3% had a confirmed diagnosis of HIT respectively. Cost-benefit analysis: The average cost of PF4 testing is $146.00 and SRA $325.00 per unit which was ordered for 46/206 patients in the low probability group; this costs ~ $6,716.00 and $ 975 respectively. Bivalirudin, a direct thrombin inhibitor is the treatment used at Cleveland Clinic Florida for treatment of HIT/ suspected HIT with an average cost of $151.00 per day. In total inappropriate lab testing resulted in $8,899 during the study period which could have been potentially saved and highlights an opportunity for cost-saving intervention.

Conclusion

We recommend that 4T score calculator should be incorporated in the ordering process for ELISA/PF4 to minimize unnecessary testing for anti PF4 antibodies and to deter simultaneous ordering of PF4 and SRA tests. Physician education highlighting the importance of pretest probability during the diagnostic evaluation will enhance the appropriate use of PF4 and SRA tests. Inappropriate use of PF4 and SRA tests has been shown to over-diagnose HIT and increase expenditure without additional clinical benefit. Further study is required to evaluate if initiating automatic EMR-initiated 4T scoring for each PF4-ELISA testing would be an effective addition in our sustained attempt to decrease inappropriate HIT testing.

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FLORIDA POSTER FINALIST - RESEARCH Larnelle Simms

Improving Endoscopic Surveillance in Veterans on High Dose Proton Pump Inhibitors as Outpatient

Title

Improving Endoscopic Surveillance in Veterans on High Dose Proton Pump Inhibitors as Outpatient

Authors

Larnelle N. Simms, MD; Laura Suzanne K. Suarez, MD; Khaled Deeb, MD; Amit Sah, MD; Ayat Al-Rubaye, MD; Catherine Ostos Perez, MD; Baher Al-Abbasi, MD; Jose Proenza, MD

Introduction

Proton pump inhibitors (PPIs) are among the most widely prescribed class of medications in the United States. It accounts for more than 11 million 30-day prescriptions each year in Veterans Affairs (VA) Hospitals. According to the American Society of Gastrointestinal Endoscopy, objective work-up such as upper endoscopy is needed for the evaluation of patients with upper abdominal symptoms that persist beyond an optimized trial of therapy of six to eight weeks. The key to successful treatment is an accurate diagnosis. This study aims to investigate the need for heightened endoscopic surveillance of patients with unclear indications for high dose PPI prescriptions as an outpatient.

Methods

In this single-center retrospective cohort study, we included 275 patients who were prescribed with outpatient high dose PPIs from October 1 to October 30, 2020. Data were extracted from the computerized patient record system at West Palm Beach VA Medical Center. Veterans with prescriptions for less than eight weeks were excluded (n= 59). The primary endpoint was endoscopic surveillance within two years for veterans without clear indications. High dose PPI was defined as a minimum total daily dose of the following: Esomeprazole: 40mg, Omeprazole 40 mg, Lansoprazole 60 mg, Pantoprazole 80mg, Dexlansoprazole 60 mg, and Rabeprazole 40mg. PPI prescriptions were categorized into indicated verses without clear indications. Guideline approved indications include treatment for Barrett's Esophagus, Severe Erosive Esophagitis, PPI-responsive Eosinophilic Esophagitis, Zollinger Ellison Syndrome, Helicobacter pylori, and Idiopathic Peptic Ulcer Disease. The most recent endoscopies were then manually reviewed including free-text comments to confirm accuracy.

Results

In the sample of 217 patients, 175 (80.6%) veterans had no clear indication for high dose PPI use beyond eight weeks. They were mostly seen by a non-gastroenterologist [161 (92%) vs 14 (8%), (P=0.0034)], and were more likely to have a history of gastroesophageal reflux disease (P= 0.0351). There was no significant difference among inappropriate and appropriate prescriptions in patients with a history of diabetes mellitus, nonsteroidal anti-inflammatory drug use, anticoagulant use, functional dyspepsia, gastritis, esophagitis, and esophageal strictures. All patients with unclear indications who were seen by a gastroenterologist received endoscopic work-up within 2 years. Of the prescriptions refilled by non-gastroenterologist providers, only 30% (n= 48) underwent endoscopies within 2 years, 34% (n=55) had it performed more than 2 years prior, and 36% (n= 58) never had an endoscopy scheduled.

Conclusion

High dose PPIs were continued without clear indication in 80.6% of outpatients. The majority of whom had no endoscopy done within 2 years. This underscores the need for implementing a regulated checkpoint in the electronic prescription process involving appropriate endoscopic work-up and gastroenterology follow-up. Future steps will focus on implementing these approaches followed by a post-intervention analysis. Ultimately, this intends to reduce diagnostic uncertainty while decreasing the risks of polypharmacy, adverse events, and overall expenditure.

FLORIDA POSTER FINALIST - RESEARCH Laura Suzanne Suarez, MD

Guideline Discordance in High Dose Proton Pump Inhibitor Prescriptions at Veterans Affairs Clinics.

Title

Guideline Discordance in High Dose Proton Pump Inhibitor Prescriptions at Veterans Affairs Clinics.

Authors

Laura Suzanne K. Suarez, MD; Larnelle N. Simms, MD; Khaled Deeb, MD; Amit Sah, MD; Ayat Al-Rubaye, MD; Catherine Ostos Perez, MD; Baher Al-Abbasi, MD; Jose Proenza, MD

Introduction

In the United States, proton pump inhibitors (PPIs) account for more than $10 billion in annual health care costs. Approximately 1 in 6 veterans is prescribed with PPIs, with a dramatic increase in supra-therapeutic doses without clear indications. This puts patients at an inordinate risk for adverse events such as community-acquired pneumonia, enteric infections (i.e. Clostridium difficile), hip fracture, dementia, cerebrovascular events, chronic renal failure, diabetes, chronic obstructive pulmonary disease (COPD), and gastric cancer. The study aims to assess the proportion of veterans inadvertently given high dose PPIs and explore the common reasons for guideline discordance.

Methods

This is a single-center retrospective cohort study including 275 patients who were prescribed high dose PPI as an outpatient from October 1 to October 30, 2020. Data were extracted from the electronic medical record at West Palm Beach VA Medical Center. Veterans who were on the high dose prescription for less than eight weeks were excluded (n= 59). The primary endpoint was appropriate high dose PPI use. High dose PPI was defined as a minimum total daily dose of the following: Esomeprazole: 40mg, Omeprazole 40 mg, Lansoprazole 60 mg, Pantoprazole 80mg, Dexlansoprazole 60 mg, and Rabeprazole 40mg. Guideline approved indications include treatment for Barrett's Esophagus, Severe Erosive Esophagitis, PPI-responsive Eosinophilic Esophagitis, Zollinger Ellison Syndrome, Helicobacter pylori, and Idiopathic Peptic Ulcer Disease. Prescriptions were categorized as, with clear indications versus non-clear indications. The most recent endoscopies were then manually reviewed including

free-text comments to confirm accuracy. Analysis was then done to assess differences in comorbidities, prescribers, endoscopic surveillance patterns, and subsequent gastroenterology (GI) follow-up.

Results

Among the veterans prescribed with outpatient high dose PPIs for over eight weeks, 80.6% (175/217) had no clear indication for it. Unclear indications were associated with non-GI prescribers (92% vs 8%; P = 0.0034), and a history of gastroesophageal reflux disease (54% vs 46%; P = 0.0351). The mean BMI was 29.9 ± 6.6, and the most common drug was omeprazole (n=188). There was no significant association of inappropriate PPI prescriptions and baseline comorbidities of concomitant anticoagulant and nonsteroidal anti-inflammatory agent use, hypertension, obesity, diabetes mellitus, functional dyspepsia, gastritis, esophagitis, and esophageal strictures.

Conclusion

Majority of the patients prescribed with high dose PPIs as outpatient had no clear indication for it. Guideline discordance was associated with prescriptions done by a non-GI provider and a comorbid condition of gastroesophageal reflux disease. Implementation of an electronic checkpoint during the prescription process, with attention to periodic symptom re-evaluation, further objective work-up, gastroenterology referral, and duration limits of prescription refills, may aid in mitigating this problem. Future steps will focus on applying these approaches followed by a post-intervention analysis.

GEORGIA POSTER FINALIST - RESEARCH Krystal Mills

Utilization Of Telemedicine For Outpatient Primary Care Encounters During The COVID-19 Pandemic & Its Impact On Resident Burnout

Title

Utilization Of Telemedicine For Outpatient Primary Care Encounters During The COVID-19 Pandemic & Its Impact On Resident Burnout

Authors

Ashley Peterson, DO; Macy McNair, MD; Timothy Sobukonla, MD; Temidayo Abe, MD; Joseph Igwe, MD; Phani Surapaneni, MD; Taiwo Ajose, MD; Judith Volcy, DO; Eric Chang, MD

Introduction

Various residency programs adapted during the COVID-19 pandemic by increasing use of telemedicine.(1-2) The impact of telemedicine use by primary care residents for virtual visits during COVID-19 has not yet been reported. By having objective data on the effects of telemedicine, programs can implement changes to increase resident wellness and improve patient care.

Methods

In May 2020, an online survey was sent to internal medicine and family medicine residents who performed outpatient visits during COVID-19. The questionnaire comprised of multiple choice questions on demographics and general feedback on telemedicine, as well as the Abbreviated Maslach Burnout Inventory to measure burnout. This study received IRB approval.

Results

62 of 78 eligible residents (79.5%) responded to the survey. Telemedicine decreased length of outpatient visits by an average of 10-20 minutes. 91% of residents agreed that telemedicine was a safe alternative to face to face encounters. 79% of residents used it to screen for signs/symptoms of COVID-19 and 93% provided patient education on COVID-19. Post-telemedicine, scores for overall burnout were decreased (p=0.0005) and less residents in total exhibited burnout (P=0.0156).

Conclusion

There was an overall positive feedback from internal medicine and family medicine residents on telemedicine use for outpatient clinic visits during COVID-19. It decreased length of outpatient clinic visits and most residents believed it was a secure option to face-to-face encounters, improved time management and decreased nervousness/anxiety during COVID-19. There was an overall decrease in burnout, with less emotional exhaustion and less depersonalization, among primary care residents with use of telemedicine during the COVID-19 pandemic.

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GEORGIA POSTER FINALIST - RESEARCH Manan Shah

ASSESSMENT AND EFFICACY OF LOW DOSE CT SCREENING AND PRIMARY CARE PROVIDERS PERSPECTIVE ON LUNG CANCER SCREENING - AN INSTITUTIONAL REVIEW

Title

ASSESSMENT AND EFFICACY OF LOW DOSE CT SCREENING AND PRIMARY CARE PROVIDERS PERSPECTIVE ON LUNG CANCER SCREENING - AN INSTITUTIONAL REVIEW

Authors

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Introduction

Lung cancer is the most common cause of death in men and the third most common cause of death in females in the world. Smoking is the most important risk factor causing more than half of the cases of lung cancer. The National Lung Screening Trial was the first study to show a mortality benefit from screening. The US preventive services task force (USPSTF) recommends annual lung screening with low dose CT chest (LDCT) for individuals aged 55-80 who have a 30 pack-year smoking history and currently smoke or have quit within the past 15 years.

Methods

We reviewed electronic medical records of patients visiting our outpatient clinic from January 2019 to January 2020. We included all eligible individuals according to USPSTF guidelines for LDCT to identify LDCT screening rates at our institution. All primary care physicians including residents and attendings were given a prepared questionnaire to understand their beliefs, knowledge and concerns with implementation of this program.

Results

A total of 13500 patients visited the outpatient clinic at our institution out of which 1178 were eligible for LDCT as per guidelines. 58% of the eligible candidates were males. The mean age was 63 years. 47% had smoking history of 30-39 pack years. Majority of our patients were active smokers. 540 (45%) patients received LDCT screening, which was higher than the national average of 2-5%. The inappropriate testing rate was 3%. Primary care provider perspective: A total of 50 primary care providers were included in the survey. 78% of the providers were aware of the USPSTF guidelines. 54% of the providers stated that they inform all their eligible patients about LDCT. 66% believed that patients with multiple comorbidities was an important barrier in initiating LDCT screening. 78% believed that creating age appropriate LDCT screening reminders on the electronic medical record would be beneficial for increasing screening rates in our patients. 44% believed that insurance and Medicare issues were significant barriers in receiving LDCT appropriately. 84% providers believed that more public awareness is required to improve national screening average when compared with other cancer screening programs.

Conclusion

Lung cancer screening is an important component in cancer preventive strategies. However, the screening rates are very low in comparison to other cancer screening programs. Various barriers have been noted in implementing this program. Widespread awareness among the primary care providers and public is extremely necessary in improving the use of LDCT.

ILLINOIS POSTER FINALIST - RESEARCH Chenyu Sun, MD

Does mask-wearing prevent respiratory viral transmission? A meta-analysis

Title

Does mask-wearing prevent respiratory viral transmission? A meta-analysis

Authors

Chenyu Sun, MD, MSc, Mingming Liang, MPH, John Patrick Uy, MD

Introduction

Recommendations regarding effects of mask-wearing on preventing respiratory viral transmission (RVI) were conflicting. Two meta-analyses found non-significant protective effect of mask on influenza (OR = 0.53, 95% CI 0.16–1.71, *I2* = 48%) (OR = 0.78; 95% CI 0.51–1.20; *I2* = 30%). Another meta-analysis found reduced spread of Severe acute respiratory syndrome (SARS) (OR = 0.32; 95% CI 0.25–0.40; *I2* = 58.4%). Therefore, a meta-analysis was performed to evaluate the mask-wearing in preventing laboratory-confirmed RVI.

Methods

The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement was consulted to report this systematic review. Relevant articles were retrieved from PubMed, Web of Science, ScienceDirect, Cochrane Library, and Chinese National Knowledge Infrastructure (CNKI), VIP (Chinese) database up to September 2020. Inclusion criteria include that diagnosis of the respiratory virus must have laboratory evidence, or the local clinical diagnostic criteria are applied during an acute large-scale infectious disease when laboratory evidence might be not available. Subgroup analyses were performed based on healthcare workers (HCWs) vs non-healthcare workers (Non-HCWs), geographic locations, and virus types. Publication bias detection was also performed via Begg's and Egger's test, and funnel plot. Analyses were performed by Revman 5.3.5 and Stata 14.0.

Results

26 studies met our inclusion criteria, with relatively strong qualities of most studies. Mask use provided a significant protective effect (OR = 0.37 and 95% CI = 0.28-0.50, *I2* = 58%). Use of masks by HCWs and Non-HCWs reduced the risk of respiratory viral infections (RVIs) by 74% (OR = 0.26, 95% CI = 0.20-0.33, *I2* = 49%) based on 16 studies, and 47% (OR = 0.53, 95% CI =

0.42-0.66, *I2* = 47%) based on 9 studies, respectively. A subgroup analysis of 3 studies found a 40% reduced risk (OR = 0.60, 95% CI = 0.37-0.97, *I2* = 31%) at household, and 6 studies at non-household setting found a 45% reduced risk (OR = 0.55, 95% CI = 0.35-0.86, *I2* = 31%) for non-HCWs. The subgroups analysis of 19 studies in Asia found a 66% reduced risk (OR = 0.34, 95% CI = 0.23-0.49, *I2= 63%), and 7 studies in western countries found a 57% reduced risk (OR = 0.43, 95% CI = 0.32-0.58, I2 = 44%). Mask use reduced the risk of influenza by 42% (OR= 0.55, 95% CI = 0.39-0.76, I2 = 27%) based on 12 studies, and reduced the risk of SARS by 74% (OR = 0.26, 95% CI = 0.18-0.37, I2 = 47%) based on 7 studies. For Coronavirus disease (COVID-19), 6 included studies found a 62% reduced risk (OR = 0.38, 95% CI = 0.21-0.69, I2 = 54%). Neither Begg's test (z =1.41, p =0.158) nor Egger's test (t = -1.93, p = 0.065) indicated publication bias.*

Conclusion

Wearing a mask protects both HCWs & Non-HCWs, and also reduces the risk of RVIs in the household. It reduces the risk of influenza, SARS, and SARS-CoV-2 infection.

ILLINOIS POSTER FINALIST - RESEARCH Nicole Yun

Hematology Referral for Intravenous Iron Replacement Therapy Reduces Number of Emergency Room Visits or Hospitalizations in Patients with Symptomatic Iron Deficiency Anemia

Title

Hematology Referral for Intravenous Iron Replacement Therapy Reduces Number of Emergency Room Visits or Hospitalizations in Patients with Symptomatic Iron Deficiency Anemia

Authors

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Introduction

The iron deficiency anemia (IDA) clinic was created specifically for the evaluation and management of patients with symptomatic iron deficiency anemia. We sought to evaluate if a referral to this clinic to receive intravenous (IV) iron replacement therapy with close provider follow-up reduces annual number of emergency room (ER) visits or hospitalizations.

Methods

Patients with a primary diagnosis of IDA referred to Rush University Medical Center's hematology clinic for IV iron replacement therapy between January 2016 and June 2020 were identified. The list was further narrowed down to include those who had contact with the health care system for symptomatic anemia in the form of one or more ER visits or hospitalizations within the year prior to referral visit. Records from 57 patients were identified and retrospectively analyzed. Number of ER visits or hospitalizations in the year prior to referral visit were compared to number in the year after. Hemoglobin (Hgb), hematocrit (Hct), mean corpuscular volume (MCV), platelet count (Plt), serum iron (Fe), total iron binding capacity (TIBC), iron percent saturation (Fe % sat) and ferritin at the initial visit were compared to those

drawn at 8-12 week follow-up after the first completed infusion cycle in order to assess response to therapy.

Results

The median number of ER visits or hospitalizations in year prior to referral was 1 [IQR 1, 2] compared to 0 [IQR 0, 0] in year after (p= <0.0001).

Conclusion

Rush University Medical Center's IDA clinic serves as a tertiary prevention model for patients affected by IDA who have failed oral iron therapy. Referral for IV iron therapy with close provider follow-up and monitoring intended to assess response to IV iron and potential need for additional treatments based on iron panel and CBC parameters led to reduction in ER visits and inpatient hospital admissions in patients with symptomatic anemia. Although we did not conduct a cost- analysis, we believe that this approach potentially holds long-term system-wide cost-savings implications. It also results in statistically significant improvements in degree of anemia as evidenced by routinely measured laboratory indicators. This translates into lower symptomatic burden and inevitably, an improved quality of life for each individual patient. Although not formally assessed, we also believe that ameliorating anemia can reduce adverse effects of chronic anemia on organ function.

IOWA POSTER FINALIST - RESEARCH Leah Laageide

Characterizing Nipple Symptoms and Treatments in Early Lactation

Title

Characterizing Nipple Symptoms and Treatments in Early Lactation

Authors

Leah Laageide, MD, Stephanie Radke, MD, Donna Santillan, PhD, Patrick Ten Eyck, PhD, Jennifer Powers, MD

Introduction

The stated intention to breastfeed is one of the strongest predictors of breastfeeding continuation, but the dynamic nature of nursing is often affected by socio- environmental factors and the experience itself. Nipple pain and skin abnormalities are a major prohibitive factor for achieving breastfeeding goals, particularly within the 1-8-week postpartum (PP) period. Previous studies have identified the prevalence of self-reported nipple symptoms (pain, itch) in PP women to be as high as 79% and self-reported nipple damage at 58%. Despite nipple problems, specific dermatologic entities which contribute to nipple soreness have not been clearly delineated, and there remains a lack of evidence-based guidelines for nipple symptoms and skin diseases.The study aimed to characterize nipple skin symptoms (pain, itching) and lesions (eczema, redness, cuts or wounds) and any associations between these nipple problems and past dermatologic history, breastfeeding outcomes ("intended" versus "current" practices), and the ability to meet breastfeeding goals.

Methods

A 13-question survey was distributed to 6-8-week PP women, 18-50 years of age with an intent to exclusive or partially breastfeed (“at the breast” or “pumping”). Categories of nipple skin issues evaluated in the survey included “nipple symptoms” (Nipple pain or itching) and ”nipple skin lesions” (redness, eczema (atopic dermatitis), cuts (fissures), or open wounds). ”Intended’ practices (breastfeeding and/or formula) represented day 0, while “current’ practices represented 6-8 weeks PP. SAS (9.4) was used for statistical analysis with statistical significance set to p =

Results

In a 4-month period, 219 respondents met inclusion criteria, of which 84.5% (185) identified as "white, non-Hispanic," the average age was 30.0 years, and 46.6% (102) had previously breastfed 1 or more infants. Findings paralleled 2018 CDC statistics with a 25% decline in breastfeeding rates between birth, 86.3% (189), and 6-8 weeks PP, 64.5% (145). By 6-8 weeks PP, exclusive “formula” and “exclusive feeding at the breast” showed the largest increase (+16.4%) and decrease (-22.9%), respectively. Although no significant differences were found in comparison of nipple problems to feeding methods or skin history, women who reported pumping or postpartum redness/eczema had higher odds ratios of a change in feeding practice, history of eczema, and sensitive skin. Strong pumping intentions were also associated with the highest risk of unmet breastfeeding goals. The majority, 62.1% (136) used lanolin, 25.6% (56) gel pads, and 46.5% (101) sought care from lactation consultants/nurses, but none from internal medicine or dermatologists. Regardless of feeding method, product or provider use, PP nipple problems predominantly arose between 1-3 weeks PP.

Conclusion

Treatment options and provider guidelines for nipple discomfort and skin issues arising in breastfeeding PP women remain limited. Although the study-design cannot define a correlation between types of nipple trauma and most effective treatments, these data will add to the existing body of knowledge on management practices for nursing mothers, which may ultimately aid women in meeting their personal breastfeeding goal and improve overall breastfeeding rates. The study also reveals a potential relationship between underlying dermatoses (eczema), sensitive skin and incidence of nipple problems.

References

To add if accepted for a poster and/or presentation.

LOUISIANA POSTER FINALIST - RESEARCH Shiva Jashwanth Gaddam

Benefits of Partial Exchange Transfusions in Sickle Cell Anemia in an Adult Population: A retrospective analysis.

Title

Benefits of Partial Exchange Transfusions in Sickle Cell Anemia in an Adult Population: A retrospective analysis.

Authors

Taras Benzar, MD, Louisiana State University Health Sciences Center - Shreveport; Shiva Jashwanth Gaddam, MD, Louisiana State University Health Sciences Center - Shreveport; Richard Mansour, MD, Louisiana State University Health Sciences Center - Shreveport; Samip Master, MD, Louisiana State University Health Sciences Center - Shreveport.

Introduction

We conducted a retrospective analysis of adult patients with sickle cell disease (SCD) receiving scheduled partial exchange transfusions with one unit packed red blood cell (pRBC) removed and one unit pRBC donor cells transfused every two weeks. Analyzed further, was this regime's impact on the number of admissions for vaso-occlusive pain crisis and duration of hospital stays for vaso-occlusive pain crisis in adult patients with SCD.

Methods

The retrospective analysis included all patients aged >/= 18 years who received scheduled packed red blood cell partial exchange transfusions at a tertiary care hospital in northwestern Louisiana. Paired t-test analysis was performed to investigate the impact of these transfusions on the number of and duration of hospital admissions, before and after enrolment into the exchange transfusions program.

Results

A total of 45 patients were identified, out of which 20 patients who had zero admissions related to sickle cell pain crisis prior to partial exchange transfusion initiation were excluded. As a result, 25 patients (11 female and 14 male) were included for the final analysis; the mean age was 32.4 (95%CI ±3.378) years. This patient population had 4 genotypes amongst them: 21 had

SS, 1 SC, 1 sickle-beta, and 1 sickle-delta beta. The mean number of sickle cell pain crisis admissions per month prior to the initiation of partial exchange transfusion was 0.4793, compared to 0.1746 after initiation. The mean difference was 0.3047 (p=0.006, 95% CI ±0.2345). Similarly, the mean average number of days in a hospital stay per month prior to the initiation of partial exchange transfusion was 3.0563, compared to 0.5884 after initiation. The mean difference was 2.4679 (p=0.0650, 95% CI ±3.2113). Data for ferritin levels and alloantibodies is under the collection.

Conclusion

A significant decline in the mean number of admissions for vaso-occlusive pain crisis was noted following enrollment into a partial exchange transfusion program, however, the decline in the mean duration of hospital stays was not statistically significant. This study indicates that partial exchange transfusions may help improve patient quality of life, along with health-care expenses. Larger prospective studies are warranted to investigate the precise significance and to evaluate which patients would derive clinical benefit from enrollment into such programs.

MARYLAND POSTER FINALIST - RESEARCH CAPT Steven J Gibson, MD

Multiple Myeloma in Adolescent and Young Adults: A SEER and CIBMTR Analysis

Title

Multiple Myeloma in Adolescent and Young Adults: A SEER and CIBMTR Analysis

Authors

Steven J Gibson, MD1, Jennifer A Thornton, PhD2, and Christin B DeStefano, MD3; 1 Internal Medicine Residency Program, National Capital Consortium, Bethesda, MD 2 Clinical Investigation Facility, David Grant USAF Medical Center, Fairfield, CA 3 Hematology and Oncology, David Grant Medical Center, Fairfield, CA

Introduction

Multiple myeloma (MM) is a disease of the elderly, with less than 3% of cases diagnosed in adolescents and young adults (AYA). Data on demographics, use of autologous stem cell transplant (ASCT), second primary malignancies (SPMs) and survival are scant to non-existent in the AYA MM population. To our knowledge, this study is the first to better understand characteristics and survival trends of this unique population.

Methods

The Surveillance, Epidemiology, and End Results (SEER)-18 and Center for International Blood and Marrow Transplant Research (CIBMTR) datasets were utilized. Inclusion criteria were patients

Results

There were 1,087 and 1,142 patients meeting criteria in SEER and CIBMTR, respectively. Median MSS was 181 months (15 years). The most common causes of death were MM (76%), SPMs (5.5%), and infection (3.6%). Statistically significant incident SPMs were lung cancers (SIR 4.94, p

Conclusion

To our knowledge, this is the first study assessing MM trends in the AYA population. Despite AYAs being underrepresented in MM clinical trials, the dramatic improvement in survival over time reflects efficacy of new drug approvals in this young population. It is also interesting the racial and socioeconomic disparities pervasive in the older adult MM population were not demonstrated in AYAs. AYA patients died from SPMs at rates similar to MM adults (3-6%), and notable incident SPMs in the AYA population were lung cancer, NHL, and AML. Also noteworthy was the high number of AYA MM patients who underwent up-front ASCT, which was nearly the same number of patients from the SEER dataset over half the amount of time. Since AYA MM patients have been underrepresented in trials utilizing ASCT, a survival benefit of ASCT in this population has not been demonstrated in the era of novel therapies. Further, given possible underlying genetic predisposition in AYA MM patients, long-term post-ASCT follow up is needed to better understand long-term toxicities including risk of hematological SPMs.

References

The findings and opinions contained herein are those of the authors and do not represent the views/opinions of the United States Air Force, Walter Reed National Military Medical Center, David Grant Medical Center, Department of Defense, or the Center for International Blood and Marrow Transplant Research (CIBMTR).

MARYLAND POSTER FINALIST - RESEARCH Fatoumatta Sissoho

Resident Driven Performance Improvement in Transitions of Care: A Pilot Targeted Needs Assessment on Medication Reconciliation for Patients Admitted from Nursing Facilities to the Hospital

Title

Resident Driven Performance Improvement in Transitions of Care: A Pilot Targeted Needs Assessment on Medication Reconciliation for Patients Admitted from Nursing Facilities to the Hospital

Authors

Fatoumatta Sissoho MD 1, Stefan David MD, CMD 2 1 GBMC, Internal Medicine Residency Program, 2 GBMC, Gilchrist, 6701 N Charles Street, Suite 4105, Baltimore MD, 21204

Introduction

Transitions of Care (TOC) require coordination and continuity of healthcare for patients transferred from one provider/site of care to another. Suboptimal TOC may result in patients suffering, worse outcomes, and increased costs of care. Medication reconciliation (MedRec) is a critical step of TOC. Physicians in training (interns and residents) have different degrees of exposure to Nursing facilities (NFs). Patients transferred from NFs to Hospital (H) represent a particular group of vulnerable patients due to their comorbidities and potential cognitive deficits.

Methods

A Google Survey with anonymous answers was administered to the trainees of a community hospital Internal Medicine Residency Program. Using Likert scales, the current project evaluated the intern/resident self-rated confidence on performing hospital admissions of NF patients, the self-rated degree of difficulty on performing the medication reconciliation for these patients and used open questions to: - verify the sources interns/residents use for MEDREC, - identify the biggest challenges experienced by the interns/residents, - aspects of NF-Hospital TOCs interns/residents would like to learn more about.

Results

57% (25/44) physicians in training answered the survey. On a Likert scale for the statement “I feel very confident in my ability to admit a patient from SNF/LTC into the hospital”, 8%of answerers strongly agreed, 12% agreed, 36% somewhat agreed, 20% neither agreed or disagreed, 20% disagreed and 4% disagreed. In terms of MedRec Difficulty evaluated on a Likert Scale, 8% considered MeRec very easy, 4% considered it easy, for 8% considered it somewhat easy, for 8% the answer was neutral, 36% considered it somewhat hard, 32%considered it hard and 4% considered it very hard. The biggest challenges for NF-Hospital Transitions of care included: -MedRec, which was mentioned repeatedly, -obtaining further information regarding patients’ past medical history, baseline mental and functional medical status, -obtaining facility records (preserving records sent to ED). When asked to indicate details regarding the hardships encountered in MedRec, the answers indicated: -difficulties establishing when and why medications were started -unclarity on the timing of last taking medications (and inability reaching facility in the middle of the night). Sources listed for medication reconciliation included: MedRec Papers from facility Calling patient, family, pharmacy, Facility, MAR (Medication Administration Record), facility dispense reports, Pharmacy, Nurse.

Conclusion

Self-confidence on performing NF to hospital admissions can be improved for 45% of our respondents, with medication reconciliation considered very hard by 4%, hard by 32% and somewhat hard by 36%. Not all of the respondents were aware of the MOLST, face page and Medication order set sent by NFs to ED or of the existence of a MAR in the facility. . Performance improvement can also be achieved by readdressing the process in which the ED staff, interns/residents process the records sent from the nursing facility. Our data indicate the benefit of a targeted curricular intervention on these topics.

MASSACHUSETTS POSTER FINALIST - RESEARCH ADEL FARHOUD, MD

Transition to Home Biologic Infusions in Inflammatory Bowel Disease (IBD) Patients During the COVID-19 Pandemic

Title

Transition to Home Biologic Infusions in Inflammatory Bowel Disease (IBD) Patients During the COVID-19 Pandemic

Authors

Adel Farhoud MD, Ravi Teja Pasam MBBS MPH, Salini Gadupudi, Randall Pellish MD, Khadija Chaudrey MD; Lahey Hospital and Medical Center, Burlington, MA

Introduction

COVID-19 poses a special challenge for patients with inflammatory bowel disease (IBD) on biologics due to concern of higher risk for infection. In an effort to limit patient exposure, our center underwent an expedited process to consider transitioning IBD patients from hospital-based infusions to home infusions. In this study, we present data on barriers and delays to home infusion (HI) transitions in the setting of the COVID-19.

Methods

We performed a retrospective chart review of adult IBD patients receiving IV biologics at our hospital-based infusion center between 1/1/2020 and 5/15/2020. Patients were excluded if receiving biologics for a non-IBD indication, if receiving infusion at a different center, or if already receiving HI. The primary objective was to assess barriers to HI transition. The secondary objectives were to identify delays in receiving HI and factors contributing to delayed HI. A HI was considered delayed if there was a delay of greater than 3 days from the planned infusion due date.

Results

149/400 patients met the inclusion criteria. Patients were categorized into 3 groups. 1) 70 (47.3%) patients who completed transition to HI. 2) 29 patients (19.6%) who had the HI transition in process at the time of this review but were not considered delayed. 3) 49 patients (33.1%) who did not undergo HI transition. Those who completed HI transition, 68/70 (97.1%)

were aged 65 or less. 16/70 (22.9%) patients experienced a delay in receiving HI. Median HI delay time was 7 days (range: 5.5-12.0). COVID-19 contributed to HI delay in 3/16 (18.75%), either due to confirmed testing or contact with a positive case. 11/16 patients (68.75%) had no clearly documented or identifiable reason for the HI delay. In 40/49 patients (81.6%) who did not complete transition to HI, Medicare insurance was identified as the barrier to HI. Patient preference against HI was identified in 5/49 (10.2%) as a barrier.

Conclusion

The main barrier to HI transition was Medicare. A successful HI transition was accomplished in the majority of the patients without any delay. About one-fourth of the patients experienced HI delay, with a small proportion attributed to COVID-19. A small subset of those who did not transition had a personal preference against HI transition. The expedited process of transitioning to HI was considered successful, though it requires further assessment for cost-effectiveness and long-term safety outcomes in the setting of COVID-19.

MICHIGAN POSTER FINALIST - RESEARCH Ankita Aggarwal, MBBS

Safety and efficacy of anticoagulation for secondary prevention of malignancy associated stroke: a systematic review

Title

Safety and efficacy of anticoagulation for secondary prevention of malignancy associated stroke: a systematic review

Authors

Ankita Aggarwal, Anubhav Jain, Sonali Sachdeva

Introduction

Stroke is a common event in the natural history of cancer patients. Stroke in cancer patients usually portends poorer clinical outcomes. The most likely cause of stroke in a cancer patient is hyper-coagulability. However, there is little and conflicting data regarding the role of anticoagulation in secondary prevention of stroke in cancer patients. We aimed to assess and compare the safety and efficacy of various antithrombotic agents for prevention of recurrent stroke in patients with malignancy.

Methods

A systematic review of databases including PUBMED, Google Scholar, EMBASE and Scopus was done. All the studies that tested efficacy and safety of different antithrombotic medications in preventing recurrence of cancer associated stroke were included.

Results

A total of 4 studies (3 retrospective and one randomized controlled trial) were found eligible. However, due to the variability of drugs being studied a pooled analysis could not be performed. Studies have shown that treatment with anticoagulation is effective in preventing recurrence of stroke as compared to no therapy. Thus far, unfractionated and low molecular weight heparin (LMWH) are shown to be efficacious in secondary prevention of cancer associated stroke. Warfarin and new oral anticoagulants (NOACs) have been found to be non-inferior in terms of efficacy and safety. Antiplatelet medication aspirin has also shown promise in prevention of stroke in a small randomized controlled trial.

Conclusion

Data comparing safety and efficacy of anticoagulants in prevention of recurrent stroke among cancer patients is scarce. Future larger studies are needed to address this question and fill the gaps in current literature.

MICHIGAN POSTER FINALIST - RESEARCH Ahmed Altibi, MD

Comparative Clinical Outcomes and Mortality in Prisoner and Non-Prisoner Populations Hospitalized with COVID-19: A Cohort from Michigan

Title

Comparative Clinical Outcomes and Mortality in Prisoner and Non-Prisoner Populations Hospitalized with COVID-19: A Cohort from Michigan

Authors

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Introduction

Prisons in the United States have become a hotbed for spreading Covid-19 among incarcerated individuals. Covid-19 cases among prisoners are on the rise, with more than 197,000 confirmed cases to date. However, there is paucity of data addressing clinical outcomes and mortality in prisoners hospitalized with Covid-19.

Methods

An observational study of all patients hospitalized with Covid-19 between March 10 and May 10, 2020 at two Henry Ford Health System hospitals in Michigan. Clinical outcomes were compared amongst hospitalized prisoners and non-prisoner patients. The primary outcomes were intubation rates, in-hospital mortality, and 30-day mortality. Multivariable logistic regression and Cox-regression models were used to investigate primary outcomes. Survival curves were plotted using the Kaplan-Meier method to compare 30-day mortality between the two groups. Log-Rank test was used to test equality of survival functions.

Results

Of the 706 hospitalized Covid-19 patients (mean age 66.7 ± 16.1 years, 57% males, and 44% black), 108 were prisoners and 598 were non-prisoners. Compared to non-prisoners, prisoners were more likely to present with fever, tachypnea, hypoxemia, and markedly elevated inflammatory markers. Prisoners were more commonly admitted to the intensive care unit

(ICU) (26.9% vs. 18.7%), required vasopressors (24.1% vs. 9.9%), and intubated (25.0% vs. 15.2%). Prisoners had higher unadjusted inpatient mortality (29.6% vs. 20.1%) and 30-day mortality (34.3% vs. 24.6%). In the adjusted models, prisoner status was associated with higher in-hospital death (odds ratio, 1.95; 95% confidence interval (CI), 1.07 to 3.57) and 30-day mortality (hazard ratio, 1.92; 95% CI, 1.24 to 2.98). The 30-day mortality was 88.9% for intubated prisoners compared to 51.1% for non-prisoners. Comparing intubated prisoners to non-prisoners, the age and gender-adjusted hazard ratio was 2.70 (95% CI, 1.54 – 4.68).

Conclusion

In this cohort of hospitalized Covid-19 patients, prisoner status was associated with more severe clinical presentation, higher rates of ICU admissions, vasopressors requirement, intubation, in-hospital mortality, and 30-day mortality. This report highlights the indispensable need for a timely, adequate, and equitable healthcare services to close the gap in Covid-19 outcomes between prisoners and the general population.

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MICHIGAN POSTER FINALIST - RESEARCH Ahmed Elshafie, MD

A Meta-analysis of Intravascular Ultrasound-guided versus Angiography-guided Stent Implantation

Title

A Meta-analysis of Intravascular Ultrasound-guided versus Angiography-guided Stent Implantation

Authors

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Introduction

Intravascular ultrasound (IVUS) offers a superior visual assessment of coronary vessels during the percutaneous intervention compared to conventional angiography. Trials have shown improved short-term outcomes using IVUS-guided stent implantation, however, the long-term outcomes remain in question. Both, The IVUS-XPL and the ULTIMATE trials recently published their 5 and 3 years follow-up results respectively, hence our analysis.

Methods

We conducted a meta-analysis of all studies that compared IVUS-guided vs angiography-guided stent implantation. We only included studies with a follow-up duration of at least one year. The primary outcome was the risk of cardiovascular death. Secondary outcomes included the rate of myocardial infarction (MI), risk of target lesion revascularization (TLR), and the risk of stent thrombosis (ST).

Results

Nineteen studies with a total of 27,733 patients were included. The median-weighted follow up period was 2.3 years. Ten of the included studies were randomized clinical trials. Heterogeneity was low to moderate across the trials (0-41%). The risk of cardiovascular death was significantly lower in the IVUS-group when compared to the angiography group (RR 0.62; 95% CI 0.54-0.73; p

Conclusion

IVUS-guided stent implantation has lower mid-term cardiovascular mortality, risk of MI, rate of TLR, and ST when compared to angiography-guided stent implantation. RCTs with a longer follow-up period are needed to confirm these results.

MICHIGAN POSTER FINALIST - RESEARCH Inayat Gill

Modified clinical risk score to predict hospital admission and in-hospital mortality in COVID-19 patients

Title

Modified clinical risk score to predict hospital admission and in-hospital mortality in COVID-19 patients

Authors

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Introduction

Novel coronavirus infection (COVID-19) has resulted in over 1 million deaths globally1. Prognostic tools to identify high risk patients are crucial to guide resource allocation efforts2. We aimed at developing a risk assessment tool for patients with COVID-19 based on the risk factors with most significant effect on hospital admission and in-hospital mortality.

Methods

We performed a retrospective analysis of patients with positive COVID-19 that presented between 3/31/2020 – 5/15/2020 at Beaumont Health's eight emergency departments (ED). Data was abstracted using automated reports. The electronic health record (EHR) embedded risk score, previously externally validated, was modified based on risk factors with different points given to those that were statistically significant2. Two outcome variables were measured, both using a yes/no binary scale: hospital admission and in-hospital mortality. Hospital admission, on the first encounter to the ED, was evaluated for the entire cohort, while mortality was evaluated only for inpatients that were discharged prior to 5/12/2020. Descriptive statistics, univariate/multivariate analyses by logistic regression were performed and presented in terms of Adjusted Odds Ratios (AOR) with corresponding 95%

confidence intervals and P-Values. Any P-Values < 0.05 were considered as statistically significant associations. All analysis was done in SAS 9.4 (SAS Institute Inc., Cary, NC).

Results

2,735 encounters with data extracted from EHR. 68.06% were hospital admissions, and 9.97% experienced in-hospital mortality. 61.23% were <69 years old. 58.07% had hypertension, 46.29% had chronic pulmonary disease, 37.81% had diabetes, and 6.71% had end-stage renal disease. Mean length of stay was 8.43 days. In the multivariate model to predict admission, end-stage renal disease (AOR 1.97), liver disease (AOR 7.77), chronic pulmonary disease (AOR 1.63), diabetes (AOR 1.70), hypertension (AOR 1.97), and nursing home residence (AOR 1.90) were independently associated with admission. While immunocompromised, congestive heart disease, congenital heart disease, coronary artery disease, and obesity had high odds of admission as well, there were no significant differences found. For prediction of in-hospital mortality in the multivariate model, chronic pulmonary disease (AOR 2.35), and nursing home residence (AOR 1.58) were significantly associated with in-hospital mortality. Other variables that had greater odds but were not significantly associated with in-hospital mortality included immunocompromised status, congestive heart failure, end-stage renal or liver disease, and obesity. Coronary artery disease, diabetes, and hypertension had lower odds of in-hospital mortality but did not meet statistical significance. The modified risk score recognized the statistically significant comorbid conditions and attributed no points to non-significant values. The cross-validated C-Statistics for the modified risk score model showed good discrimination for both admission (C=0.72) and in-hospital mortality (C=0.74) compared to the automatically generated risk tool for admission (C=0.70) and in-hospital mortality (C=0.70) for this cohort.

Conclusion

The modified risk score model created using statistically significant risk factors yielded a better scoring system than the scoring system automatically generated in Epic. This COVID-19 risk scoring model may help predict hospital admissions and in-hospital mortality for patients with COVID-19. Further external validation in a different cohort is recommended.

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MICHIGAN POSTER FINALIST - RESEARCH Padmini Giri, MBBS

IMPROVING RESIDENT ERROR REPORTING - A QI INITIATIVE

Title

IMPROVING RESIDENT ERROR REPORTING - A QI INITIATIVE

Authors

Padmini Giri, Verisha Khanam, Kevser Akyuz Yesilyaprak, Joshua Gorney, Dr. Vesna Tegeltija

Introduction

It is very important to recognize, report and correct any errors made in the medical fields. Simple errors like lack of communication can lead to lethal consequences. Residents are frontline witnesses to patient care and errors that are made on a day to day settings, therefore it is imperative they report events and are educated regarding its significance. There are many barriers to safety event reporting by graduate medical education trainees. Some of these barriers include not understanding what constitutes an error, fear of repercussions following an event report, cumbersome and time-consuming process of reporting an error. In 2014, our hospital was evaluated by Clinical Learning Environment Review (CLER) and lack of error reporting by residents was recognized as an area of concern. This project's aim is to improve error reporting by resident physicians.

Methods

We are using the IHI model to guide this study. The Plan Do Study Act (PDSA) cycle was used to study the changes.

Results

Three PDSA cycles were conducted. All involved re-educating residents each year regarding the error reporting system, workflow and what constitutes an error. Each cycle did show improvement in resident error reporting. Survey done in 2019-2020 year consisted of 10 questions. >90% of the residents are aware of the process of error reporting, have been encouraged to report an error, and are comfortable reporting errors. 87% of residents reported 'time consuming' as a reason for not reporting errors. Between 07/2019-06/2020, there were 63 resident error reports; 84% were severe harm, 6.3% were mild harm, 60.3% were actual

events and 39.6% were near misses. Resident error reporting has shown some improvement, and promising results were achieved with education. Continued improvement in error reporting was seen following implementation of workflow process and incorporation of multidisciplinary teams for error resolution. This resulted in improved satisfaction and engagement of more residents in error reporting. PDSA 4 is currently being conducted. Further improvement in safety event reporting by residents will be continually encouraged and re-evaluated.

Conclusion

With PDSA 4 we hope to achieve more understanding and reporting of errors by residents. Currently incorporating weekly dedicated times for reporting errors as well as more faculty encouragement and involvement in the process. The new resident class and seniors have already been re-educated on this topic this year. A survey will be sent out again this year to reassess the resident's knowledge on reporting errors, as well as their comfort level of reporting and to assess any constraints to reporting safety events. Medical errors represent opportunities for improvement. Reporting and resolution of errors ultimately results in improved patient safety.

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MICHIGAN POSTER FINALIST - RESEARCH Kartik Gupta, MD

Sleep Duration, Inflammation and Incident Cardiovascular Mortality in Ambulatory U.S. Adults: National Health And Nutrition Examination Survey

Title

Sleep Duration, Inflammation and Incident Cardiovascular Mortality in Ambulatory U.S. Adults: National Health And Nutrition Examination Survey

Authors

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Introduction

Cardiovascular (CV) disease is the leading cause of mortality in the United States (US).1,2 Sleep duration is a risk factor for CV morbidity and mortality.3,4 The interplay between sleep duration and inflammation on the baseline and incident cardiovascular (CV) risk is unknown. We evaluated the association between sleep duration, C-reactive protein (CRP), baseline CV risk, and incident CV mortality.

Methods

We used data for adults aged ≥18 years from the National Health and Nutrition Examination Survey (NHANES) 2005-2010. There were no exclusion criteria based on sleep duration or prevalent CV disease. We combined the cause of death from records provided by the National

Center of Health Statistics. Self-reported sleep duration was independent variable of interest. Baseline CRP was the inflammatory marker of interest. The outcome was CV mortality, defined as death due to either disease of the heart or cerebrovascular disease. We used multivariate linear regression while accounting for non-linearity using restricted cubic spline models to ascertain the associations between sleep duration and CRP, as well as sleep duration and 10-year atherosclerotic CV disease (ASCVD) risk.5 Multivariate Poisson regression models were used to ascertain the associations between sleep duration and incident rate of CV mortality. The sleep duration with the lowest CV mortality was then defined as optimal. Sleep duration was classified as either less than optimal (short sleep) or more than optimal (long sleep). Hazard ratios (HRs) and 95% confidence intervals (CI) for sleep duration class and CV mortality were estimated using Cox proportion hazard analyses. The multivariable models had the following covariates: age, gender, race, self-reported CV disease, hypertension, diabetes mellitus, estimated glomerular filtration rate, smoking status, body mass index, and dyslipidemia. All statistical analyses were conducted in Stata version 14.2.

Results

Among 31,034 participants, 17,635 participants met eligibility criteria. Median age was 46 years (interquartile range [IQR] 31,63) with 51.0% women. Majority (46.9%) were non-Hispanic White. Prevalence of diabetes mellitus, dyslipidemia, and hypertension was 17.0%, 71.0%, and 56.0%, respectively. Over median follow-up of 7.5 years (IQR 6, 9.1), there were 350 CV deaths at an incident rate of 2.7 per 1000-person years (IQR 2.4, 3.0). There was a U-shaped relationship between sleep duration and CV mortality with the lowest incidence with a sleep duration of 6-7 hours (incidence rate 1.8 per 1000-person years, IQR 1.5, 2.2, P-trend<0.001). The adjusted risk of CV mortality among those with short (<6 hours) and long sleep (>7 hours) was 45% higher than those with optimal sleep (HR 1.45, 95% 1.06, 1.99, p=0.019 for short sleep and HR 1.45, 95% CI 1.14, 1.83, p=0.002 for long sleep). We observed U–shaped associations between sleep duration and 10-year ASCVD risk (P-trend <0.001), as well as sleep duration and CRP (P-trend <0.001) with minimal risk and CRP associated with a sleep duration of 6-7 hours.

Conclusion

The analysis of a large representative cohort of US adults suggests a U-shaped relationship of CV mortality, CRP, and 10-year ASCVD risk with sleep duration such that sleep duration of 6-7 hours has minimum risk. These findings suggest an association between sleep duration, inflammation, and CV mortality.

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MICHIGAN POSTER FINALIST - RESEARCH Ahmed E Kazem

INCREASING STATINS IN THE PERIOPERATIVE PERIOD – A QUALITY IMPROVEMENT INITIATIVE

Title

INCREASING STATINS IN THE PERIOPERATIVE PERIOD – A QUALITY IMPROVEMENT INITIATIVE

Authors

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Introduction

Studies have shown that early exposure to statins preoperatively have been associated with significant reductions in perioperative mortality and improved post-operative outcomes [1]. Despite guideline recommendations, use of statin therapy remains suboptimal [2]. A retrospective study at our institution revealed over 40% of patients that presented to our preoperative optimization clinic were not on appropriate evidence-based statin therapy [3]. With this in mind, we implemented a quality improvement project to improve perioperative statin use and dosing by implementing a new screening and prescribing protocol within our surgical optimization clinic.

Methods

In this quality improvement project, we provided health care providers with automated data from the electronic health record and an algorithm, based on the ACC/AHA cholesterol guidelines, to guide decision making regarding statin therapy. Implementation also incorporated regular education to the residents and staff in the clinic, as well as changes to nursing workflow. The implementation period was from January to June 2019, and data was collected on statin prescriptions and dose adjustments. The proportion of patients with corrected statin therapy was the primary outcome.

Results

A total of 248 patients were seen in the perioperative clinic in the six-month period. 116 (46.8%) of those patients were either on an appropriate dose statin or did not qualify for needing a statin. 132 (53.2%) were not on an appropriate statin. Of those patients, 88 (66.7%)

were not on a statin but should have been based on the guidelines, and 44 (33.3%) were on an inappropriately low dose of statin. With the implementation of our QI initiative, 18 of the patients who were not on an appropriate statin had a statin initiated during the visit, and 14 patients had their statin dose appropriately adjusted.

Conclusion

Statin prescription and adherence to guidelines remains suboptimal despite profound evidence displaying the benefit of statin use. We were successful in initiating statins or appropriately modifying the dosage in patients seen in our surgical optimization clinic. While statin prescribing continues to be difficult, we found that the principal reason for not prescribing or correcting statin doses, despite our quality improvement initiative, comes from patients' desire to discuss medication changes with their primary care physician. With this, expansion and implementation of this quality improvement project within primary care, or developing closer communication with our preoperative clinic and primary care physicians, may further increase adherence to guidelines.

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MICHIGAN POSTER FINALIST - RESEARCH Claudia Villatoro Santos

Tocilizumab: A Retrospective Multi-Center Cohort Study of Critically Ill Patients with COVID-19

Title

Tocilizumab: A Retrospective Multi-Center Cohort Study of Critically Ill Patients with COVID-19

Authors

Claudia R. Villatoro Santos, MD, PhD; Ashish Bhargava, MD, FACP; Meredith Coyle, MD; Susan Szpunar, PhD; Louis D. Saravolatz, MD, MACP, FIDSA

Introduction

Coronavirus disease 19 (COVID-19) can have a severe presentation characterized by a dysregulated immune response requiring admission to the intensive care unit (ICU). Previously published data from uncontrolled studies in China(1,2) and Italy(3) indicate a potential benefit of tocilizumab on inflammatory markers and lung injury over time. More recently, retrospective cohort studies in hospitalized adults with COVID-19 and ARDS treated with tocilizumab from the USA(4) and Italy(5) suggest a benefit on survival(4,5) reduction of inflammatory markers, and decreased need for mechanical ventilation(5) when compared to those who were not treated. We aim to evaluate the effectiveness of tocilizumab treatment on critically ill patients with severe COVID-19.

Methods

This was a multi-center retrospective cohort study of 154 adult patients admitted between March 15th and May 8th, 2020, to Ascension Hospitals (St John, Providence, Providence Park, and Macomb-Oakland at Warren and Madison Heights). Inclusion criteria were adult patients (18 years of age and older) admitted to the ICU with a diagnosis of viral pneumonia-associated with COVID-19 as determined by a positive reverse-transcriptase-polymerase-chain-reaction (RT-PCR) assay of a nasopharyngeal swab. Exclusion criteria were children and adults admitted for respiratory failure not associated with COVID-19 infection. Data were obtained by electronic medical record (EMR) review. The primary outcome of interest was mortality. Secondary outcomes were ICU length of stay and rates of secondary infections. We used multivariable Cox-regression models to assess the effect of tocilizumab on mortality.

Results

Of 154 patients, 34 (21.4%) received tocilizumab. The mean age of the cohort was 61.5 +/- 14.4 years; the majority were male and predominantly African American. Compared to the non-treated group, the treated group was significantly younger, had fewer comorbidities, lower creatinine and procalcitonin levels, and higher alanine aminotransferase levels on admission. The treated group was more likely to receive supportive measures in the context of critical illness. The overall case-fatality rate was 71.4%, and it was significantly lower in the treated compared to the non-treated (52.9 % vs. 76.7%; p=0.007). In multivariable survival analysis, adjusted for age, several comorbidities, and the presence of septic shock, tocilizumab treatment was associated with a 2.1 times lower hazard of mortality when compared to the non-treated (hazard ratio: 0.47; 95% CI: 0.27, 0.83; p=0.009). The average length of stay in the ICU was significantly longer for the treatment group compared to the non-treated (21.7 +/- 13.2 vs. 7.4 +/- 5.8 days; p

Conclusion

Tocilizumab treatment for critically ill patients with COVID-19 resulted in a lower likelihood of mortality.

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MICHIGAN POSTER FINALIST - RESEARCH Sumeet Kumar Yadav, MD

Clinical characteristics and outcomes of Chronic Neutrophilic Leukemia, an often misdiagnosed myeloproliferative disorder

Title

Clinical characteristics and outcomes of Chronic Neutrophilic Leukemia, an often misdiagnosed myeloproliferative disorder

Authors

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Introduction

Chronic Neutrophilic Leukemia (CNL) is an aggressive, Philadelphia Chromosome (BCR-ABL1) negative myeloproliferative disorder. The true incidence of CNL is not known. Clinical presentation includes fatigue, weight loss, night sweats, bone pain, easy bruising, and palpable splenomegaly. Histologically, there is predominantly mature neutrophil proliferation and bone marrow granulocytic hyperplasia. Because of its histological and clinical similarities, CNL is often misdiagnosed as other myeloid leukemias such as Chronic Myeloid Leukemia (CML), atypical CML, chronic myelomonocytic leukemia and chronic leukemoid reactions. On a genetic level, CNL is like atypical CML, since both are BCR-ABL1 negative and have mutations in the colony-stimulating factor 3 receptor (CSF3R) gene. A comprehensive understanding of this disease entity is essential to differentiate CNL from other myeloid leukemias.

Methods

Over 200 Case reports have been documented so far in the literature search. We have utilized Surveillance Epidemiology and End Results (SEER) 18 registry to identify patients with CNL from 2001 to 2016 using histologic codes (9963/3). Kaplan-Meier method was used to estimate overall survival in patients who received chemotherapy to those who did not. Univariate Cox proportional hazards regression model was used to estimate hazard ratios (HRs) and 95% confidence intervals.

Results

The study population consisted of 79 patients, 60.8 % were men and 39.2% were women. The median age at diagnosis was 73. Majority of the patients were identified as white (82.3 %) compared to only 12.7% identified as black and 5.1% as "other" including American Indian, Asian, Pacific islander and others. 51.9% of patients had received chemotherapy and 48.1% did not. The 1-year and 3-year survival for those who received chemotherapy was 79.2% and 34.1% while those who did not receive chemotherapy was 57.9% and 44.7%. However, this was not statistically significant (p=0.60). In univariate analysis, older age at diagnosis had worse survival outcome (HR 1.04; CI 1.02-1.07; P=0.02). Sex, race, insurance status, marital status and whether the patients received chemotherapy had no prediction on survival.

Conclusion

In this one of the largest population-based studies on CNL patients, we have presented clinical characteristics and outcomes of patients with CNL. The findings of our study show that median age at the time of diagnosis of CNL is 73 years which is older than CML (50 years) but like atypical CML. They also had worse survival when compared to CML (34.1% at 3 years Vs 90% at 5 years). Our sample size was small because of the rarity of the disease and we could not identify different type of chemotherapies received by the patient as the study was conducted from a preformed database. Future studies with larger sample size are needed to understand this rare entity completely, identify genetics, and further explore the treatment modalities to improve survival.

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MINNESOTA POSTER FINALIST - RESEARCH Jwan Naser

Role of Artificial Intelligence in Identifying Patients with Graves ' disease at High Risk for Atrial Fibrillation

Title

Role of Artificial Intelligence in Identifying Patients with Graves ' disease at High Risk for Atrial Fibrillation

Authors

Jwan A. Naser, Zachi I. Attia, Sorin V. Pislaru, Marius N. Stan, Peter A. Noseworthy, Paul A. Friedman, Grace Lin

Introduction

Graves' disease (GD) is known to be associated with atrial fibrillation (AF). However, there remains a need to identify patients at high risk of AF who may benefit from a close follow up. Artificial intelligence (AI)-enabled electrocardiograms (ECGs) using a convolutional neural network can identify the signature of silent AF. This clinically-available AI platform provides a probability of patients having AF for each ECG performed while patients are in sinus rhythm. Whether the existing AI model is able to identify patients at highest risk of GD-related AF remains unknown.

Methods

Patients diagnosed with GD (2009-2019) at our institution were included. GD-associated AF was defined as AF diagnosed =30 days before or any time after GD. Probability of AF was obtained from the AI platform on ECGs in sinus rhythm done within 2 months before and up to 2 years after GD; when multiple ECGs were present, the earliest was considered. ECGs done at or after AF diagnosis were excluded. Risk factors for AF were analyzed using cox proportional hazards. For multivariate analysis, all variables with a p

Results

430 patients with GD were included (mean age at GD 50±17; 78% female). GD-associated AF was diagnosed in 43 (10%) patients with a median (IQR) duration of 11 (0-863) days after GD diagnosis. ECGs used were obtained 27 (4-690) days before AF diagnosis. Age, gender, comorbidities, and thyroid hormone levels were included in the model. Univariate risk factors

included older age at GD [HR 1.07 (1.04-1.09) p 5% [HR 5.90 (3.20-10.88) .p< 0.001]. At multivariate analysis, risk factors for AF were AI ECG probability of AF>5% [HR 4.18 (2.14-8.14), p1.7) [HR 3.40 (1.04-11.08) p = 0.04]. Model AUC was 0.84 (compared to 0.79 without ECG-derived AF probability) and chi square was 61 (compared to 43 without ECG-derived AF probability, p

Conclusion

A clinical risk model based on AI-ECG, age and free T4 was strongly associated with developing GD-associated AF at follow-up. The AI-enabled ECG is available within the electronic medical record, and could be easily incorporated in clinical-decision tools. Prospective validation of the model is currently underway.

MISSISSIPPI POSTER FINALIST - RESEARCH Jannat Kang

UTILITIZATION AND THE COST BURDEN ANALYSIS OF AMYLASE TESTING IN ACUTE PANCREATITIS

Title

UTILITIZATION AND THE COST BURDEN ANALYSIS OF AMYLASE TESTING IN ACUTE PANCREATITIS

Authors

Jannat Kang, Himmat S. Brar, Pradeep Bathina

Introduction

Amylase was one of the earliest tests used for identifying acute pancreatitis among those presenting with abdominal pain. Since then, lipase has been introduced and offers superior sensitivity and specificity compared to amylase for diagnosing acute pancreatitis. The amylase is routinely ordered with co-ordering of amylase and lipase seen in 90% of the cases secondary to the belief that co-ordering these provides greater accuracy than either test alone. At a diagnostic threshold of 208 U/L for lipase and 114 U/L for amylase, lipase compared to amylase had a superior sensitivity (90.3% vs 78.7%), specificity (93.0% vs 92.6%), positive likelihood ratio (14.1 vs 10.6), and a similar negative likelihood ratio (0.1 vs 0.1). The lipase also remains elevated longer than amylase and is useful in delayed presentations of acute pancreatitis. Neither of these tests correlates with severity or clinical resolution of pancreatitis and are not included in any of the severity tools, like Ranson's criteria, APACHE II or CT severity index. The 2013 ACG guidelines recommend ordering lipase alone, stating serum amylase alone cannot be used reliably and that serum lipase is preferred.

Methods

We performed a retrospective observational study of all patients who received the amylase test at UMMC from January 3, 2013 to December 31, 2019. Patient Cohort Explorer was used to obtain de-identified patient data from EPIC. We obtained the number of encounters and patients on whom the amylase test was performed. Coding and billing offices provided the cost per test (CPT code 82150) at $ 63 in 2020.

Results

Amylase test was ordered 26,448 times on 15,864 patients between 2013 and 2019. 4167, 4127, 4175, 3946, 3533, 3081, 2952 tests were done respectively from 2013 to 2019 with a declining trend since 2015. Majority (22,287) tests were ordered only once per encounter and 4,161 tests are done as repeat tests during the same encounter. The median age of the patient was 43. More tests were done in females (58%) than males (42%). The majority tests were in African Americans (56.6%) followed by Caucasians (41.1%) and 2.3% in others/unknown. Of the 26,448 tests, 6,128 (23%) were >100, the upper limit of the test and 1,018 (3.8%) were >300, three times the upper limit. With $63 per test a total of $1,666,224 was spent on amylase testing between years 2013 to 2019, with an average expenditure of 238,032 each year. The total cost of repeat tests during the same encounter was $262,143.

Conclusion

In the evaluation of acute pancreatitis, amylase, when compared to lipase, has inferior sensitivity and specificity, adds no additional diagnostic information when co-ordered, and does not provide additional prognostic information. The guidelines recommend ordering lipase alone rather than either amylase alone or co-ordering amylase and lipase, and also against the daily monitoring of pancreatic enzymes as it do not help assess clinical progress or severity of illness. We recommend that the guidelines should be followed and amylase should no longer be tested in suspected acute pancreatitis patients to reduce the cost burden on the healthcare system.

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MISSOURI POSTER FINALIST - RESEARCH Luis Hernandez

Calling Attention to Hepatic Steatosis in a CT Scan Impression is Associated with Increased Recognition of NAFLD in Primary Care

Title

Calling Attention to Hepatic Steatosis in a CT Scan Impression is Associated with Increased Recognition of NAFLD in Primary Care

Authors

Luis Hernandez MD MBA, Megan White MD, Gretchen Evans MD, Bradley Busebee MD, Emily Fondahn MD, Jeffrey Crippin MD, Scott McHenry MD

Introduction

It is well known that Nonalcoholic fatty liver disease (NAFLD) has reached epidemic proportions and affects roughly one-third of the United States population. Unfortunately, the real-life clinical recognition of NAFLD is poor. Since significant cardiometabolic and liver-related disease can occur with unaddressed hepatic steatosis, we underwent a quality improvement project to increase the recognition of incidentally diagnosed NAFLD in a resident-run primary care clinic.

Methods

Consecutive unique patients from October 2018- December 2018 and October2019-December2019 seen at the outpatient clinic were reviewed for the presence of hepatic steatosis on clinically obtained imaging using natural language processing and confirmed by manual chart review. The outcome for this analysis was if hepatic steatosis was only ever present in radiology findings but not in an impression. Univariate and multivariable logistic regression were performed to establish correlations.

Results

NAFLD was found to be present in 410 patients. Hepatic steatosis was relegated to only an imaging finding in 135 (33%) of patients and was associated with lower clinical recognition of NAFLD (OR 0.4). Risk factors include CT imaging (aOR 3.6) while protective factors include ultrasound imaging and an indication of imaging being elevated liver biochemistries

Conclusion

We showed that a large proportion of patients have hepatic steatosis on imaging but that a third will have it relegated to only a radiographic finding. Since this is associated with less clinical recognition of NAFLD, our next PDSA cycle for our quality improvement project will include educational curriculum aimed at radiologists to highlight the clinical relevance of incidental hepatic steatosis. Future direction will include radiology templates and an audit and feedback system aimed at our CT scan reports.

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NEW JERSEY POSTER FINALIST - RESEARCH Mohab Hassib

ACE-I and ARBs in COVID-19, Good, Bad, or Indifferent? A Meta-Analysis and Systematic Review

Title

ACE-I and ARBs in COVID-19, Good, Bad, or Indifferent? A Meta-Analysis and Systematic Review

Authors

Mohab Hassib1, Steven Hamilton1, Ahmed ElKhouly1, Yiting Li1 Adam Kaplan1

1St Francis Medical Center, Trenton, NJ

Introduction

Increased virulence, severity of illness, and mortality have all been hypothesized with respect to ACEi/ARB use in Covid-19 infection. Our study aims to assess whether ACEi/ARB use in patients with COVID-19 conferred worsened severity of illness or increased mortality. Additionally, we explore the possibility of an unearthed protective benefit due to their interruption of the RAS signaling pathway as observed in cardiovascular diseases.

Methods

The Cochrane Library, MEDLINE, and EMBASE were searched for studies relevant to Covid-19 severity, mortality and inflammation in the context of ACEi/ARB use. Eight studies were included with a total of 17,943 patients, 4,292 (23.9%) of which were taking an ACEi or an ARB. The study population was 47.9% female and the average age across all studies was 65. The studies chosen had a sample size of at least 100 patients.

Results

Mortality outcomes were assessed in six studies and showed no significant difference in mortality among ACEi/ARB and control groups (odds ratio [OR]: 0.99, 95%CI: 0.48-2.04). Seven studies assessed the severity of COVID-19 and showed no statistically significant difference in disease severity when comparing the ACEi/ARB group to the control group (odds ratio [OR]: 1.30, 95% CI 0.87-1.94). Four studies reported the length of stay with no significant difference between ACEi/ARB groups compared to non-users. Four studies included inflammatory markers

CRP and D-Dimer which were noted to be consistently lower in ACEi/ARB groups when compared to control groups, however, this was not statistically significant.

Conclusion

Our study found no significant difference in mortality, severity of illness, or length of stay between ACEi/ARB users and non-users with Covid-19 infection. These results support the continuation of ACEi and ARBs in the setting of Covid-19 as advised by the ACC/AHA. The decrease in CRP and D-dimer suggest a possible protective effect related to ACEi/ARB use in Covid-19, however, more studies with larger sample sizes are needed to establish this effect.

NEW JERSEY POSTER FINALIST - RESEARCH Chrystina M Kiwan, MD

WHO AND WHY DO PATIENTS WITH COVID-19 GET READMITTED TO THE HOSPITAL?

Title

WHO AND WHY DO PATIENTS WITH COVID-19 GET READMITTED TO THE HOSPITAL?

Authors

Eyad Ahmed, MD; Kok Hoe Chan, MD; Ruhma Ali, MD; Aditya Patel, MD; Chrystina Kiwan, MD; Sindhusha Vederaballi, MD; Jihad Slim, MD

Introduction

COVID-19 pandemic is associated with many questions and uncertainties regarding mortality and post infectious complications that are still being studied. We have observed many patients readmitted after their initial diagnoses of COVID-19. Herein, we are interested in investigating the timing of these admissions, reason for admission, and also the demographics of these patients.

Methods

A retrospective hospital cohort study on patients =18-year-old with confirmed COVID-19 who were admitted to our hospital between 03/15/2020 and 05/25/2020. Demographics, clinical and laboratory data were reviewed and retrieved. Reasons for readmission were also reviewed and recorded. Data was expressed as counts and percentages or mean. T-test was used to identify the difference between continuous variables and Chi-square (?) was used to identify the associations between categorical variables. PRISM statistical software was used for all data analysis.

Results

Out of the 512 confirmed COVID-19 hospitalized patients during the study period, 6 were excluded due to incomplete data and 389 (76.9%) were discharged alive. Of the 389 patients, 96 (24.7%) were readmitted to the same hospital. Of the readmitted patients, the average age was 60 years old; 47 (48.9%) male and 49 (51.1%) female. Predominantly blacks (43.8%) and Latinx (37.5%). The most common comorbidity was hypertension, followed by diabetes mellitus

(DM) and chronic kidney disease. Only DM was statistically associated with risk of readmission (p=0.0473). Most of the patients (52.1%) were readmitted within 30-days and close to 87.5% were readmitted within 90-days. Respiratory complains such as dyspnea, hypoxia and respiratory tract infections comprised approximately 21.9% of the reason of readmission. Surprisingly, there were 18.8% who experienced neurological sequalae such as dizziness, weakness and syncopal episodes. In short, close to 50% of the readmissions were due to respiratory, neurology, infections and cardiovascular complains.

Conclusion

This retrospective cohort study showed that DM associated with risk of admission and 50% of readmission were seen within the first 30 days, with respiratory complains being the most common, with a fair proportion of neurologic sequelae. These interesting observations will need to be corroborated with larger studies.

NEW JERSEY POSTER FINALIST - RESEARCH Yiting Li

Improving Vaccination Rates in an Inner-City Patient Population

Title

Improving Vaccination Rates in an Inner-City Patient Population

Authors

M.Hassib, T. Mabrouk, Y.Li, H.Iftikhar, S.Ansari, M.Munir, S.Kola, M.Malak, S.L. Wallach

Introduction

The adult national influenza vaccination rates in the year of 2018 were 34.2%, 46.8%, and 68.7% for age groups of 18-49, 50-64, and > 65, respectively. Pneumococcal vaccination coverage among adults aged 19-64 years and >65 years, were 24.5% and 69.0%. The influenza and pneumococcal vaccination rates at our institution, Saint Francis Medical Center (SFMC), were noted to be below the national average. This prompted the commencement of a quality improvement project aimed to systematically improving adult vaccination rates at SFMC.

Methods

The St Francis Medical Clinic Team worked with the American College of Physicians "I Raise the Rates Vaccination Project from 2016-2019. In Sept 2019 members of the New Jersey Immunization Network (NJIN) asked us to join a New Jersey Project Echo vaccination effort. We did this with the approval of the American College of Physicians Center for Quality Staff. Our team included faculty members, medical residents, clinic staff, and data analysts at our institution as well as at NJIN. Several different approaches were implemented to improve vaccination rates in our hospital. Standardized orders were reviewed and reincorporated into our clinic system. We employed on-site Spanish translators to improve communication with our predominantly Hispanic patient population. Dedicated data analysts reviewed our data weekly and gave us feedback on our progress. In October,2019, Robert H. Hopkins Jr, MD, MACP, a nationally known authority on vaccination delivered a Grand Rounds which disseminated practical information on vaccination to a multidisciplinary team. In November of 2019, we hosted the Families Fighting Flu event sponsored by several stakeholders under the umbrella of the NJIN. This event was also joined by the Capital Health, the Henry J. Austin Community Health Centre, the Bellevue pediatric practice, and Trenton Health Care officials. Approximately 220 individuals were vaccinated during this event.

Results

Influenza Vaccination rates at SFMC prior to the mentioned initiatives were 31.8% in 2017, and 46.5% in 2018 for adult patients of all age groups. The baseline pneumococcal vaccination rate for indicated adults was 55.13% prior to the project. The rates of both vaccinations at SFMC have markedly improved with addition of these initiatives. The adult influenza vaccination rate improved to 73.5% and the pneumococcal vaccination rates improved to 100% for indicated patients in the analysis in Feb 2020.

Conclusion

Despite aggressive motivational counseling, patients still refuse to get vaccinated. Potential reasons for this may be lack of awareness and education amongst lower socioeconomic groups, scarcity of resources, religious/cultural beliefs, and costs related to vaccination. Furthermore, breakdown of communication between physicians and clinic staff may lead to missed counselling opportunities in reluctant patients. Our quality improvement project emphasized the importance of educating all medical personnel on improving vaccination rates, listening to patient concerns, and providing counselling regarding their concerns.

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NEW JERSEY POSTER FINALIST - RESEARCH Boris Martinez

By the Resident for the Resident - Tackling Medical Errors: Resident-lead Performance Improvement Committee

Title

By the Resident for the Resident - Tackling Medical Errors: Resident-lead Performance Improvement Committee

Authors

Boris Martinez, MD., Keshav Bhandari, MD., Janani Mohan, MD.

Introduction

Medical errors are one of the leading causes of in-hospital morbidity in the United States. Medical errors can occur at every level within the healthcare system and actions to prevent them should involve all healthcare members. Medical residents are on the front lines of healthcare provision and understand the system in which they work best. Therefore, they are key players in identifying system deficiencies that contribute to medical errors. In mid-2018 the residency program leadership created a peer-review Resident Performance Improvement (PI) committee to evaluate near-miss events involving residents within our hospital system using Plan-Do-Study-Act methodologies to identify contributing factors and implement preventive measures. Residents rotate within this committee quarterly, and members of the committee are required to complete training modules from the Institute for Healthcare Improvement.

Methods

We analyzed the events reviewed by the committee over the last two years, including the improvements and lessons derived from these efforts.

Results

38 near-miss events involving residents were reviewed by the committee in the last two years. 37% were due to Inadequate medication dosing of antibiotics, anticoagulants, or electrolytes. 26% were due to deficiency in the patient-handoff, including outdated or inappropriate sign-outs. 24% were due to break in communication (such as updating nursing staff promptly and repetition in already completed orders). 13% were due to medication reconciliation deficiencies during patient admission or discharge. The resident PI team identified the factors that resulted

in errors were because of the patient (comorbidities, confusion, polypharmacy), provider (burnout, provider:patient ratio, call, and task fatigue), staff (resident, healthcare provider), and policy (non-standardized protocols) issues through their analysis using the fish-bone method. Based on these findings multiple changes have been implemented within our program and institution such as the introduction of swing resident rotation to reduce patient:provider ratio during peak hours, restructure of on-call schedule, initiate standardized medication protocols within the EMR for antibiotics, anticoagulants, and electrolytes, adopting consistent patient hand-offs, development of a nursing communication tab within the EMR, and create a discharge assist team for safer patient discharges and medication reconciliation. The reports and recommendations generated are disseminated to other residents and physicians contributing to lesser errors. As these changes come from the constructive input from the residents, we have seen a significant increase in support from the trainees and the institution as a whole. Future steps include the adoption of qualitative improvement methodologies to assess the impact of the committee's initiatives.

Conclusion

Medical errors are common and efforts to prevent them are important to ensure patient safety and improve healthcare outcomes. In our experience, a resident PI initiative has been pivotal in identifying areas of improvement and bringing about positive changes at our institution.

NEW JERSEY POSTER FINALIST - RESEARCH Anmol Mittal

Analysis of Postoperative Complications of Endoscopic Retrograde Cholangiopancreatography (ERCP) and Laparoscopic Cholecystectomy (LC) Performed During Single Hospital Stay in the Elderly

Title

Analysis of Postoperative Complications of Endoscopic Retrograde Cholangiopancreatography (ERCP) and Laparoscopic Cholecystectomy (LC) Performed During Single Hospital Stay in the Elderly

Authors

Anmol Mittal, MD ; Mansi Patel, MD ; Sushil Ahlawat, MD

Introduction

Choledocholithiasis is increasingly prevalent among patients diagnosed with cholecystitis, with symptoms and outcomes varying according to age. Studies have shown that early LC after ERCP may reduce recurrent CBD disease, thereby reducing postoperative complications, hospital length of stay, and morbidity. However, a reduction in mortality has not been shown in the elderly population who undergo early LC after ERCP during the same hospital admission, suggesting increased complications in this subset of the population with biliary tract disease.

Methods

A retrospective analysis of the Nationwide Inpatient Sample (NIS) 2001-2013 database was used to identify patients undergoing both ERCP and LC with appropriate International Classification of Disease, Ninth Revision (ICD-9) procedure codes. Complications of Myocardial Infarction (MI), Sepsis, Acute Renal Failure (ARF), Urinary Tract Infections (UTI), Pneumonia (PNA), Pancreatitis, and Acute Cholangitis were identified with ICD-9 diagnosis codes. Age was stratified to 19-65 (Group A), 66-75 (Group B), greater than 75 (Group C). A chi-square analysis was performed to determine variables to be included in a multivariable analysis. A binary logistic regression analysis was used to examine demographic and other important variables for their respective odds ratio(OR), with a significance level of $p < 0.05$.

Results

A total of 117,684 patients were identified who underwent both ERCP and LC, of which 77,037 (65.5%) were Group A, 19,584 (16.6%) were Group B, and 21,063 (17.9%) were Group C. After incorporating demographic variables and social variables, such as biological sex, insurance status, and median income, the geriatric population had a significantly higher likelihood of having a MI (ORGroupB=4.39, ORGroupC=7.61), sepsis (ORGroupB=1.52, ORGroupC=2.07), ARF (ORGroupB=2.03, ORGroupC=3.23), UTI (ORGroupB=1.48 ORGroupC=2.68), PNA (ORGroupB=1.23, ORGroupC=1.82), pancreatitis (ORGroupB=1.17, ORGroupC=1.07), and cholangitis (ORGroupB=1.37 ORGroupC=1.98) versus the reference group A. Geriatric patients had a significantly higher likelihood of dying during the hospital stay (ORGroupB=1.51, ORGroupC=3.97).

Conclusion

Although the safety and efficacy of ERCP and LC individually have been previously well studied in the geriatric population, the clinical outcomes of undergoing early LC after ERCP have not been well studied. Patients 66 years of age and older are more likely to suffer from complications after undergoing both ERCP and LC during the same hospital admission. Additional studies are needed to identify the factors that contribute to increased complication rates to further improve morbidity and mortality from biliary tract disease in this population.

NEW JERSEY POSTER FINALIST - RESEARCH Alexis Okoh

Indicators of High Resource Utilization during the COVID-19 pandemic at NBIMC

Title

Indicators of High Resource Utilization during the COVID-19 pandemic at NBIMC

Authors

Corrine Raczek, Joshua Carlson, Asad Chohan, Gurdarshan Sandhu, Kemi A, Naser Abdelhadi, Thomas Nubong, Kessy Joseph, Rashmi Pillai, Barshoy Barsuom, Christian Engell, Jose Bustillo

Introduction

The COVID-19 pandemic has created multiple problems for healthcare systems. In the setting of a value-based care system, identifying patients who may be at risk for high-healthcare resource use is necessary to optimizing outcomes. The purpose of this study is to identify factors associated with high resource use among patients admitted to the Newark Beth Israel Medical Center during the peak of the COVID-19 pandemic

Methods

Patients were admitted for COVID-19 at the Newark Beth Israel Medical Center (NBIMC) during the peak of the COVID-19 pandemic and survived till discharge were stratified into two groups based on their high resource utilization (HRU). HRU was defined as a composite prolonged length of hospitalization (LOS) (LOS = 14 days) or discharge to a rehabilitation facility. Baseline demographics, clinical characteristics and in-hospital outcomes were compared between HRU patients and non-HRU patients. Multivariable logistic analysis was used to identify independent predictors of HRU.

Results

During the study period, 418 patients were admitted for COVID-19 at NBIMC and discharged alive. Of these, 108 (26%) were classified as HRU. HRU patients were older (61 vs. 56 yrs. P=0.009), of male sex (62% vs. 48%; p=0.012), had a higher incidence of diabetes mellitus (DM) (49% vs. 41%; p=0.041), coronary artery disease (CAD) (24% vs. 17%; p=0.027). and COPD (13% vs. 6%; p=0.013) than non-HRU patients. On multivariable logistic regression analysis, independent predictors of HRU were [OR: 95% C.I; p value]; male sex [1.8: 1.1, 2.8; p=0.012] and a history of COPD [2.6: 1.3, 5.4; p=0.015]

Conclusion

Among patients who were admitted for COVID-19 at and survived till discharge, almost one out of every three stayed for = 14 days or discharged to a rehabilitation facility. Independent predictors of HRU were male sex and a history of COPD. Based on these findings, community-based interventions aimed at reducing the incidence of these chronic conditions are warranted.

NEW JERSEY POSTER FINALIST - RESEARCH Amy Paige, DO

Examining Pre-Exposure Medications on COVID-19 Severe Disease: A Single-Center Retrospective Cohort Study

Title

Examining Pre-Exposure Medications on COVID-19 Severe Disease: A Single-Center Retrospective Cohort Study

Authors

Paige, Amy, DO; Afaq, Safia MD; Ahmed, Eyad, MD; Koneru, Kalyan MD; Chan, Kok Hoe, MD; Slim Jihad, MD

Introduction

COVID-19 is an international pandemic and has caused staggering mortality data. Patients with comorbidities have higher risk of mortality. Medications such as ACEi/ARB, statins, and metformin have been reported to improve survival and mortality. Herein, we are interested in investigating the relationship of COVID-19 mortality with use of ACEi/ARB, metformin, and statins in our population in Newark, N.J.

Methods

We conducted a retrospective, single-center, cohort study on patients greater than and/or equal to 18 years old with confirmed COVID-19, admitted between 03/15/2020 and 05/25/2020. Demographic, medication history and clinical outcomes were reviewed and retrieved. Medication use was considered present if patients had regularly taken medication 30-days prior to hospital admission. We excluded patients with unverifiable medication history and no clear clinical outcome. Data was expressed as counts and percentages or mean. The chi-square test was used to identify associations between categorical variables. Graphpad Prism was used for data analysis.

Results

Of 512 confirmed COVID-19 patients, 143 were excluded due to incomplete data on home medications and no clear clinical outcome. Of 369 patients, the average age was 60 years (+/- 16.26 years); 43.1% male and 56.9% female. Common comorbidities were HTN (65.3%), diabetes mellitus (43%), CKD (23.8%) and 8.4% CKD with ESRD on dialysis. The study population

was predominantly blacks (38%) or Latinx (45.8%). Of the patients included, 48 (13%) required mechanical ventilation and 87 (23.6%) expired. The odds ratio was not statistically significant for any primary exposures of interest. After stratification by race, BMI and sex some variables of interest were significant. Being black and on a statin was significant for decreased odds for severe disease (OR 0.4161 CI 0.1889-0.9804; p-value 0.0362). No variables of interest were significant for severe disease among hispanic patients. Being non-obese (BMI

Conclusion

Additional research in large cohorts of patients is essential to fully understanding the relationship and possible beneficial protective qualities these medications possess, can guide treatment algorithms, prevent adverse sequelae, and improve survival odds.

NEW JERSEY POSTER FINALIST - RESEARCH Aadhithya Raman

An Institutional Quality Improvement Project on Preventive Measures for Rapid Correction of Hyponatremia

Title

An Institutional Quality Improvement Project on Preventive Measures for Rapid Correction of Hyponatremia

Authors

Santharaman A. V., Martinez B., Bhandari K., Khalifa A. A., Shikha J., Gurnani S., Sterman P., Mohan J., Kothari N.

Introduction

Hyponatremia is one of the most common electrolyte abnormalities seen in hospitalized patients. Patients with chronic and severe hyponatremia (serum sodium

Methods

A team was formed with residents from the Resident Performance Improvement (PI) committee, the academic nephrologist, the department safety & quality officer and the program director at Saint Peter's University Hospital. A Plan-Do-Study-Act (PDSA) worksheet was created, the contributing factors were identified and all the residents were initially surveyed to risk stratify them. The most significant contributing factors determined were, a) defective sign-outs between residents during change of shifts, b) delay/difficulties in communication between the residents, primary attending and nephrologist, c) delay in timely blood draws, d) lack of standardized protocols, and e) lack of use of DDAVP for patients at risk for water diuresis. Sodium correction was standardized for 4 to 6 mEq/L per day and residents were recommended to make detailed sign-out sheets with goals sodium ranges and plans for the same. Difficulties in contacting the nephrologist were addressed and residents/attendings were recommended to contact the nephrologist on a timely manner. These changes were tested for two months and residents were surveyed again.

Results

Of the 36 residents who answered, 91% of them felt that the recommendations were helpful. Around 80% of the residents noted that the sign-outs were detailed and 80% of them were able to contact nephrologist on a timely manner. Despite this, around 39% of them encountered rapid correction of hyponatremia (> 6mEq/L in 24hrs) while 30% did not encounter rapid correction and 30% did not encounter any case of hyponatremia over a duration of two months.

Conclusion

While the changes in sign-outs and timely communication were helpful, based on the first PDSA cycle residents were still encountering rapid correction of hyponatremia. Feasibility of making a standardized protocol is restricted due to challenging presentation at many times with complex medical history and difficulties in evaluating the volume status. Our plan now is to adapt the possible use of DDAVP for patients at risk for water diuresis, adopt the previous changes and to test them for a longer duration since many residents did not encounter a case of hyponatremia. Once the success of the changes is determined, they would be implemented on a broader scale.

NEW JERSEY POSTER FINALIST - RESEARCH Aadhithya Raman

A Retrospective Review of COVID-19 Related Predisposition to Diabetic Ketoacidosis (DKA)

Title

A Retrospective Review of COVID-19 Related Predisposition to Diabetic Ketoacidosis (DKA)

Authors

Santharaman A. V., Sankaramangalam K., Dewan S., Bassi M., Sapkota S., Shah M., Raj K., Khan A., Luo H., Redel H.

Introduction

The knowledge behind COVID-19 pandemic caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is currently evolving. It has been reported that SARS-CoV-2 infection could deteriorate hyperglycemia and cause life threatening DKA in patients with diabetes mellitus (DM), both type 1 (DM1) and type 2 (DM2). This might be induced by sepsis, inflammatory storm, direct pancreas injury resulting in release of glucocorticoids and catecholamines. Several studies have established DM to be an independent risk factor for disease progression, leading to increased mortality. The objective of this study is to determine the incidence of DKA among patients with COVID-19 and DM, the contributing factors for their predisposition to DKA and mortality.

Methods

Following our institutional IRB approval, a list of subjects was obtained from our electronic medical record system based on the diagnosis of COVID-19 and the concurrent presence of DM using the ICD-10 codes. A retrospective analysis was performed for a total of 331 patients with COVID-19 and DM who presented to our hospital between March and June 2020. ADA diagnostic criteria was used to determine the patients with DKA, hyperosmolar hyperglycemic state (HHS) and euglycemic DKA patients were also included in the analysis. Contributing factors including home medications, compliance, co-morbidities, severity of COVID-19 infection, concurrent presence of sepsis or hypoxic respiratory failure, use of steroids during hospitalization and mortality were compared between the patients with and without glycemic crisis.

Results

Based on our preliminary analysis, out of the 331 patients with COVID-19 and DM, 29 patients (8.7%) had DKA and one patient had HHS. Out of these 30 patients with glycemic crisis, 5 patients (16.7%) were new onset DM (type undetermined during hospitalization), 5 patients (16.7%) were DM1 and 20 patients (66.7%) were DM2. Of note, there were around 33% of these patients with glycemic crisis who did not have sepsis upon presentation, including 7 out of 20 (35%) of patients with DM2. The estimated mortality rate was 30% among patients with glycemic crisis.

Conclusion

Our preliminary analysis showed that COVID19 infection caused DKA in both DM1 and DM2, but majority were DM2 patients (16.7% vs. 66.7%). Further results on most significant contributing factors and statistical significance of difference in mortality are pending as the final analysis is currently ongoing. While DM2 patients usually present as HHS instead of DKA in the setting of infection or stress, our data showed that COVID-19 infection can result in DKA even without sepsis. This might indicate a direct inhibition of insulin secretion in DM2 with SARS-CoV-2 infections. More research is needed to investigate this inhibition mechanism and to develop the novel therapy to reverse this inhibition and decrease the morality.

NEW JERSEY POSTER FINALIST - RESEARCH Dawn Roach, MD

Liver Fibrosis Staging with APRI and FIB-4 Scoring Systems as an Alternative to Transient Elastography in Patients with both HIV and Chronic Hepatitis C

Title

Liver Fibrosis Staging with APRI and FIB-4 Scoring Systems as an Alternative to Transient Elastography in Patients with both HIV and Chronic Hepatitis C

Authors

Ajao, S. MD, Roach D. MD, Thimmanagari, K. MD, Muhanna, A. MD, Chan, KH. MD, Slim, J. MD, DaCosta, T. MD, Brown, J. DO New York Medical College at Saint Michael's Medical Center, Internal Medicine Residency Program, Newark, New Jersey (Ajao, Roach, Thimmanagari, Muhanna, Chan); Saint Michael's Medical Center, Department of Infectious Diseases, Newark, New Jersey (Slim) Saint Michael's Medical Center, Department of Gastroenterology, Newark, New Jersey (DaCosta, Brown)

Introduction

Liver biopsy is the gold standard to assess for liver fibrosis. However, due to its invasive nature, techniques such as transient elastography liver stiffness (TE-LS), FIB-4 and APRI scores are used. APRI and FIB-4 scores have the advantage of low cost and are easy to use compared with TE-LS. We evaluated the diagnostic performance of these scoring systems compared to TE-LS in detecting liver fibrosis in patients co-infected with HIV and chronic hepatitis C (CHC).

Methods

We reviewed the records of all patients with HIV co-infected with CHC who had TE-LS performed at our facility between 10/1/2013 and 1/1/2020. Patients who had coinfection with hepatitis B virus, invalid TE-LS assessment and alanine aminotransferase (ALT) levels = 10 upper limit of normal (ULN) were excluded. Patient demographic, medical history, clinical and laboratory data were retrieved. For each patient, we calculated the APRI score using the following formula: APRI = [(AST level/ULN)/ Platelets (10^9/L)] × 100. The FIB-4 score was calculated using the following formula: FIB-4 = [age × AST/platelet count (10^9/L) × vALT]. Descriptive analysis was performed and correlation of APRI and FIB-4 with TE-LS was assessed with GrapPad Prism.

Results

There were 547 patients during the study period. After excluding those without complete laboratory parameters, total study population was 344. The average age was 56 ± 10.4 and 234 (68%) were males. The average AST and ALT were 27.95 and 30.73 respectively. The average platelet count was 224 and average TE-LS was 7.29. Fourteen patients (4.1%) had TE-LS values between 9 and 11.9 kPa, and were classified as F3, while 29 (8.5%) were classified as F4 (TE-LS =12 kPa). APRI was positively correlated with the TE-LS fibrosis stage (r=0.1097, 95% confidence interval [CI] 0.0403-0.2130; P=0.042) while FIB-4 was not (r=0.0424, 95%CI -0.0634-0.1474; P=0.4335).

Conclusion

The APRI score showed significant correlation with TE-LS fibrosis stage in patients co-infected with HIV and CHC. This noninvasive biochemical marker may have a potential role as a screening tool instead of TE-LS measurement, which is costly and not widely available. Larger studies are needed to corroborate these findings.

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NEW JERSEY POSTER FINALIST - RESEARCH Akash J Shah

COVID Telehealth Innovation: Accessible LEAN Processes for Patient and Clinician Safety

Title

COVID Telehealth Innovation: Accessible LEAN Processes for Patient and Clinician Safety

Authors

Akash Shah, Geoff Hook, Christopher Lehrach, Albert Villarin, Cornelius Ferreira, Kelly Philiba, Walter Lestrange, Keith Hoffman, Shawn Foley, Cathy Niles, Mary Gerwien, Suzanne Salfi, Anthony D'Ambrosio, Jeffrey Michaelis, Adam Greenberg, Deborah Picchione, Kimberly Malumphy

Introduction

Nuvance Health is a 7 hospital, 250+ practice system serving patients throughout Western Connecticut and the Hudson Valley, NY. COVID-19 response efforts transformed the way we deliver healthcare; emphasizing telehealth as an essential tool for facilitating clinical interactions. The sentinel case of COVID-19 identified in our network inspired swift and decisive actions to preemptively mitigate the risk of transmission within our supported communities. It was immediately clear that expanding capabilities to host virtual visits were crucial to continuing to safely deliver vital services to our patients during (and after) this crisis.

Methods

Using virtual gemba and modeling by way of lean principles for process improvement, we developed workflows and mhealth strategies to implement telehealth across our network.

Results

1. Completed training and feedback sessions for >650 providers and >1200 clinical/clerical staff which was conducted 90% virtually, 10% in person to ensure staff safety. 2. Launched a telehealth hotline which received Total Calls: 1929, Avg Daily: 33, Avg Call Time: 3:54 between March-June 3. Devised a marketing structured which received 40,155 Engagements, 427,470 Reaches, 557,011 Impressions 4. Total Pre-Covid telehealth visits over two years were 13,011, Between March and June our average daily telehealth visits were 2,548 with a total of >308,000 until September. Telehealth remains >20% of our daily volume of patient visit types. 5.

Integrated telehealth with exisiting EMR infrastructure, Patient Portal, ChatBot, mHealth 6. Received a Pandemic Activation and Acceleration Award for telehealth uplift.

Conclusion

Historically less than 1% of annual office visits had been conducted virtually. Nuvance Health's LEAN approach to the virtual gemba involved establishing governance, consolidating contracts, creative IT engineering and EMR integration, re-purposing preexisting technologies, and creation and delivery of education to expediently establish a safe, efficient, and convenient workflow for conducting patient visits which enabled us to conserve PPE and minimize risk to our patients and caregivers. All levels of expertise displayed tremendous teamwork and the results proved worth our efforts. At surge peak 98% of outpatient visits were conducted via telehealth. To date, we have delivered over 300,000 virtual visits and remains >20% of our outpatient visit volume.

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NEW JERSEY POSTER FINALIST - RESEARCH Ali Shahverdiani, MD

Anti-SARS-CoV-2 IgG decline in Symptomatic vs. Asymptomatic Hospital Staff

Title

Anti-SARS-CoV-2 IgG decline in Symptomatic vs. Asymptomatic Hospital Staff

Authors

Ali Shahverdiani, MD; Fatemeh Abbasi, MD; Robert J. Remstein, DO; Patrick G. De Deyne, PhD; Neena Shetty, MD, Eugene McMahon, MD. Department of Medicine, Capital Health, Trenton, NJ

Introduction

Severe acute respiratory syndrome coronavirus 2(SARS-CoV-2) caused a worldwide pandemic of coronavirus disease 19 (COVID-19). By November 2020 more than 230,000 people had died in the United States due to COVID-19 infection. The protective effect of anti–SARS-CoV-2 antibodies is not well understood. Antibody levels can be a marker of an immune response to SARS-CoV-2 and infer possible immunity, but recent studies show a rapid decline in anti–SARS-CoV-2 IgG levels following early infection. A better characterization of the immune response to COVID-19 infection may be helpful in understanding how immunity to this virus develops.

Methods

We measured a semi-quantitative COVID-19 Elisa IgG test (Epitope Diagnostics, Inc. San Diego, CA) on serum from 106 volunteers among hospital staff in 2 hospitals who had a positive or borderline IgG test 4-5 months prior, when they volunteered for early testing for COVID-19 IgG. At the retest, subjects were given a questionnaire and were asked: 1. Any covid-19 related symptoms when they had the initial IgG test? and 2. Any history of direct contact with COVID-19 patients prior to the initial test? The qualitative results obtained from the two different times were compared using repeated measures and Chi Square, with significance set at

Results

At the time of initial serology testing, 85% of the volunteers who had a positive or borderline test had a history of symptoms whereas 14% did not recall having any symptoms. Similarly, 71% of the volunteers who had a positive or borderline test initially, had a history of direct contact

and 28% did not have any known direct contact. In the retest, 21% of volunteers remained seropositive and 12% had a borderline test while 67% had no evidence of circulating anti COVID-19 IgG after 4-5 months. The rate of conversion for the IgG test from positive to negative was not associated with direct contact (p= 0.26). On the other hand, in the subjects who had a history of being symptomatic, 44% remained positive or borderline while only 13% of asymptomatic volunteers continued to have a positive or borderline result (p= 0.005). In fact, volunteers with a history of having a symptomatic infection were 4.6 times (O.R., p= 0.004) more likely to have a positive repeat IgG test compared to volunteers who did not report any symptoms.

Conclusion

We suggest that the symptomology is a sound predictor to determine a durable antibody response, and future work may evaluate the correlation of the intensity or type of symptoms with a quantitative and durable immune response. This information may be used to predict humoral immune response to COVID-19 in a clinical setting, and inform diagnostic workup, and vaccine production.

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NEW YORK POSTER FINALIST - RESEARCH Venkata Sireesha Chemarthi, MBBS

Clinical Features, Maternal and Fetal Outcomes in SARS-CoV2 PCR positive pregnant women admitted to a New York City hospital in the Bronx.

Title

Clinical Features, Maternal and Fetal Outcomes in SARS-CoV2 PCR positive pregnant women admitted to a New York City hospital in the Bronx.

Authors

Venkata Sireesha Chemarthi, MD. Virali Shah, MD Vidya Menon, MD, FACP

Introduction

Pregnant women were more susceptible to greater mortality and morbidity rates when compared to general population in the previous SARS and H1N1 pandemics. Many studies have been published about effects and outcomes of COVID-19 in general population. Limited data is available on COVID-19 in pregnancy.

Methods

This is a retrospective single-center descriptive study. All pregnant women with SARS-CoV2 positive PCR admitted to Lincoln Hospital between March to July 2020 were included in the study. A detailed review of medical records was performed and the baseline characteristics, clinical features, clinical course including maternal and fetal outcomes were evaluated. Categorical variables were characterized frequency (%) and continuous variables as median with 25-75 IQR.

Results

Thirty-six SARs-CoV2 PCR positive pregnant women were admitted during the study period. 75% were Hispanic, 22% were African American, 2.7% were Asian. 78% of the pregnant women did not have any symptoms of COVID-19 infection, while 22 % were symptomatic of which 14% had features of COVID-19 pneumonia confirmed on X Ray Chest. 3 patients had severe disease requiring Oxygen. 8.3% patients required Oxygen, no one required mechanical ventilation and no deaths reported. Out of the 36 patients, 92% were in their third trimester, 5% were in second trimester, 3% were in first trimester. 19 patients had vaginal deliveries, 9 had C-sections

and the reasons for C-section and maternal and fetal outcomes are described in table 2. Fetal growth restriction was noted in 2. No fetal deaths reported.

Conclusion

In our study, we found that patients presenting with obstetric complaints or for delivery are more often asymptomatic which suggests a universal protocol to carry out testing for women admitted to the hospital. Inspite of being at the epicenter, we did not see any adverse outcomes in our patients who were SARs-CoV2 PCR positive during the surge of the pandemic. Very few patients had severe disease who required Oxygen and majority of the symptomatic patients had mild disease. A significant proportion of patients had C-section in our study similar to previous reports from NYC. The reasons for C-section were failed Induction of Labor, severe Fetal Growth restriction and decreased fetal movements, oligohydramnios and breech presentation and preeclampsia with severe features. One patient in her second trimester who required Oxygen had decreased fetal movement and fetal tachycardia. More studies are needed to understand if COVID-19 can increase the proportion of operative delivery and certain fetal outcomes. Although the outcomes were promising in our study which has a small sample size, until we have more evidence, we need to be concerned regarding the maternal and fetal outcomes in SARs-CoV2 PCR positive pregnant women. Long term effects of the virus on the mother and baby needs to be explored. To prevent maternal and fetal mortality and morbidity, prevention is the best strategy. Universal screening for all pregnant women admitted to the hospital should be in place.

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NEW YORK POSTER FINALIST - RESEARCH Ryan Din, MD

Characteristics of Physicians Receiving Reimbursement Under the Merit-Based Incentive Payment System in 2017

Title

Characteristics of Physicians Receiving Reimbursement Under the Merit-Based Incentive Payment System in 2017

Authors

Ryan S. Din 1, Jinal Shah*2, Tanmik Shah*2, Xueming Sun*2, Marc Triola 3 *authors contributed equally to this work 1. Department of Medicine, NYU School of Medicine 2. NYU School of Global Public Health 3. NYU School of Medicine, Institute for Innovations in Medical Education, NYU Langone Health

Introduction

The Merit-Based Incentive Payment System (MIPS) is a program from the Centers for Medicare and Medicaid Services (CMS) to address current gaps in physician reimbursement.1 A composite MIPS score is calculated based on several domains: quality, including outcomes for common medical issues, data completeness, and advanced planning; promoting interoperability, including open access electronic medical records, e-prescribing, and public health registry participation; and improvement activities, including care coordination, tele-health implementation, and community engagement.2 This score determines whether clinicians receive a bonus, penalty, or no adjustment in reimbursement.3 This study characterizes trends in 2017 MIPS reimbursement. We hypothesized that MIPS would reward clinicians practicing in rural areas in primary care fields with low procedural volume.

Methods

A retrospective review of the 2017 Physician Compare dataset was conducted. Variables included National Provider Identifier (NPI), physician, gender, primary specialty, state of practice, scores across each domain, and the final MIPS score. The average MIPS score was stratified by gender, years of experience, specialty, and geographic location. Wilcoxon tests, Kruskal-Wallis tests, and Spearman correlation were used to compare MIPS scores for binary, categorical, and continuous predictors respectively. Multiple linear regression with MIPS score as the outcome and specialty, gender, region and years of experience as covariates was performed. Analyses were conducted in R.

Results

Of 1,142,428 physicians, 363,360 physicians with complete MIPS score data were included. Of these, 104,946 (28.9%) were female. The average years of experience was 22.7 years. 39.1% of physicians lived in the south, 21.7% in the midwest, 20.6% in the northeast and 18.3% in the west coast. The average MIPS score for females was significantly higher than for males (73.2 vs 69.5, $p<0.01$).

Conclusion

We conclude that several factors were associated with higher MIPS scores: female gender, midwest location, and moderate work experience. In addition, physicians specializing in hematology/oncology, cardiology, and radiology were more likely to perform well on MIPS while physicians practicing allergy and immunology, plastic surgery, and psychiatry were less likely to perform well on MIPS. Our hypothesis thus did not hold true as MIPS tended to reward physicians practicing in specialized fields rather than primary care and was not associated with rural location or low procedural volume. Limitations include information bias as scores were only available for 31.8% of providers from the dataset, lack of information on trends over subsequent years, and lack of data on the domain of cost. Future studies on MIPS reimbursement are needed to better characterize novel physician reimbursement models.

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NEW YORK POSTER FINALIST - RESEARCH Sudharsan R Gongati

Declining mortality rates of Covid-19 infections since first surge: The Bronx Experience.

Title

Declining mortality rates of Covid-19 infections since first surge: The Bronx Experience.

Authors

Sudharsan Gongati MD; BronxCare Health System, Haozhe Sun MD; BronxCare Health System, Nikhitha Mantri MD; BronxCare Health System, Maleeha Zahid MD; BronxCare Health System, Cosmina Zeana MD, MPH; BronxCare Health System, Sridhar Chilimuri MD; BronxCare Health System.

Introduction

Introduction: COVID-19 disease was first reported in Wuhan, China, in December 2019 and since became a global pandemic that killed more than 1,550,000 patients worldwide. During the first surge in New York City, lasting from March 2020 to May 2020, we observed very high hospital mortality rates. Subsequently, shelters in place orders have decreased transmission rates. Treatment protocols have also been revised since initial surge which led to more consistent use of dexamethasone and remdesivir and elimination of hydroxychloroquine. We assessed changes in hospital mortality rates over time since the first surge.

Methods

Methods: We abstracted demographic and clinical data from all patients admitted at Bronx Care Hospital Center with SARS-CoV-2 infection from March 2020 to November 2020. Patients were separated into two groups; the first group included patients admitted from March to May 2020 and the second group from June 2020 to November 2020. We calculated hospital mortality rates for the two groups.

Results

Results A total of 1235 patients were admitted with COVID-19 illness from March 2020 to May 2020 of which 432 patients died (mortality rate of 34.9%). From June 2020 until November

2020, 180 patients were admitted with COVID-19 of which 11 patients died (mortality rate of 6.1%). The difference in mortality rates between the two groups was statistically significant (P

Conclusion

Conclusion: There was a significant decline in hospital mortality in COVID-19 patients from the initial surge in our hospital serving the South and Central Bronx in New York City. Although there were significant changes in treatment protocols over the study period, patients admitted after the surge were younger, were more likely to be women and had lower levels of inflammatory markers. These differences may have accounted for declining mortality rates.

NEW YORK POSTER FINALIST - RESEARCH Miluska O Mejia Trebejo, MD

SEX DIFFERENCES IN OUTCOMES OF CARDIOGENIC SHOCK REQUIRING TEMPORARY PERCUTANEOUS MECHANICAL CIRCULATORY SUPPORT

Title

SEX DIFFERENCES IN OUTCOMES OF CARDIOGENIC SHOCK REQUIRING TEMPORARY PERCUTANEOUS MECHANICAL CIRCULATORY SUPPORT

Authors

Miluska O. Mejia Trebejo, Katia Bravo-Jaimes, Nadia Abelhad, Yelin Zhou, Marwan Jumean, Sriram Nathan, Abhijeet Dhoble

Introduction

There is evidence for lower use of percutaneous mechanical circulatory support (pMCS) in women. We aimed to determine (1) whether sex differences exist regarding in-hospital mortality, hospital course and procedures,(2)and whether socio-demographic and treatment-related factors were associated with these differences.

Methods

We used the National Inpatient Sample (NIS) and collected the ICD-9-CM codes for cardiogenic shock (CGS) due to acute myocardial infarction (AMI) or acutely decompensated advanced heart failure (ADHF). We included intra-aortic balloon pump, Impella or Tandem Heart (pVAD) and extracorporeal membrane oxygenation (ECMO). Clinical variables included demographics, comorbidities, in-hospital course and procedures. The Charlson Comorbidity Index (CCI) was calculated. Multivariable hierarchical logistic regression analysis and multiple additional sensitivity analyses were performed. Statistical analyses were performed using Stata/IC-14.2.

Results

We identified 376 116 cases of CGS due to AMI or ADHF of which 113 305 required pMCS. Women were more likely to be older, non-white, insured by Medicare and have higher burden of comorbidities as well as higher CCI. pMCS devices were inserted in 35 516 women (24.9%) and 77 789 men (33.3%). Women were less likely to receive pVAD or pulmonary artery catheter (PAC). Blood transfusions and acute respiratory failure were more common in women. Acute

renal failure, cardiac arrest, and anoxic brain injury were more common in men; however, they were more likely to receive a left ventricular assist device. Women had 15% higher in-hospital mortality and in a multivariate analysis, women, older age, having no insurance, diabetes, chronic kidney disease, cerebrovascular disease, peripheral arterial disease, longer time to pMCS insertion, receiving PAC, pVAD or ECMO and having cardiac arrest were associated with higher in-hospital mortality.

Conclusion

Women requiring pMCS support had higher comorbidity load, in-hospital mortality, acute respiratory failure, blood transfusions and lower PAC use. Studies addressing early sex-specific interventions in cardiogenic shock are needed to reduce these differences.

NEW YORK POSTER FINALIST - RESEARCH Phyu Thin Naing

Clinical Outcomes in Critically Ill Patients with COVID-19 Treated with Therapeutic Dose of Anticoagulants for Suspected Thromboembolism

Title

Clinical Outcomes in Critically Ill Patients with COVID-19 Treated with Therapeutic Dose of Anticoagulants for Suspected Thromboembolism

Authors

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Introduction

The first case of COVID-19 in New York was confirmed on March 1, 2020. [1] Since March 2020, the New York City hospitals have experienced a tremendous surge of COVID-19 cases. Our hospital admitted 877 patients from March 15 to Apr 1, 2020. The exact mechanism of how COVID-19 causes vascular injury is unclear but some experts attribute it to widespread vascular inflammation. [2,3] The limited understanding of the hypercoagulable mechanism has limited our treatment techniques. To date, whether therapeutic anticoagulation is the right choice in regard to optimal management of patients with COVID-19 in suspected DVT (deep vein thrombosis) or PE (pulmonary embolism) is still a question. [4]

Methods

We performed a retrospective analysis of 145 adult ICU patients at an acute care teaching hospital located in Queens County, New York between March 15, 2020 to April 1, 2020. All patients >18 years of age with confirmed SARS-CoV-2 infection and determined to require admission to ICU between March 15, 2020 and April 1, 2020, were included in the investigation, with the exclusion of pregnant patients. All data was collected from the electronic health record (Allscripts) and was compiled in REDCap software. During that study period, therapeutic anticoagulants were used in hospitalized patients with COVID-19 with high clinical risk or suspicion for venous thromboembolism (VTE). As per hospital protocol, heparin continuous infusion with a target activated partial thromboplastin time of 50 to 70 seconds or enoxaparin

1mg/kg twice a day for creatinine clearance (CrCl) above 30 ml/min or once a day for CrCl below 30 ml/min were used to achieve therapeutic anticoagulation. The primary outcome of the study was 28-day in-hospital mortality for critically ill patients affected by COVID-19 with or without the use of therapeutic anticoagulation. Statistical analysis was done using R version 4.0.2.

Results

Out of 145 ICU patients, 61 received therapeutic anti-coagulation. Kaplan-Meier survival curves show the survival probability with respect to days after admission for the two groups (those who used anticoagulant therapeutic drugs and those who didn't) using 28-day in-hospital mortality. Median age was 61 years for patients who didn’t receive therapeutic anticoagulants compared to 60 years for patients who received therapeutic doses. The median survival for those who did not take anticoagulant therapeutic drugs is 10 days, while for those who did take anticoagulant therapeutic drugs is 25 days. After adjusting for including hypertension, diabetes, hyperlipidemia, cardiac history, home anti-platelet medication use and continuous response for peak d-dimer levels, the results show that there is a causal effect of 22.2 % decreased risk of 28-day in-hospital mortality if one received the therapeutic anticoagulant in the hospital.

Conclusion

Our findings suggest that there is a significantly higher median survival time in critically ill patients who received therapeutic anticoagulants compared to those who didn't. However, our study is limited by observational nature, unobserved confounding and lack of metrics to classify illness severity. There is a need for clinical trials which are necessary to provide specific guidelines for use of therapeutic anticoagulants in patients with COVID-19.

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NEW YORK POSTER FINALIST - RESEARCH Victor A Perez Gutierrez, Sr, MD

Short term impact of COVID-19 pandemic in mental and social determinants of health in Ambulatory Care population in South Bronx, a pilot study.

Title

Short term impact of COVID-19 pandemic in mental and social determinants of health in Ambulatory Care population in South Bronx, a pilot study.

Authors

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Introduction

The first case of COVID 19 in New York State was confirmed on March 1st, 2020. The virus spread rapidly and grew exponentially to approximately 20,000 cases in New York City by March 25th, which led to implementing specific measures including shutdown, social distancing, and working from home. This action had a significant impact, increasing unemployment rates, and poverty and displaying that social inequality plays a vital role in morbidity and mortality, including mental health and substance abuse. We aimed to describe demographic characteristics and evaluate the impact of the COVID -19 outbreak on social needs, well-being, mental health, and alcohol use in the South Bronx population.

Methods

This is a pilot cross-sectional study to assess the impact of COVID 19 in the community. Included 173 participants who attended the ambulatory clinic and agreed to complete a standardized survey that included the PHQ- 9 scales, PTSD scale, and GAD-7 scale. Surveys were conducted between May-September. Data were analyzed by frequency in IBM SPSS v22 for Windows.

Results

Out of 173 participants, 60.7% were females, 73.4% ethnically identified as LatinX, 21.4%, and African American. 25% do not speak English very well, and 27% did not speak English at all. 29%

did not go to high school, and 4% had obtained a graduate degree. 1% admitted they increased their alcohol consumption, and 7% drink less than before. 16.2% experienced symptoms of depression, 9.2% anxiety, and 4.6% PTSD symptoms. 20.2% lost someone close due to COVID 19. Regarding social needs, 16.2% need help with health insurance, medical bills, or medication costs; 19.7% were worried about running out of food, 10.4% required public assistance; 12.1% needed help with school or job training; 0.6% stated needed daycare for the child, 16.2% were worried about losing their house, 5.8% paying utilities and 6.9% reported needing assistance with immigration or legal problems. 24.3% reported a loss in their income, and among them, 35% received financial help.

Conclusion

Our study not only demonstrates how our participants were affected individually by losing people who were close to them due to COVID 19 and the increasing need for economic, legal, social, and emotional support, but it as well exposes the aggregate social needs of a community which represents a majority who has not achieved a higher level of education. Language barriers should be included as an essential factor in this study. Most participants have low English proficiency skills making it difficult to seek help in moments of crisis. All this external factor impacts mental health and could be contributors to substance abuse as well. Therefore, after this study, our goal is to promote social projects and educate the community about the resources available at the moment. We conclude that LatinX ethnicity is predominant among the study population. The majority of participants lost someone close due to COVID-19, and social needs in the community increased remarkably. A few patients experienced depression and anxiety. Illicit drug use increased during the outbreak; however, there was no notable difference in alcohol use.

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NEW YORK POSTER FINALIST - RESEARCH Abhinaya Sridhar, MBBS

Relationship between ABO blood type and incidence of new Acute Kidney Injury, intubation and death in COVID 19

Title

Relationship between ABO blood type and incidence of new Acute Kidney Injury, intubation and death in COVID 19

Authors

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Introduction

COVID-19, the disease caused by the SARS-COV2 virus, has led to a pandemic with varying effects on the global population. Given its significant morbidity and mortality, several studies have been done to determine prognostic factors that affect disease incidence and progression. The objective of our study was to determine the relationship between ABO blood type in patients with COVID- 19 infection and disease severity defined as incidence of new Acute Kidney Injury (AKI) and intubation and death.

Methods

A retrospective observational study was done by chart review of all patients who tested positive for COVID-19 infection in our tertiary care center in New York during March and April of 2020. Inclusion criteria : individuals >50 years of age who tested positive for COVID-19 by nasopharyngeal swab (PCR) with normal baseline creatinine. 253 patients were included in the study. The patients were grouped based on their blood type to assess mortality and disease severity. Disease severity was assessed by incidence of new AKI and need for intubation. The data was analyzed using SPSS software and Chi-square test.

Results

The median age of our study population was 67. 61.6% of patients were male. Among 120 patients with blood type O, 38.3% were diagnosed with new AKI, 41.7% were intubated and

25.8% died. Among 87 patients with blood type A, 42% were diagnosed with new AKI, 40.9% were intubated and 26.1% died. Among 35 patients with blood type B, 37.1% were diagnosed with new AKI, 40% were intubated and 37.1% died. Among 11 patients with blood type AB, 27.3% were diagnosed with new AKI, 36.4% were intubated and 36.4% died. No statistical significance was found between blood type and incidence of AKI (p:0.35), intubation (p:0.91), or mortality (p:0.66) in patients with COVID-19 infection.

Ours is the first study to determine the relationship between blood type and incidence of new AKI in patients with COVID-19 infection. In our study, there was no association between the two. Our study results were congruent with the large, multi-institutional, retrospective review that showed no association between ABO blood type and COVID-19 disease severity defined as intubation or death. (1) However, this differs from other studies which showed an association.(2)(3) In our study, blood type O had the highest frequency of disease positivity while other studies demonstrated lowest frequency with blood type O.(1) Our study did not group patients based on Rh typing and ethnicity or match patients for pre-existing chronic medical conditions which could affect the course and severity of the disease. Hence a meta-analysis accounting for age, comorbidities, ethnicity and Rh typing is warranted to establish a true association between blood type and severity of COVID-19 infection, including AKI.

Conclusion

Blood type was not independently associated with incidence of AKI, intubation or death in patients with COVID-19 infection. Given this lack of association, ABO blood typing should not be considered prognostic in those who acquire the disease. All individuals irrespective of blood type should take appropriate precautions to prevent the spread of COVID-19.

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NEW YORK POSTER FINALIST - RESEARCH Poy Theprungsirikul, MD

Incidence of Thrombosis and Associated Risk Factors in Hospitalized COVID-19 Patients in a New York City Hospital System

Title

Incidence of Thrombosis and Associated Risk Factors in Hospitalized COVID-19 Patients in a New York City Hospital System

Authors

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Introduction

As of August 10, 2020, there have been over 5 million cases of the 2019 novel coronavirus disease (COVID-19) in the United States, resulting in 162,000 deaths. New York City became the first epicenter, with several case series based on over 56,000 hospitalizations and 18,900 deaths. These case series expanded our understanding of a broader clinical spectrum of COVID-19, extending beyond the initial descriptions of a viral pneumonia. This clinical spectrum has included arterial and venous thrombotic events. Factors upon admission which are associated with the development of thrombosis in hospitalized COVID-19 patients are less well defined. Our aim is to characterize the incidence of thrombosis and the associated clinical and demographic risk factors of patients hospitalized across a New York City hospital system.

Methods

We conducted a retrospective observational study of all patients, age 18 and older, hospitalized with a reverse transcriptase-polymerase chain reaction (RT-PCR) confirming severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection between March 13 and April 4, 2020 in two hospitals in New York City. Clinical demographics, admission labs and medications prior to admission were collected. Thrombotic events were identified manually by chart review and were defined as experiencing arterial and/or venous thrombotic events, including pulmonary embolism (PE), deep vein thrombosis (DVT), cerebrovascular accident (CVA), myocardial infarction (MI), acute limb ischemia, and splenic infarct, among others.

Results

There were 1,352 patients hospitalized during the study period. Overall median age was 62 years (IQR: 49-72), with 455 females (33.7%). There were 160 (11.8%) thrombotic events, including 102 with venous thromboembolism (VTE), 45 with PE, 69 with DVT, 32 with CVA and 55 with other thrombotic events (e.g., MI, acute limb ischemia, and splenic infarct). Females were 46% less likely than males to experience a thrombotic event (OR: 0.54 [CI: 0.36-0.79]). Patients who racially self-identify as Asian or Pacific Islander were observed to have a 2.06 odds compared to other races of having a thrombotic event with COVID-19 (95%[CI: 1.27-3.34]). Age, admission BMI, ethnicity, smoking status, and comorbidities (i.e., history of cancer, coronary artery disease, atrial fibrillation, chronic obstructive pulmonary disease, asthma, CVA, seizure, hypertension, and diabetes) were not associated with the incidence of thrombosis during hospitalization. Thrombotic events were associated with higher mortality in hospitalized COVID-19 patients (35% vs 25.3%, p = 0.009).

Conclusion

Traditional risk factors (i.e., age, obesity, ethnicity, smoking status, and comorbidities) were not associated with an increased risk for thrombotic events in COVID-19 patients, while admission laboratory values (i.e., d-dimer, ESR, CRP, and ferritin) among patients experiencing an event were significantly different, highlighting the impact of the cytokine storm in mediating thrombotic events. Since the incidence of thrombosis associated with COVID-19 infection may vary according to clinical demographics, further investigation to identify high risk patients may enable us to consider the role of adjunctive treatment, such as therapeutic coagulation.

NEW YORK POSTER FINALIST - RESEARCH Thinzar Wai, MD

CLINICAL CHARACTERISTICS AND RISK FACTORS FOR COVID-19 MORTALITY IN A COMMUNITY HOSPITAL

Title

CLINICAL CHARACTERISTICS AND RISK FACTORS FOR COVID-19 MORTALITY IN A COMMUNITY HOSPITAL

Authors

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Introduction

New York City emerged as the Epicenter for Covid-19 due to Novel Coronavirus SARS-CoV-2 soon after it was declared a Global Pandemic by the WHO. Covid-19 presents with a wide spectrum of illness from asymptomatic to severe respiratory failure, shock, multi-organ failure, and death. Although the overall case fatality rate is low, there is significant mortality among hospitalized patients.

Methods

We conducted a retrospective cohort study for patients admitted and diagnosed with Covid-19 by Nasal PCR for SARS-CoV-2 at a community hospital in Brooklyn from March 1st to June 21st, 2020 to evaluate the clinical characteristics and risk factors for mortality. Data collection included manual and electronic extraction from electronic medical records. Variables include demographics, presenting symptoms, medical history, vitals, medications, need for mechanical ventilation, and outcomes. Descriptive statistics, chi-square, and binomial logistic regression statistical analyses were performed.

Results

669 hospitalized patients were included in the study. 245 (37%) expired and 424 (63%) were discharged. The mean age was 61.7 years and 44% were 65 years and older. There were 425

men (64%) and 244 women (36%). Hispanic ethnicity (54%) was the majority. Many had comorbidities including hypertension (54%) and diabetes mellitus (40%). Common presenting symptoms were shortness of breath (66%), cough (64%), fever (52%), and body aches (23%). Remarkable vital signs included respiratory rate of 24 and above (15%), heart rate of 125 and above (12%), and temperature of 100.4 °F and higher (25%). Median values were used as cut-off points for creating dichotomous laboratory variables. Among them, creatinine of 1.135 mg/dl and above (50%), albumin level below 3 g/dl (48%), ferritin level of 787 µg/l and higher (40%), and procalcitonin level 0.305 ng/ml and higher (34%) and D-Dimer level of 1920 ng/ml FEU and higher (22%) were significant. White cell counts (8.42 k/ul and higher) and absolute lymphocytes percent (12% and lower) were in 50% of the patients. 166 (25%) of the patient required invasive mechanical ventilation. 21 relevant and significant variables (p-value < 0.05) were selected for binomial logistic regression. Interestingly, only the procalcitonin level (0.305 ng/ml or greater) was 5.7 times more likely to result in COVID-19 mortality (p-value

Conclusion

In our hospitalized Covid-19 cohort of 669 patients, on chi-square analysis, we noted similar risk factors for Covid-19 mortality that are reported worldwide including male gender, older age, hypertension, diabetes, lymphopenia, elevated levels of ferritin, lactate dehydrogenase, C-reactive protein, D-Dimer, creatinine, and procalcitonin. However, on binomial logistic regression, the only significant variable was procalcitonin with an odds ratio of 5.7. Procalcitonin is a very controversial marker and its association and implications for Covid-19 mortality need further investigation.

NEW YORK POSTER FINALIST - RESEARCH Bo Yu, MD

COVID-19 and stress-induced mental health concerns among healthcare workers at a public hospital in New York City

Title

COVID-19 and stress-induced mental health concerns among healthcare workers at a public hospital in New York City

Authors

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Introduction

As coronavirus disease 2019 (COVID-19) continues to spread around the world, healthcare workers (HCWs) are facing a range of stressors on a daily basis including tremendous increase in workload, exposure to life-threatening disease, and shortage of resources. [1] HCWs' motivation to alleviate the suffering of others might exceed their ability to deliver the care needed. [2-4] It potentially results in mental exhaustion or even psychological disorders.[5-8] This study aims to analyze HCWs' professional quality of life (ProQOL) and trauma-related mental health concerns in the midst of COVID-19 pandemic, and on the same time investigating associated risk factors.

Methods

This is a cross-sectional study of HCWs at NYC Health + Hospitals/Lincoln from May-July 2020. Each consenting employee completed an online de-identified, self-administered questionnaire, which obtained information about demographics, role in the hospital, years of experience, any behavioral/emotional health issues, COVID-19 exposure, residential status etc. The survey used standardized validated tools to assess ProQOL including compassion satisfaction (CS), burnout (BO), and secondary traumatic stress (STS), [9] as well as post-traumatic stress disorder (PTSD). [10] Coronavirus anxiety (CA) scale and obsession with COVID-19 (OC) scale were used to determine dysfunctional anxiety and persistent thinking about COVID-19, respectively. [11, 12] To determine potential independent risk factors for the various outcomes, multiple logistic regression analysis was performed.

Results

Among 1,113 HCWs, 889 completed all of the questions in the survey. A majority of respondents reported high CS (54.1%), low BO (58.8%), and low STS (53.4%) with respect to their work. The overall prevalence of probable PTSD was 24.3%, and the rate of OC and CA was 20.6% and 8.3%, respectively. Baseline characteristics and intergroup differences were shown in Table 1. 60.9% of respondents provided direct clinical care to COVID-19 patients. Independent risk factors were shown in Table 2 adjusting for all baseline characteristics. Behavioral/emotional health concern prior to the outbreak was associated with all measured outcomes: CS (OR=0.322, p

Conclusion

The high grade of ProQOL among staffs is testament to their courage and commitment to patients. The prevalence of PTSD and obsession especially among those with prior mental health concerns underscores the significance of improving wellbeing in our profession. [13] While our study attempts to identify the “at risk” group among HCWs, it is clear that organizational interventions should be implemented to help HCWs maintain caring attitudes and promote self-care.

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NEW YORK POSTER FINALIST - RESEARCH Bo Yu, MD

Empiric use of therapeutic dose of anticoagulation in hospitalized patients with COVID-19: a propensity score-matched study of risks and benefits

Title

Empiric use of therapeutic dose of anticoagulation in hospitalized patients with COVID-19: a propensity score-matched study of risks and benefits

Authors

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Introduction

Hospitalized patients with COVID-19 have been shown to develop thromboembolism even on standard prophylaxis. [1, 2] Empiric use of therapeutic dose of anticoagulation (AC) was suggested for patients with high risk but unconfirmed thromboembolism by some investigators. [3-5] Not enough data are currently available with respect to the risks and benefits.

Methods

We retrospectively reviewed 1189 patients hospitalized for COVID-19 between March 15 and May 15, 2020. Patients who died or were discharged within 48 hours after the presentation to the emergency room, who were transferred to another facility, who were on long-term AC prior to the admission, and who had therapeutic AC started more than 7 days after the admission were excluded. Risk of bleeding was evaluated by the Hypertension, Abnormal renal/liver function, Stroke, Bleeding, Labile International Normalized Ratio (INR), Elderly, Drugs or alcohol use (HAS-BLED) score. [6] Propensity score matching (ratio: 1:2, caliber: 0.3) of baseline characteristics and parameters on admission was performed to minimize bias between cohorts.

Results

A total of 973 patients entered the analytic phase. 44 patients received therapeutic AC for well-acknowledged indications including confirmed thromboembolic events (n=28, 2.9%) and atrial fibrillation and were excluded. (Figure 1) After propensity score match, 133 patients were exposed to empiric therapeutic AC while 215 were only on prophylactic AC. Patients who received therapeutic AC showed a higher incidence of major bleeding (13.8% vs 3.9%, p <

0.001). There was no difference on the rate of invasive mechanical ventilation (73.7% versus 65.6%, p = 0.133) or mortality (60.2% versus 60.9%, p = 0.885). Multivariate cox regression analysis showed among patients requiring invasive mechanical ventilation, therapeutic AC was an independent predictor of a lower mortality (hazard ratio [HR] 0.476, 95% confidence interval [CI] 0.345-0.657, p < 0.001) after adjusting for age, gender, ethnicity, chronic comorbidities, COVID-19 severity, sepsis, and acute kidney injury, with a longer median survival (14 days vs 8 days, p < 0.001). However, no mortality benefit was observed in the overall participants (p = 0.063). (Table 1, Figure 2) HAS-BLED score =2 was associated with a high risk of mortality (HR 1.482, 95% CI 1.110-1.980, p = 0.008), while a score =3 was associated with a higher risk of major bleeding (Odds ratio: 1.883, CI: 1.114-3.729, p = 0.016). (Table 1 and 2)

Conclusion

Empiric use of therapeutic dose of AC conferred survival benefit to critically ill patients, but not to non-critically ill patients hospitalized for COVID-19. Careful bleeding risk estimation should be pursued before considering escalation of AC doses.

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NORTH CAROLINA POSTER FINALIST - RESEARCH Robert Dorrell

Assessment of Venous Thromboembolism Prophylaxis Adherence Rates in Inflammatory Bowel Disease at an Academic Medical Center

Title

Assessment of Venous Thromboembolism Prophylaxis Adherence Rates in Inflammatory Bowel Disease at an Academic Medical Center

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Introduction

Inflammatory Bowel Disease (IBD) is a chronic inflammatory disease that primarily affects the gastrointestinal (GI) tract. This condition can also cause extraintestinal complications. Venous thromboembolism (VTE) is particularly prevalent in IBD patients (IBDP). However, IBDP also have a propensity for GI bleeding during IBD exacerbations. With a risk for both VTE and GI bleeding, the decision to start VTE prophylaxis (VTEP) in hospitalized IBDP poses a conundrum. The American College of Chest Physicians currently recommends such patients receive VTEP as data from numerous randomized controlled trials demonstrates VTEP is not associated with an increased risk of bleeding. The goal of this study was to evaluate the rate of VTEP compliance at our hospital.

Methods

An IRB-approved, retrospective cohort study was conducted following all IBDP admitted at Wake Forest Baptist Medical Center during a 6-month study period. Demographics, admission diagnosis, admission medications, presenting symptoms, and medical history were collected and stored in a secured database. Wald confidence intervals and odds ratio estimates were used to assess significance.

Results

One hundred fifty IBDP were admitted during the study period. There were 56 (37%) IBDP admitted for an active disease flare. Patients admitted with IBD-related complaints were much less likely to receive VTEP in comparison to those without IBP-related complaints, 18% vs. 79%. Twenty-three (15%) patients were admitted for hematochezia, of these patients only 5 (22%) received VTEP on admission. There were 98 IBDP with a history of GI bleeding (65%), 47% received VTEP. Odds ratio estimates showed IBD-related admissions, hematochezia, and history of GI bleed were negatively associated with VTEP adherence rates.

Conclusion

Our analysis demonstrates a statistically significant decrease in administration of VTEP in IBDP admitted for an IBD related complaint, hematochezia, and patients with a history of GI bleed. Only 18.2% of patients admitted with an active IBD flare were given VTEP. This shows a major deficit in our hospital's adherence to the ACCP guidelines of VTEP administration in IBDP. Future directions of these findings are ongoing and include implementation of a Best Practice Advisory (BPA) into the electronic medical record to encourage VTEP for IBDP. After a trial of this BPA, a similar analysis will be repeated to evaluate the efficacy of the measure.

NORTH CAROLINA POSTER FINALIST - RESEARCH Erin M Finn

Going Back to the Basics at the Bedside: Instituting Physical Exam Teaching Rounds to Improve Skills and Teaching in Residency

Title

Going Back to the Basics at the Bedside: Instituting Physical Exam Teaching Rounds to Improve Skills and Teaching in Residency

Authors

Erin Finn, MD Victoria Bender, MD Carlos Rubiano, MD Nathaniel Warner, MD David Lynch, MD Nicholas Maston, MD Katherine A. Despotes, MD James Rogers, MD Brian Bramson, MD

Introduction

Resident competence in physical exam skills is lacking.6,7 Despite the advantages technology has afforded modern medicine, the reliance on laboratory and radiologic data has contributed to a decline in bedside clinical skills. Multiple articles report that bedside teaching has declined, from once making up about 75% of clinical teaching in the 1960s to only 16% by 1978.3 Over time, residents have become less familiar with physical signs, causing them to place less importance on this part of patient care. Physical exam teaching in medical school is variable and few residency programs have formal physical exam teaching curricula. Improving on these skills relies on the senior residents or attending physicians to actively seek out teaching opportunities or work these into daily rounding. The inherent problem, however, is that if senior residents and faculty themselves are lacking confidence in physical exam skills, they are less likely to teach junior residents, leading to an ever-worsening cycle.

Methods

We created a program of weekly physical exam rounds for residents led by a resident on our existing medical education elective and an attending skilled in bedside teaching. Patients with key physical exam findings are identified by residents each week and placed on a designated EMR list. The resident is primarily responsible for the pre-planning as well as teaching of bedside rounds. The faculty member functions to help the resident plan his or her teaching, provide expert commentary throughout the session, and provide feedback to the resident after rounds.

Results

Literature supports the need for more directed teaching in physical exam skills in residency – in our experience, though, many well-intentioned physical diagnosis rounds are ultimately unsuccessful due to lack of sustainability. Much of this may stem from the amount of preparatory work required beforehand. We believe we may have circumvented some of those obstacles in that a rotating resident manages the majority of planning and teaching. This allows the core group of faculty members to remain involved without being over-extended. Our program fosters mentorship by affording faculty the opportunity to not only teach physical exam skills, but also mentor and give feedback to a new bedside teacher. We hope that by incorporating physical exam teaching rounds into our pre-existing medical education elective, our program will remain in place for years to come. We plan to prospectively evaluate resident confidence and physical exam performance in the near future.

Conclusion

Creating a dedicated curriculum for bedside teaching in physical exam has reintroduced clinical skills that have declined over recent decades. Our programs sustainability will allow residents to experience this teaching in years to come, with the hope that upon graduation, they will have acquired the skills to incorporate bedside teaching into their own clinical practice.

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NORTH CAROLINA POSTER FINALIST - RESEARCH Zahra Hamedi, MD

Immune-Related thyroid dysfunction in different Lung Cancer Tumors, Adverse Event Grade and Need for Thyroid Hormone Replacement Therapy

Title

Immune-Related thyroid dysfunction in different Lung Cancer Tumors, Adverse Event Grade and Need for Thyroid Hormone Replacement Therapy

Authors

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Introduction

Therapeutic blockade of the Programmed cell death protein 1 and ligand (PD-1/PD-L1) immune checkpoint using immune checkpoint inhibitors (ICI) has been a promising form of advanced lung cancer treatment. Thyroid dysfunction is a common side effect of immune checkpoint inhibitors, but the underlying causes of this ICI-mediated thyroid dysfunction remain unclear. The current belief is that the thyroid manifestations seen in patients receiving PD-1/PD-L1 checkpoint inhibitors mainly represent autoimmune phenomenon. In our study we looked at the severity of thyroid Immune-related adverse events (irAE) among different lung malignancies and incidence of thyroid hormone replacement therapy (Levothyroxine) in each group.

Methods

A total of one hundred and thirty two lung cancer patients treated with immunotherapy at East Carolina University between April 2014 and July 2019 who experienced thyroid related irAE were included in a retrospective cohort analysis. Pre-treatment TSH and TSH at each treatment cycle were recorded, in addition to lung cancer type, agent used, timing of thyroid dysfunction, grade of thyroid dysfunction and need for levothyroxine treatment. A TSH of 4.0 was defined as abnormal and irAE grade was designated based on the Common Terminology Criteria for Adverse Events (CTCAE). The incidence of thyroid irAE, grade and need for levothyroxine treatment were analyzed using chi square tests.

Results

Of the one hundred thirty-two patients treated with immunotherapy who developed thyroid irAEs, 61.4% had adenocarcinoma, 25.7% had squamous cell carcinoma and 12.9% had small cell lung cancer. Of the adenocarcinoma group; 73% had grade I irAE with 5% requiring hormone replacement, 24% had grade II irAE with 68% requiring hormone replacement and 3% had grade III irAE with 100% requiring treatment. Of the squamous cell group; 50% had grade I irAE with no patients requiring treatment, 38% had grade II irAE with 54% requiring treatment and 8% had grade III irAE with 100% requiring treatment. The SCLC group had 76% patients with grade I irAE and no patients required treatment and 24% had grade II irAE with 75% requiring levothyroxine replacement. There was no cases of grade III irAE in SCLC group. There was no statistically significant difference of thyroid irAE grading between lung cancer types $X2$ $(4, N =132) = 8.01$, $p = .085$ or the need for levothyroxine treatment between lung cancer types $X2$ $(2, N =132) = 1.04$, $p = .59$.

Conclusion

Our study showed no significant difference in grade of PD1/PD-L1 related thyroid dysfunction or need for thyroid hormone replacement therapy) between lung Adenocarcinoma, Squamous cell Carcinoma or Small Cell Carcinoma. Additionally, our data indicates that most thyroid irAEs are of low grade and don't require treatment. Although clinicians should continue to be aware of the possibility of thyroid irAEs in patients treated with ICI, there is no propensity for a specific lung cancer type to have a higher grade irAEs or to require levothyroxine therapy.

NORTH CAROLINA POSTER FINALIST - RESEARCH Jeremy Hess

Unmasking the Face of the Malnourished Adult: A Retrospective Analysis

Title

Unmasking the Face of the Malnourished Adult: A Retrospective Analysis

Authors

Jeremy Hess, DO; Michael Pietrangelo, DO

Introduction

Moderate and severe protein calorie malnutrition are a prevalent public health issue even in developed countries (1,2). Malnutrition is associated with increased mortality in numerous disease states at varying levels of healthcare including patients with heart failure, cancer, the critically ill, and the elderly (3,4,5,6). Malnutrition is also an independent risk factor for susceptibility to parasitic infections and associated with longer hospital stays (7,8). We sought to develop an understanding of our healthcare system's malnutrition risk factors, and groups at risk, so that we may be able to help close health disparity gaps and improve the health outcomes of our community at large.

Methods

This was a retrospective observational study of 8,000 patients in a rural community hospital system who had been diagnosed with moderate or severe protein calorie malnutrition. Demographic and socioeconomic variables including sex, age, marital status, ethnicity, home zip code, 2018 average household income and population for their home zip code per the United States Census Bureau, primary language, body mass index (BMI) with stratification according to the Center for Disease Control, insurance payor, primary care provider (PCP), and chronic disease registry status (includes congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), or chronic kidney disease stage 5 (CKD)). Patients were divided into subgroups based on this data and contingency tables were created, with t-test comparisons, and linear regressions for graphical data.

Results

In comparison of elderly (age 65+) male adults versus non-elderly (age 18-64), there was a significantly higher proportion of non-elderly underweight patients (p 0.022) than elderly underweight. Meanwhile the elderly males had greater proportions of normal weight (p

Conclusion

This study breaks the convention of the stereotypical frail, elderly, underweight patient that is often depicted as the predominantly malnourished but rather shows a greater prevalence of underweight, non-elderly patients comprising our local malnourished population. Also highlighted is the prevalence of obesity in the malnourished, reminding providers to look beyond BMI and dig deeper when evaluating a patient's nutritional status. By better characterizing this group of affected patients, we hope to increase physician awareness as to the profile of the malnourished within our region and create better screening tools to identify all of those affected so their needs can be properly addressed.

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NORTH CAROLINA POSTER FINALIST - RESEARCH Hillary Spangler

Implementation of a hospital medicine procedure service: 5-year experience of an academic medical center

Title

Implementation of a hospital medicine procedure service: 5-year experience of an academic medical center

Authors

Hillary Spangler, MD (1) Ria Dancel, MD (1) John Stephens, MD (1) 1. Departments of Internal Medicine and Pediatrics, University of North Carolina School of Medicine, Chapel Hill, North Carolina

Introduction

Procedural complications are a common source of adverse events in hospitalized patients (1, 2). In academic centers, bedside procedures have traditionally been performed by trainees, often without experienced proceduralist supervision, or referred to interventional radiology or consultant services, often with an associated delay in procedure performance. Many trainees report discomfort with their skill in performing and supervising procedures (3-5). In order to address these concerns, a number of centers have established medicine procedure services (MPS) (6-10). Our objective was to report our five-year experience after establishing a hospitalist run MPS, including procedural volume, complication rates, and revenue.

Methods

We conducted a retrospective analysis of all patients referred to the MPS for a procedure between 2014-2018. We performed manual chart review for all encounters to identify complications of large volume paracentesis, thoracentesis, central venous catheterization, and lumbar puncture by residents and attending MPS physicians. Charts were reviewed for immediate (within 72 hours of procedure) and delayed complications. We queried hospital medicine billing data for CPT codes for procedures performed by our MPS both before and after implementation of the MPS.

Results

The MPS performed 3,633 procedures with large volume paracentesis being the most common. Trainees performed 74.3% of procedures, which were ultrasound-guided 88.7% of the time. Thoracentesis was complicated by pneumothorax in 3.7% of cases, with only 0.5% complicated by bleeding. Bleeding accompanied only 0.1% of lumbar punctures. Post-dural puncture headaches occurred in 13.9%. Leaking was the most common complication for paracenteses (1.6% diagnostic, 3.7% large volume) and bleeding was the most common complication of central venous catheter placement (3.5%). Our complication rates compared favorably to those previously published (10). Prior to initiation of the MPS in 2013, our department's procedural charges totaled only $90,437. After MPS initiation, charges steadily increased, averaging $787,352 in the last 4 years of the study period.

Conclusion

Implementation of an MPS at our institution resulted in a large volume of procedures, high rate of trainee participation, low rates of complications, and steady increase in procedural revenues over five years. Wider adaptation of this model at academic centers has great potential for furthering trainee education while providing safe procedural patient care.

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OHIO POSTER FINALIST - RESEARCH Omar Badawi

Utility Evaluation of a Multidisciplinary Disposition Clinic in a Resident Office

Title

Utility Evaluation of a Multidisciplinary Disposition Clinic in a Resident Office

Title

Utility Evaluation of a Multidisciplinary Disposition Clinic in a Resident Office

Authors

Omar Badawi MD, Stephannie Aronovic MD, MPH; Jay Anderson DO, David Sypert DO, Lauren Spaeth OMS II, Emily Stansbury BA,CCRC

Authors

Omar Badawi MD, Stephannie Aronovic MD, MPH; Jay Anderson DO, David Sypert DO, Lauren Spaeth OMS II, Emily Stansbury BA, CCRC

Introduction

The Hospital Readmission Reduction Program (HRRP), established under the Affordable Care Act (ACA), caused health care systems to reevaluate the discharge process to avoid payment reduction for excess readmissions. The post-hospitalization follow-up appointment is a key factor in preventing readmissions. While the HRRP provides recommendations on time to follow-up for select diagnoses, those known to be of higher risk for readmission, there are no other standards of care provided. Taking this into consideration, supplemented by the underserved and complex population of a graduate medical education environment, our multidisciplinary disposition clinic was designed with an aim to reduce the 30-day readmission.

Introduction

The Hospital Readmission Reduction Program (HRRP), established under the Affordable Care Act (ACA), caused health care systems to reevaluate the discharge process to avoid payment reduction for excess readmissions. The post-hospitalization follow-up appointment is a key factor in preventing readmissions. While the HRRP provides recommendations on time to follow-up for select diagnoses, those known to be of higher risk for readmission, there are no

other standards of care provided. Taking this into consideration, supplemented by the underserved and complex population of a graduate medical education environment, our multidisciplinary disposition clinic was designed with an aim to reduce the 30-day readmission.

Methods

Chart review was conducted for baseline data analysis from March 2019 through the disposition clinic opening on August 14th, 2019. Patients were included if they met one of the following criteria: admitted under the housestaff service or were an established outpatient admitted to another primary service with housestaff consultation and followed up after discharge. The primary endpoint was the 30-day readmission rate followed by three secondary endpoints: 30-day observation or emergency department visits, readmission up to 90-days, and average days to follow-up. The first PDSA cycle compared our standard discharge follow-up with the multidisciplinary clinic. The standard process consisted of patients being seen in the housestaff continuity clinic in a 15-minute time slot. The multidisciplinary clinic created extended time slots, one afternoon per week, consisting of a hospitalist, designated resident, pharmacist and rounding transition of care (TOC) nurse. Additional clinic staff were dependent on patient requests and included financial aid and social work. Unexpectedly, PDSA cycle two started on January 11th, 2020 following the vacancy of the TOC nursing position. Cycle two ended on March 11th, 2020 as a result of the global pandemic and shift to telehealth medicine.

Results

Including baseline data, a total of 247 unique patients were reviewed creating 326 separate encounters over the study period. The standard clinic evaluated one-hundred and seventy-five patients in 244 separate encounters; average age of 59.7 years with 65% females.. The multidisciplinary clinic evaluated seventy-two patients in 82 separate encounters: average age 54.9 years with 50% females. Baseline analysis (n= 152) of the primary endpoint, 30-day readmission, was 18.42%, 95 CI [13.1, 25.3]. PDSA cycle one demonstrated comparable readmissions between the control group (n= 60) 15 %, 95 CI [8.1, 26.1] and intervention group (n= 57) at 14%, 95 CI [7.3, 25.3]. PDSA cycle two demonstrated a higher readmission rate in the intervention group (n= 25) at 28%, 95 CI [14.3, 47.6] compared with the standard (n= 32) at 12.5%, 95 CI [5, 28.1] however was not statistically significant. In addition, there were no statistically significant secondary endpoints reviewed.

Conclusion

Despite not demonstrating statistically significant data, our study provided insight into the key components of preventing 30-day readmission, communication and coordination of care. Understanding the limitations of our study; the unexpected key staff vacancy and early termination of cycle two will create an opportunity to readdress our aim and interventions once normalcy has resumed.

OHIO POSTER FINALIST - RESEARCH Faris Hammad

Role of Endoscopic Vacuum Therapy in the Management of Esophageal Anastomotic Leak: A Systemic Review and Meta-Analysis.

Title

Role of Endoscopic Vacuum Therapy in the Management of Esophageal Anastomotic Leak: A Systemic Review and Meta-Analysis.

Authors

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Introduction

Anastomotic leak is one of the serious complications after esophagectomy with an incidence rate of 3–25%. The optimal treatment for anastomotic leak remains unclear. Conservative management, surgical conversion, and/ or endoscopic management with clipping or stent placement, have been the traditional methods to manage anastomotic leak. However, they have been associated with high adverse events and failure rates. Endoscopic Vacuum Therapy (EVT) is an emerging technique for management of anastomotic leak. EVT is based on applying continuous negative pressure on the leak site by polyethylene sponges which facilitate drainage of the leaking fluid, proximate the edges and induce granulation tissue formation. In our study, we aim to assess the clinical success and adverse event rates of EVT in the management of Esophageal Leaks.

Methods

We searched PubMed, Cochrane Library, and Scopus from inception to January 2020 for studies reporting the clinical success and adverse event rates of EVT for esophageal anastomotic leaks. We excluded studies with

Results

Fourteen studies (11 retrospective and 3 prospective) involving 229 patients with esophageal anastomotic leak and treated by EVT, were included in this study. The indication of esophagectomy was esophageal cancer in all patients. The pooled overall clinical success rate was 89.1% (95% CI: 85.1–93%, I2 = 0%). The pooled complication rate was 14.5% (95% CI: 5.8–23.3%, I2 = 69.1%). The most common complication was strictures in 14 cases followed by endosponge dislocation in 5 cases. Stent placement was required in 10.1% of the cases whereas surgical conversion was required in 2.2% of the cases. EVT-related mortality was reported in two cases.

Conclusion

EVT is a novel modality and it seems to be a safe and effective approach of therapy in patients with anastomotic leak after esophagectomy. However, large prospective studies comparing it with the traditional methods are warranted.

OKLAHOMA POSTER FINALIST - RESEARCH Aamina Shakir, MD

Implementation of a standardized admission order set for heart failure admissions to the PCIS service

Title

Implementation of a standardized admission order set for heart failure admissions to the PCIS service

Authors

Aamina Shakir, M.D.; Jena Nimri, M.D.; Anam Siddiqui, M.D.; Muhammad Bajwa, M.D.; Ahmad Hassan, M.D.; Sarah Nimri, M.D.; Sowmya Srimanthula, M.D.; Anum Fayyaz, M.D.; Stephen Travis, M.D.; Mary Zoe Baker, M.D.

Introduction

Implementation of a standardized order set for congestive heart failure (CHF) exacerbation admissions has been shown to reduce mortality, readmission rates, and cost. While a CHF order set exists in Meditech, the electronic medical records system used at the University of Oklahoma Medical Center (OUMC), it is largely unknown to internal medicine residents. This study aimed to standardize use of the order set for CHF admissions to the resident-run inpatient cardiology service (known as PCIS). Our goals were to 1.) decrease readmissions; and 2.) improve resident satisfaction by increasing workup/treatment efficiency compared to de novo order entry.

Methods

This intervention was conducted from December 2019-April 2020. The checklist-formatted Meditech CHF order set was printed and posted in the PCIS team room to maximize accessibility. At the beginning of each month, we educated the oncoming residents about the order set with instructions to follow it for each CHF admission. We collected daily patient lists throughout the intervention period. The information technology department provided a list of all CHF patients hospitalized at OUMC during the pre-intervention period September-November 2019. Chart review was conducted for all patients in the pre-intervention and post-intervention groups to compare overall and 30-day all-cause readmission rates. Inclusion criteria were: 1.) CHF exacerbation as at least one of the admitting diagnoses; 2.) admission to PCIS (the majority of patients) OR CHF management by PCIS (this applied to some ICU/weekend-floor consults, as

PCIS acts as primary team in such instances). Lastly, participating PCIS residents were provided a satisfaction survey to assess whether they subjectively felt that using the order set improved efficiency/outcomes.

Results

142 patients met criteria for analysis: 71 in the pre-intervention group, 71 in the post-intervention group. In the pre-intervention group, 29/71 (41%) patients were readmitted; 14/29 readmissions (48%) were within 30 days. In the post-intervention group, 16/71 (22.5%) patients were readmitted; 6/16 readmissions (37.5%) were within 30 days. The decrease in overall/30-day readmissions in the post-intervention group was not statistically significant ($z=1.657$, CI [-0.0305, 0.2286]). 6/12 (50%) PCIS residents completed the satisfaction survey. 5/6 (83%) agreed or strongly agreed that the order set increased efficiency; 5/6 (83%) agreed or strongly agreed that it helped them remember orders they may have otherwise forgotten; 4/6 (67%) felt neutral as to it decreasing length of stay; 5/6 (83%) disagreed or strongly disagreed that it lacked important orders; and 5/6 (83%) rated their experience with it satisfactory or highly satisfactory (the 6th participant left this question unanswered). All recommended adding fluid restriction and low-salt diet to the order set.

Conclusion

The positive feedback suggests that the CHF order set does increase resident satisfaction and efficiency. Both overall and 30-day readmission rates were lower in the post-intervention group. Although the difference was not statistically significant, by limiting our intervention to the PCIS team, we could only test a small percentage of CHF admissions to OUMC. Expanding the intervention to resident and hospitalist ward teams may provide more accurate results.

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PENNSYLVANIA POSTER FINALIST - RESEARCH Sharmila Bisaria, DO

Association of Elevated Levels of Inflammatory Marker High-Sensitivity C-Reactive Protein and Hypertension

Title

Association of Elevated Levels of Inflammatory Marker High-Sensitivity C-Reactive Protein and Hypertension

Authors

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Introduction

Hypertension is managed in primary care and a major risk factor for stroke and cardiovascular disease. Despite current therapies, hypertension remains a prevalent cardiac, renal, and cerebrovascular risk factor [1, 2]. Hypertension, smoking, diabetes and hyperlipidemia, are risk factors for cardiovascular diseases. Reduction of these factors is known to improve cardiovascular morbidity and mortality. However, these factors are absent in half of the patients with cardiovascular disease [3]. Identification of other modifiable factors in persons without a diagnosis of hypertension may allow for further interventions to prevent development of hypertension and cardiovascular events. Hypertension is an inflammatory disease triggered by angiotensin II [4, 5]. Angiotensin II triggers a response which increases vascular permeability, migration and adhesion of inflammatory markers, increased levels of VEG-F causing proliferation of vasculature, and increased levels of endothelin, stiffening vasculature. [4]. As an inflammatory process, studies postulate that measurement of high-sensitive C-reactive protein (hs-CRP) may be a marker for early development of hypertension. Remodeling of the vasculature causes arterial stiffness [6, 7] and progression to hypertension [8]. Hs-CRP levels are correlated with high systolic and diastolic pressures [1, 5]. Our retrospective study investigates the correlation between hs-CRP levels and hypertension. Early detection and initiation of anti-hypertensive agents at the onset of elevated hs-CRP in patients that have not met criteria for hypertension, may prevent progression of an inflammatory

response and further vascular complications. We hypothesized that there is a significant correlation between hs-CRP and the development of hypertension.

Methods

Electronic medical records of 169 adult patients in our medicine office were reviewed for hs-CRP levels, and divided into group A (elevated hs-CRP =2 mg/L; n=110) and group B (hs-CRP (

Results

Among subjects with elevated hs-CRP, 58.2% had hypertension while 47.5% of subjects with normal hs-CRP levels had hypertension (P=0.182). There was a direct correlation between elevated hs-CRP levels and coronary artery disease, hypothyroidism, cerebrovascular disease, and white blood cell count. Normal Hs-CRP levels correlated with alcohol use, statin use, dementia, and normal to elevated high-density lipoprotein (HDL) levels.

Conclusion

Although a higher frequency of association of hypertension was observed in elevated hs-CRP group compared to normal hs-CRP group, the difference in the frequencies was not statistically significant. Hs-CRP had statistically significant associations between alcohol use, white blood cell count, and HDL levels. Promising but not statistically significant associations were observed between hs-CRP and statin therapy, hypothyroidism, coronary artery disease, and cerebrovascular disease. We highlight the utilization benefits that hs-CRP levels may provide physicians when managing hypertension, coronary artery disease, cerebrovascular disease, and hypothyroidism. Hs-CRP has potential to be a screening tool and measure of treatment efficiency. Further studies with a larger sample size would be beneficial in assessing whether hs-CRP can be used to manage hypertension and other critical vascular diseases.

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PENNSYLVANIA POSTER FINALIST - RESEARCH Aumi Brahmbhatt

The Post-Surgical Debriefing Checklist: A Pilot Project

Title

The Post-Surgical Debriefing Checklist: A Pilot Project

Authors

Aumi Brahmbhatt MD, Calliope O'Shea MS3, Cheryl Semmel RN, Zachariah Goldsmith MD, PhD, Parampreet Kaur MD

Introduction

The World Health Organization's Surgical Safety Checklist (2009) itemizes a list of steps to maximize patient safety in the operating room - a component of which is the Preoperative Timeout. A recent publication demonstrated a reduction in 30-day surgical mortality following implementation of a formal debriefing program (Rose and Rose 2018). Debriefing - a part of the Surgical Safety Checklist - is a focused post-operative meeting that provides a platform for members of the surgical team to discuss specific aspects about the case, and is designed to increase safety and accuracy. However, these meetings are not widely implemented in operating rooms despite being an essential step, opening a window to the potential of patient harm. Our pilot project shows how important a more formalized debriefing process is to improve patient safety.

Methods

We developed a focused post-operative debriefing checklist that would be integrated into the St. Luke's Anderson Hospital operating room system. The protocol would be followed with a focus on the following endpoints: the number of surgical near misses and efficiency of workflow evaluated over a 6-month period. A standardized debriefing form was created and performed by the circulating nurse following each surgical procedure. This was implemented and tracked for every procedure beginning in September 2019. Surgical near misses were tracked following the implementation period for a total of 10 months, and 348 debriefing forms were analyzed to determine the impact of the debrief on surgical workflow. An obstacle in this project was receiving incomplete forms. In response to this issue, the team modified the form to create a more streamlined, less time-consuming debriefing form.

Results

There were a total of 8 near misses between January and June 2019 before the debriefing checklist process was implemented. After implementing the postoperative debriefing step, we saw an overall downward trend in near misses and improved workflow. Full completion of the checklist was observed in 92% of surgical cases, and following implementation, zero surgical near misses were identified during this 9-month follow-up period. Additionally, debriefing was found to identify workflow improvements in 16% of cases, including modifications to surgical equipment and changes to surgeons' preference cards.

Conclusion

The use of checklists in surgery and medicine has improved patient care and patient safety. Our project demonstrates that the use of our debriefing safety checklist improved our near-miss rate to zero in nine-months of follow-up. Debriefing has since become a component of surgical best practice within our network, and the pilot project is now instilled into the EPIC system. This has now become a mandatory element of every surgical case at all network hospitals.

PENNSYLVANIA POSTER FINALIST - RESEARCH Gregory F Churchill

An American Hospital on the Cusp: Unveiling Structural Racism in the Era of COVID-19

Title

An American Hospital on the Cusp: Unveiling Structural Racism in the Era of COVID-19

Authors

Gregory Churchill DO, Julianna Tantum DO, and Benjamin Larson MD

Introduction

Public health agencies are releasing harrowing data showing a disproportionately high number of COVID-19 diagnoses and deaths within black communities. For example, according to researchers at Ochsner Health in Louisiana, from March 1st through April 11th, 76.9% of those hospitalized with COVID were black patients and 70.6% of those who died were black, yet blacks only comprise 31% of the Ochsner Health population. Nationwide, blacks make up a majority of nearly 20% of the counties in the United States, yet accounted for 52% of COVID-19 diagnoses and 58% of COVID-19 deaths prior to April 13th. It is clear that black Americans have experienced disproportionate morbidity from SARS-CoV-2. In order to investigate the role of racial inequality in the COVID-19 pandemic in the Philadelphia area, we examined the rates of COVID-19 infection in our community. Lankenau Medical Center is a community academic hospital perched between two very different urban environments. It straddles Lower Merion Township, Pennsylvania, which has the 5th highest per capita income in the country and is 85.7% white, and West Philadelphia, which is 76.2% Black with approximately one quarter of its residents living below the poverty line. We have a unique opportunity to analyze how COVID-19 has affected our local community in regards to race.

Methods

Using de-identified data from EPIC with its Slicer Dicer function, we looked for differences in COVID-19 impact on black and white patients at Lankenau Medical Center.

Results

Since the adoption of EPIC at Main Line Health in 04/2018, there have been 74,623 black and 149,628 white individuals cared for in some capacity at Lankenau Medical Center as of 11/24/20. We compared the rates of a positive assay for detection of SARS-CoV-2 by PCR for any patient with an encounter at Lankenau Medical Center. During the first two months of the pandemic in Pennsylvania (3/6/20 - 5/6/20) Lankenau tested 1,449 black patients of which 580 were positive (40.0%). Within this same timeframe, 1,049 white patients were tested resulting in 289 positive tests (27.6%). OR = 1.76, CI 1.48-2.08, $p < .0001$ Within the last two months of the pandemic in Pennsylvania amid an active surge (9/24/20 - 11/24/20) Lankenau tested 3,158 black patients of which 349 were positive (11.1%). Within this same timeframe, 5,052 white patients were tested resulting in 214 positive tests (4.2%). OR = 2.80, CI 2.25-2.35, $p < .0001$

Conclusion

The COVID-19 pandemic has placed American racial inequality in sharp relief. Our data are congruent with reports published around the country, showing the disproportionate effect COVID-19 is having on black communities. Higher rates of infection are likely multifactorial; ongoing research is needed to disentangle the relative contributions of socioeconomic status (itself a proxy for risk of comorbidities like obesity, diabetes, and uncontrolled hypertension) from other factors such as chronic stress from racial discrimination. This abstract offers an example of concrete local numbers to contextualize the unequal racial impact of COVID-19.

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PENNSYLVANIA POSTER FINALIST - RESEARCH Shumail Fatima, MBBS MD

Transthyretin Cardiac Amyloidosis Independently Predicts Thromboembolic Risk in Atrial Fibrillation

Title

Transthyretin Cardiac Amyloidosis Independently Predicts Thromboembolic Risk in Atrial Fibrillation

Authors

Syed Bukhari MD, Amr Barakat MD, Shumail Fatima MD, Ricardo Nieves MD, Sandeep Jain MD, Samir Saba MD, William P Follansbee MD, Amy Brownell CRNP, and Prem Soman MD PhD

Introduction

Tc-99m pyrophosphate scintigraphy (PYP) has unmasked a high community prevalence of transthyretin cardiac amyloidosis (ATTR-CA). Atrial infiltration with amyloid fibrils predisposes to arrhythmias, however the prevalence of atrial fibrillation (AF) and the incidence of thromboembolic risk in ATTR-CA patients is unknown. Our study was aimed to determine the prevalence of AF in ATTR-CA and compare the incidence of thromboembolism in AF patients with and without ATTR-CA.

Methods

We studied patients who underwent Tc-99m PYP scintigraphy between 06/2016 and 06/2020. ATTR-CA was diagnosed by a positive Tc-99m PYP (defined as Perugini grade 2 on a planar image and a diffuse myocardial tracer uptake on SPECT imaging) in conjunction with negative serum studies for light-chain amyloidosis. We compared the prevalence of AF in patients with and without ATTR-CA and the incidence of thromboembolism (ischemic stroke, transient ischemic attack or peripheral embolism) in AF patients with ATTR-CA (AF-ATTR) and without (AF-controls).

Results

Of 277 patients referred for Tc-99m PYP scintigraphy (mean age 78.4 ± 8.0 and 83% men), 77 (28%) had ATTR-CA. The prevalence of AF was markedly higher in patients with ATTR-CA (n=68, 88%) compared to patients with negative Tc-99m PYP scintigraphy (n=77, 39%, p< 0.01).

Compared to AF-controls, AF-ATTR patients had similar age (79±7 vs. 79±8 years, p=0.9) and anticoagulation status (96% vs 94%, p=0.58), lower CHA2DS2-VASc (4.7±1.4 vs. 5.4±1.2, p=0.001), thicker interventricular septum (1.67 ± 0.27 vs 1.50 ± 0.15, p

Conclusion

ATTR-CA is a strong predictor of thromboembolism in patients with AF, independent of CHA2DS2-VASc score, interventricular septal thickness or left atrial size. These findings may have important implications for anticoagulation in patients with ATTR-CA.

PENNSYLVANIA POSTER FINALIST - RESEARCH Hafiz Muhammad Siddique Qurashi, MBBS MD

QI project investigating the use of Sublocade and a Tamper-resistant PICC to administer Outpatient IV antibiotics in Patients with serious infections and Opioid Use Disorder. The STOP OUD Project.

Title

QI project investigating the use of Sublocade and a Tamper-resistant PICC to administer Outpatient IV antibiotics in Patients with serious infections and Opioid Use Disorder. The STOP OUD Project.

Authors

Qurashi H, MD; Dimech C, MD; Kanderi T, MD; Goldman J, MD; Swartzentrubber G, MD; Pineo T, DO.

Introduction

The US opioid crisis is driving up serious infections in Pennsylvania related to intravenous drug use (IVDU).[1] These serious infections require prolonged courses of antibiotics, often resulting in prolonged hospital stays. Extended hospitalizations for monitored parenteral antibiotics for patients with OUD are challenging for patients, reduce bed capacity, and are associated with a significant cost. This quality improvement project safely administers IV antibiotics in a monitored outpatient setting while addressing the patient's opioid use disorder (OUD).

Methods

Participants with OUD, as defined by DSM-5 criteria, and serious infections admitted to inpatient were included in the study. Serious infections were defined as those requiring extended antibiotic therapy. Sublocade (Extended-release buprenorphine) and a tamper-resistant PICC were used to treat patients with serious infections and OUD as an outpatient to reduce hospital length of stay (LOS). A total of 5 patients participated in the project since we start enrolling in April 2020. The pre-STOP-OUD average LOS for patients with serious infection and OUD was 40 days. The average cost per day for patients with a serious infection and OUD was $1,092, as per the Hospital Financial Planning and Analysis Department report. A cost-benefit analysis was performed using these numbers.

Results

Hospital LOS for patients participating in the STOP OUD project was reduced by 30.6 days per STOP OUD patient. All STOP OUD patients completed their antibiotic courses as prescribed, there was no evidence of PICC tampering, and they rated their care as 5/5 on a follow-up questionnaire. One patient developed a PICC-associated DVT. Institutional savings per STOP OUD patient was $33,000. 6.8 admissions could be accommodated in the vacated bed, generating $79,600 per STOP OUD patient. The total financial impact per STOP OUD patient was $112,600.

Conclusion

The STOP OUD project safely reduced hospital LOS for patients with OUD and serious infections. This project also had a favorable financial impact. The number of participants is the limitation of the study. Results will be updated as more participants are enrolled.

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PENNSYLVANIA POSTER FINALIST - RESEARCH Sahar Sultan, MBBS

Relationship Between Pulmonary Hypertension and Clinical Outcomes in COVID-19

Title

Relationship Between Pulmonary Hypertension and Clinical Outcomes in COVID-19

Authors

Sahar Sultan, MD; Kevin Lo, MD Department of Medicine, Albert Einstein Medical Center, Philadelphia, PA

Introduction

Pulmonary hypertension (PH) is a group of heterogeneous diseases with the common feature of elevated pulmonary vascular pressure. Coronavirus disease 2019 (COVID-19) has been shown to have worse outcomes in patients with underlying comorbidities but the influence of PH on the course of the infection is not well understood. This study aims to identify the impact of severity of PH on clinical outcomes in COVID-19 infection.

Methods

In this single-center, retrospective, cross-sectional study, we collected data on 355 patients who were admitted to Einstein Medical Center, Philadelphia from March 1 to April 24, 2020, and tested COVID-19 positive via reverse transcriptase-PCR (RT-PCR). Available echocardiographic data within last 5 years of admission was analyzed. Outcomes were compared among patients with PASP elevation of greater than or equal to 40mmHg vs. those with PASP less than 40mmHg, as seen on echocardiography. Outcomes considered were inpatient mortality, need for mechanical ventilation and the need for continuous renal replacement therapy/hemodialysis (CRRT/HD). Chi square was used to analyze the associations between categorical variables. Non-parametric Mann Whitney U test was used for continuous variables due to skewness.

Results

Out of the initial 355 patients, 77 patients had echocardiographic data available and were included in the study. The majority of the study population was female. 74% of the patients

were African American. Most of the patients had multiple comorbidities; 56% of patients had heart failure while 53% of patients had diabetes. Almost half of the patients had coronary artery disease and 86% had hypertension. There was a significantly higher rate of need for CRRT/HD among patients with PASP greater than or equal to 40mmHg (45% vs. 23%) p=0.045 compared to those with lower PASP values. There was no significant difference in inpatient mortality (32% vs. 26% p=0.620) and need for mechanical ventilation (26% vs. 28% p=1.000).

Conclusion

Patients with COVID-19 who have a greater degree of severity of PH have a higher need for CRRT/HD as compared to patients with a lower degree of elevation in the PASP. However, PH does not have a significant association with inpatient mortality or need for mechanical ventilation. The degree of elevation of PASP may give useful insight into prognostication of COVID-19. Hence, further studies are needed to properly characterize the effects of PH on the clinical course in COVID-19, including the measurement of actual hemodynamic pulmonary pressures via cardiac catheterization.

PENNSYLVANIA POSTER FINALIST - RESEARCH Vikas Yellapu

Automated Office Blood Pressure (AOBP) in Patients with Chronic Kidney Disease: A Pilot Study

Title

Automated Office Blood Pressure (AOBP) in Patients with Chronic Kidney Disease: A Pilot Study

Authors

Eluwana Amaratunga MD, Vikas Yellapu MD, Richard Snyder DO, Carmen Dobrovolschi MD, Michelle Andrion MD, Anish Parameswaran DO, Joseph Jacobs MD

Introduction

Hypertension is a well-known risk factor for cardiovascular disease (CVD), Chronic Kidney Disease (CKD) [1]. Conversely, CKD is a risk factor for hypertension. Obtaining accurate manual blood pressure (BP) readings is challenging in the outpatient venue as readings are affected by confounding variables including white-coat hypertension, clinic temperature, etc. Further, manual blood pressure values are operator dependent and can be less accurate [2-4]. Automated office blood pressure (AOBP) tends to be more closely correlated with the gold standard of daytime ambulatory BP monitoring (ABPM) [4,5]. Few studies have evaluated AOBP in patients with CKD [6-7]. We conducted a pilot study to identify whether there is a difference between AOBP and manual blood pressure (MBP) in a nephrology office.

Methods

This study was conducted in two outpatient nephrology offices. The study included a total of n= 491 patients. The patients had GFR ascertained by their last lab work to determine CKD stage. To ensure reliability, office #1 had the same operator for n=395 and office #2 had different operators for n=96 patients' BP readings. The AOBP monitor was placed on the patient's typical arm at heart level without any clothing under the monitor. Prior to measuring blood pressures, all patients were seated in a darkened quiet room for 3 minutes. Three blood pressure readings were obtained 1 minute apart, and the average value was recorded. Prior to the start of the patient visit, the nephrologist obtained the BP manually. Once data was collected, statistical analysis was conducted with SPSS for mean, standard deviation, and non-parametric testing.

Results

The average AO Systolic Blood pressure (AOSBP) and AO diastolic Blood pressure (AODBP) for both offices were 125±18 mmHg and 65±12 mmHg, respectively. Manual systolic and diastolic pressures (MSBP & MDBP) were 134±19 mmHg and 72±12 mmHg, respectively. A paired comparison showed that AOSBP vs MSBP was lower by 9 mmHg (p<<

Conclusion

Our findings indicate there is a significant difference between AOBP measurements and manual blood pressure measurements in patients with CKD. There are only a few studies 6-7 that have evaluated AOBP in patients with CKD, none with our sample size. CKD is known to have detrimental effects on blood pressure including loss of “nocturnal dipping.” In addition, there is the added stress of visiting a “kidney specialist” which contributes to a white-coat effect. AOBP has already been validated by many studies as being comparable to ABPM. AOBP measurement further eliminates higher blood pressure readings due to confounding variables which reduce the overtreatment of hypertension. Our pilot project demonstrated that there is a clear difference in measurements of BP and that the use of AOBP in the management of hypertension in patients with CKD should be considered instead of manual BP measurements.

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RHODE ISLAND POSTER FINALIST - RESEARCH Dong Joo Seo, MD

Pre-operative SARS-CoV2 Screening with TMA Nasopharyngeal Swab in Asymptomatic Patients undergoing Non-urgent Outpatient Procedures

Title

Pre-operative SARS-CoV2 Screening with TMA Nasopharyngeal Swab in Asymptomatic Patients undergoing Non-urgent Outpatient Procedures

Authors

Dong Joo Seo MD, Seetha Lakshmanan MD, Tarek Nafee MD, Navya Kirla MD, Toubia Nabil MD

Introduction

Pre-operative SARS-CoV2 nasopharyngeal swab screening is performed prior to non-urgent procedures in many institutions in the United States. Some centers opt to treat all patients as presumptive SARS-CoV2 carriers, thus utilizing full personal protective equipment and practicing thorough post-procedural sanitization processes. It remains unknown whether a standardized screening algorithm is effective in capturing asymptomatic SARS-CoV2 carriers to limit exposure to other patients and staff. Our aim was to study the effectiveness of the screening approach used in our center to identify these patients.

Methods

We performed a retrospective study on all patients scheduled for a non-urgent outpatient procedure at our center between 06/03/2020 and 11/18/2020. They were required to undergo a three-step screening process for SARS-CoV2. Firstly, patients were screened for typical symptoms of SARS-CoV2 by phone using a standard questionnaire. Those asymptomatic were then required to undergo transcription mediated amplification (TMA) testing within 72 hours of the procedure. Lastly, those with negative TMA were contacted again for another phone screening 24 hours prior to the procedure. All our patients were tested using the same SARS-CoV2 nasopharyngeal swab kit. Number of false negative tests were estimated by computing pre-test odds and negative likelihood ratio. The pre-test probability among asymptomatic patients was determined by dividing the number of positive TMA by all those tested in the same setting, assuming those who tested positive had the disease for 14 days. The negative likelihood ratio was calculated based on sensitivity (98.5%) and specificity (99%) of the TMA test that was used. Descriptive statistics were used to analyze the entire study period, including

both the pre-surge (until 10/6/2020) and post-surge (after 10/6/2020) period. Sensitivity analysis was also performed using the Rhode Island Department of Health prevalence data to estimate pre-test odds.

Results

A total of 8925 SARS-CoV2 TMA tests were performed as part of the pre-operative screening for non-urgent procedures during the study period. Of those, 67 patients tested positive. This represents a positivity rate of 0.75% and an estimated prevalence of 740 per 100,000. In the pre-surge period, 27 of 6355 patients tested positive (positivity rate 0.42%; prevalence 410 per 100,000), while in the post-surge period, 40 of 2570 patients tested positive (positivity rate 1.6%, prevalence 1540 per 100,000). Based on post-test odds, the number of false negatives during the entire study was estimated to be less than 1 (0.39 for pre-surge and 0.62 for post-surge period). The calculated number of false negative tests within the study period was 1.01. Sensitivity analysis using Rhode Island Department of Health prevalence data yielded similar results with only 0.6 false negatives over the entire study period.

Conclusion

A three-tier pre-operative SARS-CoV2 screening approach including nasopharyngeal TMA testing among patients undergoing non-urgent procedures, effectively captures the overwhelming majority of asymptomatic cases. This study suggests that this approach may be safer and can help limit personal protective equipment wastage while expediting turnover time of the procedural suites and operation theaters.

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TENNESSEE POSTER FINALIST - RESEARCH Akesh Thomas

Epidemiology of Malignant Pleural Mesothelioma in the United States from 2000 to 2016

Title

Epidemiology of Malignant Pleural Mesothelioma in the United States from 2000 to 2016

Authors

Akesh Thomas, MBBS, Department of Internal Medicine, East Tennessee State University, Johnson City, TN. Ahmed Minhas, MD, Department of Internal Medicine, East Tennessee State University, Johnson City, TN.

Introduction

Center for disease control (CDC) estimates 5-year prevalence of mesothelioma to be about 4,562 [1]. Peak incidence of malignant mesothelioma estimated using registries was in early 2000 in the United States [2]. It is mostly associated with asbestos exposure; one case per million is the incidence of non-asbestos related mesothelioma [3].Latency period between asbestos exposure and the development of malignant pleural mesothelioma (MPM) can range anywhere from 15-60 years [4]. Asbestos exposure was peaked during the industrial revolution and World War II [5]. Different histological subtypes of MPM are typically identified are epithelioid, sarcomatoid, and biphasic [6]. Surveillance, epidemiology, and end results (SEER) cancer incidence data include population-based registries covering approximately 34.6% of the U.S. population. Here, we analyze the epidemiology of MPM in the U.S. with emphasis on histological subtypes.

Methods

SEER data from 2000-2016 with 17 regional registries were included. For the histological classification, we excluded the unknown histology. Data were analyzed using the SEER stat program [7]. Overall epidemiology of MPM and epidemiology of histological subtypes were analyzed separately. Data were analyzed independently for gender, ethnicity, age groups, and regions. We used annual percentage change (APC) to evaluate trends in epidemiology.

Results

Total of 11,857 cases of MPM were included. Prevalence of MPM was highest in 2009 and was lowest in 2016. APC in MPM incidence during the period is -2.0 [-2.4, -1.5]. APC for each histological type after removing 5,989 non-specified histology are -0.7[-3.1,1.7] for fibrous , 1.8 [1.2, 2.3] for epithelioid, and 2.9 [0.8, 5.1] for biphasic.Of regional registries, greatest significant change in APC was seen in Hawaiian -4.1 [-7.6, -0.4] while lowest significant difference was seen in Seattle (Puget Sound) -1.7 [-2.7,-0.6]. Significant change in APC was seen in San Francisco-Oakland, Connecticut, Seattle, Los-Angeles, California, and New Jersey registries. In contrast, Detroit(metropolitan), Iowa, New Mexico, Utah, Atlanta, San Jose-Monterey, Kentucky, Louisiana, and Greater Georgia registries did not show significant change in APC. APC in incidence of MPM among males during the study period was -2.4 [-3, -1.8] while that of females was -0.9 [-1.5, -0.2]. Detroit metropolitan region, Seattle (Puget Sound), Louisiana, and New Jersey, registries showed a statistically significant increase in the epithelioid variant of MPM while the overall APC for MPM in the region still showed a significant decrease. Contrary to this, the Iowa registry showed a significant increase in APC of the epithelioid MPM with an insignificant reduction in APC overall for MPM. APC for overall malignant mesothelioma showed a significant decrease in all age groups. Blacks, whites, and Asian/pacific islanders showed a significant decrease in the APC for MPM. While whites showed a significant increase in APC for epithelioid and biphasic MPM, all other racial subclasses were statistically insignificant or unable to calculate.

Conclusion

The overall incidence of MPM in the United States is declining, while the data showed an increase in the incidence of epithelioid and biphasic histological subtypes. The authors believe that these conflicting results can be attributed to the improved histological diagnosis and improved biopsy techniques, including video-assisted thoracoscopy.

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TEXAS POSTER FINALIST - RESEARCH Sundar V Cherukuri, DO

The Positive Impact of a Provider-Based Cohort Coverage System on the Handling of Clinic Phone Notes: An Internal Medicine Residency Continuity Clinic Quality Improvement Project

Title

The Positive Impact of a Provider-Based Cohort Coverage System on the Handling of Clinic Phone Notes: An Internal Medicine Residency Continuity Clinic Quality Improvement Project

Authors

Sundar V. Cherukuri, Gian M. Galura, Bhanu T. Chaganti, Alejandro Robles, Mohammad Bashashati, Brian Edwards, Aimee Hechanova, Abhizith Deoker

Introduction

Clinic phone calls range from clinical questions, request for appointments, relaying test results, prescription refills, and notifications for visits. Documentations regarding the communication between providers and patients are classified as phone notes. In residency programs, residents are traditionally responsible for their continuity clinic notes even during their inpatient rotations, which usually causes an increase in the number of delayed notes. This quality improvement project was designed to assess the effects of implementing new systems on phone note compliance in an internal medicine residency program.

Smart AIM: By implementing new clinic cohort coverage systems to handle phone notes between July 2018 and March 2020, we will decrease the average number of unanswered phone notes and the average age of unanswered phone notes by 25%. This will simplify responsibilities for coverage providers, improve patient care, and improve patient satisfaction.

Methods

Methods: The internal medicine residency program at TTUHSC El Paso implemented an X+Y system. To measure the effectiveness of our implementations, we observed the number of unanswered phone notes and the average age of unanswered phone notes. Data before and after implementation of both interventions was reported as mean ± SEM and compared using one-way ANOVA (Tukey's post-hoc).

Cycle 1: Each resident was assigned to a group while on their outpatient rotations for 2 weeks, after every 6 weeks of their inpatient rotation. Group-based cohort coverage system (GBCCS) was started as the coverage of clinic phone notes of residents who were doing inpatient rotations by the group members who were in outpatient clinic.

Cycle 2: To better track residents' compliance, the residency program updated the system by implementing provider-based cohort coverage system (PBCCS). One or two providers from each group was responsible for the phone notes of up to four residents who were not currently in the outpatient clinic rotation.

Results

The average number of unanswered phone notes at baseline was 35.0±6.4 per week. This significantly decreased to 23.7±2.3 after GBCCS ($p<0.05$). PBCCS further decreased the average number of unanswered phone notes to 16.4±1.0 ($p<0.01$ compared to GBCCS). Age of unanswered phone notes were significantly decreased from 11.2±3.4 days at baseline to 6.8±0.6 and 3.3±0.3 days after GBCCS and PBCCS, respectively ($p<0.001$).

Conclusion

GBCCS and PBCCS had positive impacts on the phone note management by the internal medicine residents. Implementing GBCCS approximately decreased the average number of unanswered phone notes by 32% and the age of unanswered phone notes by 39%. Implementing PBCCS further approximately decreased the average number of unanswered phone notes by 31% and the age of unanswered phone notes by 51%. Our data showed PBCCS having a stronger impact through promotion of resident accountability to provide adequate coverage for residents who are out of the clinic.

TEXAS POSTER FINALIST - RESEARCH CAPT Benjamin H Greiner, DO

Cancer screenings during the COVID-19 pandemic: an analysis of public interest trends

Title

Cancer screenings during the COVID-19 pandemic: an analysis of public interest trends

Authors

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Introduction

Cancer was the second leading cause of mortality in the United States in 2019 leading to approximately 606,000 deaths.1 With 1.7 million new diagnoses annually,1 the overall cancer burden continues to represent a public health crisis; however, screening is effective for detecting and decreasing cancer morbidity and mortality. New evidence suggests the Coronavirus Disease 2019 (COVID-19) pandemic has impacted mammography usage in the U.S. by decreasing screening numbers.2 We believe other cancer screenings may have also been impacted during the pandemic as a result of cancellations of elective procedures and patient fear of seeking cancer screenings during a pandemic. Our primary objective was to assess how COVID-19 affected public interest, a surrogate for screening incidence,3 in mammography, colonoscopy, human papillomavirus (HPV), and papanicolaou tests.

Methods

Google trends (trends.google.com) was utilized to assess public interest in the following search queries between September 6, 2015 - August 30, 2020: “colonoscopy,” “mammogram,” “HPV,” and “pap smear.” This timeline was chosen to best approximate weekly fluctuations in search interest. Google trends calculates relative search interest (RSI) on a scale of 0-100 with 100 representing peak interest. To analyze expected search interest had COVID-19 not occurred, we

forecasted predictive models using autoregressive interactive moving average (ARIMA) algorithms in R (version 4.0.2).

Results

Following the onset of the COVID-19 pandemic within the U.S. (March), RSI for “colonoscopy”, “mammogram”, “HPV”, and “pap smear” sharply declined followed by a slow uptrend to baseline near the end of May. Between March 14 - May 17 of 2020, RSI for “HPV” had a mean difference of -19.96; an average percent change of -40.47% below the forecasted value. “Colonoscopy” RSI showed a mean difference of -57.17; -64.33% below expected. “Mammogram” RSI had a mean difference of -40.46; -59.2% below expected. Finally, RSI for “pap smear” showed a mean difference of -26.83; -43.66% below the forecasted value.

Conclusion

Our study identified a sharp decline in public interest related to colonoscopies, mammography, HPV, and pap smears corresponding with the onset of COVID-19 followed by a slow uptrend to baseline near the end of May. The decrease in public interest was greatest for colonoscopies and mammography. Considering public interest in cancer screenings is a surrogate for screening utilization,3 these findings suggest that there is a large population in need of cancer screenings to reduce the fallout of delayed or missed cancer diagnoses. Therefore, we recommend physicians in both primary care and oncology settings seek out high cancer risk patients and aggressively make efforts to attenuate this disparity. Solutions for improving cancer screening compliance during the pandemic include fecal immunochemical testing, tele-mammography, and preferentially performing pap smears with HPV co-testing in high risk patients.4,5

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TEXAS POSTER FINALIST - RESEARCH Christopher Nguyen

The Gut Feeling: Virtual Interview Applicant Preferences and the Role of Social Media

Title

The Gut Feeling: Virtual Interview Applicant Preferences and the Role of Social Media

Authors

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Introduction

"The gut-feeling", a common phenomenon shared among resident and fellowship candidates upon visiting a compatible program. With the transition into the era of virtual interviews due to the COVID-19 pandemic, applicants and programs alike struggle to discover those moments of inexplicable mutual connection that oftentimes solidifies the final denouement. Many studies have focused on specific etiquettes expected of applicants during the virtual interview [1,2]. However, preferences of the applicant and nuances of the interview day that can greatly impact an applicant's rank list are often overlooked, especially due to limited program experience with hosting successful virtual interviews.

Methods

Social Media Initiative: A committee was formed at the University of Texas Medical Branch with the aim of launching a robust social media initiative that supplies applicants with a more personal experience and exposure to the program and house staff. Twitter, Facebook, and especially Instagram were utilized. The "Reels" feature was used to create our unique, animated "Resident Spotlights" with individual videos reaching up to 7500 views: https://www.instagram.com/utmb_imresidency/reels/?hl=en. Survey: A 25-question

anonymous survey was designed by the authors focused on applicant preferences regarding the nuances of the virtual interview day. The survey was distributed to residency and fellowship applicants of the 2020-2021 cycle across all specialties using the Google Forms application and results were interpreted under the “responses” tab.

Results

The survey was completed by 80 virtual interview participants. 93.8% preferred Zoom over other platforms. 55.6 % believed that inability to interview with the program director or chairman reflected poorly on the program. 60% found it difficult to eat during the interviews due to discomfort eating on camera and 51.2% felt obligated to remain in front of the camera during breaks due to lack of explicit instructions to be able to leave the camera frame. 62.5% believed disorganization, scheduling issues, or lack of preparation reflected poorly on the program. Only 35% believed they gained enough exposure to the residents or fellows. 82.5% believed having access to spotlights similar to our Instagram Reels would have given them a more personalized exposure to their prospective colleagues. 83.8% of participants used Instagram to assess programs while 35% used Twitter, and 13.8% used Facebook. Only 16.3% preferred virtual interviews over conventional face-to-face interviews. Lack of in-person exposure to the hospital and city affected the decision of 60% of participants.

Conclusion

The COVID-19 pandemic has incited unprecedented change in the application process. The 2020-2021 academic year will encompass 46,000 residency and 10,000 fellowship applicants, the highest seen in 5 years. Illustrating a program’s true culture during traditional face-to-face interview day has historically been an intricate art form that is exponentially more difficult to replicate with the standardization of virtual interviews. Our data suggests that institutions across the country have numerous opportunities for improving the ability to highlight their programs through refining the virtual interview day and using social media to provide applicants with a more dynamic experience outside of the stressful interview day to reproduce that “gut feeling”.

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TEXAS POSTER FINALIST - RESEARCH Maria Jose Pesantez

Healthcare Disparities and Acute Mesenteric Ischemia: An Analysis of Factors that Lead to Mortality.

Title

Healthcare Disparities and Acute Mesenteric Ischemia: An Analysis of Factors that Lead to Mortality.

Authors

Maria Pesantez, MD, Azucena del Real, MD, Asif Zamir, MD, Chelsea Chang, MD

Introduction

Acute mesenteric ischemia (AMI) is characterized by an interruption of the splanchnic circulation, leading to insufficient oxygen delivery to visceral organs [1]. Though uncommon, AMI remains a highly morbid condition, with reported mortality rates ranging from 30% to 90%[2]. The high mortality rate is mainly attributed to delay in diagnosis and treatment [3]. Factors affecting mortality have not been studied extensively, and a consensus has not been achieved. However, it is well established that duration of ischemia is one of the most important factors influencing prognosis[4]. A delay in initial diagnosis and treatment, which may be the result of lack of access to health care, may result in a poor outcome. Due to the economic burden, individuals that are uninsured may be more vulnerable to the complications associated with AMI. Our study analyzed the AMI outcomes in Hidalgo county, where the reported poverty rate is three times higher than the United States average. Thirty percent of our population does not have any type of health insurance and almost half of the remaining 70%, are Medicaid users[5]. The aim of our study is to determine if socioeconomic factors have an impact on mortality.

Methods

We reviewed electronic medical records and extracted data using codes for AMI diagnosis from July 31, 2014 to July 31, 2019 in a private hospital. All electronic medical records obtained were confirmed as AMI using the current gold standard for diagnosis: CT abdomen, Mesenteric angiography or, exploratory laparotomy.

Results

Twenty-nine cases were confirmed as AMI in five years and mortality before discharge was 38% in our sample. Eighty-three percent of patients were 65 or older. Nine out of the 11 patients that died (82%) were 65 years and older. There was no significant difference in mortality between the male and female groups. Eight out of the 11 patients (73%) that died were Hispanics/Latino. Only 14% were uninsured, while 72% had Medicaid alone or combined. Notably, 83% of patients that survived had a primary care physician (PCP).

Conclusion

Mortality in our cohort was congruent with numbers reported in the literature. Age and PCP were the only 2 statistically significant factors associated with mortality. All the patients that were uninsured survived. Probably, the small sample size, including only four uninsured patients, will explain this result. Overall, our study showed that lack of access to primary care, which is related to health care disparities, may play a role in mortality associated with AMI. Although insurance was not statistically significant, access to primary care is a relevant socioeconomic factor associated with higher survival. Primary Care physicians may play a role in prompt diagnosis as this is the most important prognostic factor in AMI.

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TEXAS POSTER FINALIST - RESEARCH Minh Tran

Hepatitis Vaccination in Patients with Cirrhosis

Title

Hepatitis Vaccination in Patients with Cirrhosis

Authors

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Introduction

Acute hepatitis A (HAV) and hepatitis B (HBV) infection in the setting of cirrhosis can lead to higher rates of liver decompensation and mortality. Despite clear immunization recommendation for patients with chronic liver diseases, the rate of HAV and HBV vaccination remain suboptimal nationwide (7.7% and 11% respectively). We sought to determine the vaccination rates against HAV and HBV in cirrhotic patients at our institution and identify predictors that affect the vaccination rates.

Methods

Adult patients (greater than or equal to 18 years of age) diagnosed with liver cirrhosis between August 2019 to August 2020 were included. Chart review was performed to assess vaccination against HAV and HBV. Patients with previous HAV and HBV infection were excluded. Patients who had anti-HAV antibodies without documentation of vaccination were also excluded. Univariate analysis was performed to calculate the vaccination rates against HAV and HBV. Multivariate analysis was then performed to identify predictors that affected the rates of vaccination in these patients.

Results

A total of 343 patients were included in our study. Univariate analysis shows approximately 10.9% (34/310) of patients received HAV vaccination and 12.5% (39/312) of patients received vaccination against HBV. In the multivariate analysis, follow up with primary care physician

(PCP) or gastroenterology clinic within a year of diagnosis was associated with higher vaccination rates against HAV (Odd Ratio (OR) 3.34 and 10.54 respectively, p <0.001).

Conclusion

In conclusion, immunization against HAV and HBV in cirrhotic patients remains low at our institution, and the vaccination rates are comparable to the national average. Follow up with PCP or gastroenterology clinic is associated with higher vaccination rates. Efforts should be made to ensure hepatitis vaccination to prevent decompensation of liver function or liver failure in this vulnerable cirrhotic population.

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VIRGINIA POSTER FINALIST - RESEARCH Omowunmi Adedeji, MD

Aortic stenosis but not mitral regurgitation increases mortality in cardiac amyloidosis patients

Title

Aortic stenosis but not mitral regurgitation increases mortality in cardiac amyloidosis patients

Authors

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Introduction

Valvular abnormalities such as Aortic stenosis (AS) and Mitral regurgitation (MR) are common among patients with heart failure. Cardiac amyloid (CA) has been described in 13-16% of patients with AS undergoing transcatheter aortic valve replacement (TAVR). Early data suggests utility of TAVR in CA. Incidence and prognosis of MR in CA patients is not well known. Hypothesis Aortic stenosis worsens the prognosis of cardiac amyloidosis

Methods

Data was obtained from the National Inpatient Sample from 2005-2016 using patients with the diagnosis of heart failure based on ICD 9 and ICD 10 codes. Patients with cardiac amyloidosis were identified with a view of capturing patients with cardiac amyloidosis as against other types of amyloidosis. Logistic regression analyses were utilized and Statistical Analysis Software (SAS) was used in the analysis.

Results

54, 404, 493 patients (weighted) were involved. Mean age is 70 years; 54.4% female; 86.6% Caucasians. In patients with CA and AS, the overall odds of mortality is 1.086 (95% CI 1.061-1.12

with P< 0.001). Caucasians with concomitant AS and CA have higher risk of mortality compared to African Americans (AA) (OR 1.081(CI 1.07-1.11; p

Conclusion

Aortic stenosis is associated with an increased risk of mortality in patients with CA. In the current analysis, we observed a statistically higher risk of mortality in CA-AS patients that are Caucasians compared to AA. Presence of MR was not associated with higher mortality among patients with CA. Clinical studies need to further confirm these findings.

VIRGINIA POSTER FINALIST - RESEARCH Ramzi Hassouneh, DO

Early Renal Dysfunction Post Liver Transplant Predicts Long-Term Adjudicated Cardiovascular Events

Title

Early Renal Dysfunction Post Liver Transplant Predicts Long-Term Adjudicated Cardiovascular Events

Authors

Ramzi Hassouneh, Steve Shen, Taseen Syed, Sean Flynn, Matt Fasullo, Vaishali Patel, Chandra Bhati, Mohammad Shadab Siddiqui, Samarth Patel

Introduction

Cardiovascular disease (CVD) is responsible for substantial long-term morbidity and mortality among liver transplant (LT) recipients, despite exclusion of patients with high-risk CVD prior to LT evaluation. The association between development of metabolic co-morbid conditions, such as diabetes or weight gain post-LT, is modest, thus, underscoring other potential pathways linking LT to CVD. We hypothesize that patients who develop CVD following LT are at higher risk at the time of LT, not captured via traditional CVD assessment at the time of LT. Renal impairment has been linked to CVD through multiple mechanistic pathways. Therefore, we evaluated the relationship between future risk of CVD and early renal function in LT recipients.

Methods

We retrospectively analyzed patients who had detailed pre-LT CVD assessment including coronary angiography, echocardiogram, electrocardiogram, and serum lipid profile between 2007 and 2019 (N=651). Since glomerular filtration rate (GFR) can vary widely after LT, we used the highest GFR within 4 weeks after LT as the baseline surrogate of renal function. Patients were followed every 6 months post-LT. Major adverse cardiovascular events (MACE) included myocardial infarction, stroke, heart failure, and sudden cardiac death. MACE were adjudicated by study investigators according to the American Heart Association (AHA) definitions. Multivariate Cox regression models were used to evaluate the relationship between GFR and MACE.

Results

The mean age was 56 ± 10 years, 73% were male, and 72% were Caucasians. Coronary artery disease (CAD) was present in 178 (27%) of patients at the time of LT; however, this was mild in the majority of these patients (72%) and all patients with obstructive CAD had revascularization prior to LT. The mean GFR was 88 ± 28 mL/min/1.73m2 at baseline and 58 ± 28 mL/min/1.73m2 at 1-year post-LT. No association between GFR and baseline CAD or cardiac volumetric assessment on echocardiography was noted. The median follow-up in the study was 69 months (IQR 34 months, 101 months) and 116 (18%) patients had a MACE, with the most common event being myocardial infarction. In time to event analysis, GFR at 12 months was independently associated with future risk of MACE in unadjusted analysis. The relationship between MACE and GFR at 12 months persisted (HR 0.99, 95% CI 0.98, 0.99, p=0.02 per unit increase in GFR) after adjusting for gender, diabetes, CAD, dyslipidemia, hypertension, non-alcoholic steatohepatitis, and choice of immunosuppression.

Conclusion

Early changes in renal function are strongly associated with increased risk of MACE post-LT, which is independent of traditional cardio-metabolic risk factors. These findings suggest that GFR may potentially be used as a prognostic biomarker for more robust CVD risk assessment post-LT; however, this requires prospective validation.

VIRGINIA POSTER FINALIST - RESEARCH Bakri Kulla

Retrospective Evaluation of the Three-Step EIA/PCR Algorithm as a Cost-Effective Method for Detection and Treatment of Clostridium Difficile Infection

Title

Retrospective Evaluation of the Three-Step EIA/PCR Algorithm as a Cost-Effective Method for Detection and Treatment of Clostridium Difficile Infection

Authors

Bakri Kulla, M.D Alexandra Carroll, MS Brynn Sheehan, PhD Patrick Haggerty M.D

Introduction

Clostridium difficile infection (CDI) is the primary cause of infectious diarrhea in the United States. Timely and accurate testing provides the guidance that physicians need to determine how and when to treat a patient. Previously the local hospital system performed a less sensitive test (i.e., GDH/Toxin EIA) detection method. Starting July of 2013, the laboratory service utilized a more sensitive, three-step algorithm to detect CDI. The algorithm detects GDH, Toxins A and B, and proceeds with NAAT (PCR) testing for samples that have discrepant results (e.g., positive for only one test; GDH or Toxin A and B). Our retrospective study was designed to determine rates of positive CDI and compare rates and outcomes of GDH (+)/Toxin (+), what we will refer to as a true positive, and GDH (+)/toxin (-) patients who were subsequently PCR (+), what we will refer to as an indeterminate positive, based on CDI severity stratification.

Methods

A retrospective chart review was performed for all patients who presented with hospital associated diarrhea, and were admitted to Sentara Norfolk General Hospital (SNGH) and then subsequently tested for CDI from 9/1/2016 to 9/30/2017. Cases were detected using the three-step algorithm previously described. Multivariable Chi-square tests were performed to compare CDI with medical history, outcome measures, treatment-related variables, CDI treatment, and blood test lab values. First we determined overall rates of CDI cases based on GDH, Toxin, and PCR results. We then determined person-level frequencies and Chi-Squared results between true positive and indeterminate positive groups. We then found the sample descriptive of age, length of stay (LOS), and ICU LOS. Lastly, independent sample t-tests were found between true positive and indeterminate positive groups.

Results

1031 stool samples were tested for CDI, of them 853 (82.7%) were negative and 178 (17.3%) were positive, this included 265 (25.7%) GDH positive tests and 94 (9.1%) toxin positive tests. Specifically, the incidence of true positive (GDH+/Toxin+) was 94 (9.1%) and indeterminate positive (GDH+/Toxin-/PCR+) was 84 (8.1%), The first positive or first test from each patient was included to ensure independence of data points. This resulted in 830 unique tests and patients. When comparing outcomes for true positive tests to indeterminate positive tests, groups did not differ on a variety of demographics, clinical variables, and various lab values. The groups were found to differ on initial treatment used, with true positive cases being more likely to receive both Metro ($p = .005$), and Vanco ($p = .006$), treatment as compared to indeterminate positive cases.

Conclusion

When comparing the true positive to indeterminate positive groups, we found that the results did not differ on most variables. However, we did find that the groups differed on initial treatment used. Additionally, we found evidence that performing the three-step algorithm prevents nearly half of GDH+/Toxin- patients from being unnecessarily treated with antibiotics. By preventing unnecessary antibiotic use and contact enteric precaution, the three-step algorithm effectively decreases cost per patient and length of stay.

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WISCONSIN POSTER FINALIST - RESEARCH Kirsten M Lipps, MD

High-intensity Versus Moderate- or Low-intensity Statin Therapy for Primary Prevention of Cardiovascular Disease in Higher-risk Adults: The Multi-Ethnic Study of Atherosclerosis (MESA)

Title

High-intensity Versus Moderate- or Low-intensity Statin Therapy for Primary Prevention of Cardiovascular Disease in Higher-risk Adults: The Multi-Ethnic Study of Atherosclerosis (MESA)

Authors

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Introduction

Statin therapy is a cornerstone of atherosclerotic cardiovascular disease (ASCVD) prevention (1, 2). In contrast to strong evidence supporting high-intensity statins for secondary ASCVD prevention (3-5), the importance of statin intensity for primary prevention is not well understood. This study evaluated the association of statin intensity with development of ASCVD in a multi-ethnic population of adults at higher cardiovascular risk.

Methods

Total CVD and coronary heart disease (CHD) events were prospectively evaluated in MESA participants who were free from CVD at baseline, at higher CVD risk, and on statin therapy at any point during the study (2000-2017). Mutually exclusive higher-risk groups were Diabetes Mellitus (DM), High-risk (Pooled Cohort Equation (PCE) 10-year risk $\geq$ 20%) without DM, and Intermediate-risk (PCE 10-year risk 7.5-20%) without DM. Total CVD was defined as CHD, stroke, or other ASCVD death. CHD was defined as myocardial infarction, CHD death, resuscitated cardiac arrest, or angina. The association of statin intensity (high- versus moderate-/low-) with total CVD and CHD events was analyzed using Cox regression, accounting for time-varying covariates of cardiovascular risk factors, use of non-statin lipid-lowering medications, and MESA field center. Cardiovascular risk factors included age, gender, race, physical activity, cigarette use, body mass index, blood pressure, fasting glucose status, lipid profile, and renal function.

Results

We included 2,288 adults (53% female, 55% non-white), who were a mean (standard deviation) age of 68.5 years (9.1), in the analysis. At baseline, 31% had DM, 30% were High-risk, and 39% were Intermediate-risk. During follow-up, 255 participants used high-intensity statins. High-intensity statin therapy was not associated with significantly lower risk of total CVD or CHD events in any higher-risk group as compared to moderate-/low-intensity statin. Among those with DM, total CVD rate was 40/3,526 person-years (PY) for low-/moderate-intensity statin versus 1/419 PY for high-intensity (hazard ratio (HR) 0.17, 95% confidence interval (CI) 0.02-1.31); CHD rate was 28/3,526 PY versus 1/419 PY for low-/moderate-intensity and high-intensity, respectively (HR 0.22, 95% CI 0.03-1.76). In High-risk adults, total CVD rate was 36/3,139 PY versus 1/231 PY for low-/moderate-intensity and high-intensity statin, respectively (HR 0.29, 95% CI 0.03-2.50); CHD rate was 27/3,154 PY for low-/moderate-intensity. No CHD events occurred in High-risk adults using high-intensity statin, so this HR was not estimable. For Intermediate-risk adults, total CVD rate was 18/3,951 PY for low-/moderate-intensity statin versus 1/304 PY for high-intensity (HR 0.44, 95% CI 0.11-1.76); CHD rate was 15/3,968 PY versus 1/304 PY for low-/moderate-intensity and high-intensity, respectively (HR 0.54, 95% CI 0.13-2.28).

Conclusion

To our knowledge, this is the first study to evaluate the association of statin intensity with development of ASCVD. Our results indicate that in adults at higher risk of cardiovascular disease, high-intensity statin therapy was not associated with lower risk of total CVD or CHD events, as compared to moderate- or low-intensity statin. However, hazard ratios consistently suggest a trend toward CVD benefit with high-intensity statin. As this study was limited by small numbers of events in all higher-risk groups, further research is necessary to establish the association of statin intensity with development of ASCVD.

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WISCONSIN POSTER FINALIST - RESEARCH Lindsay A Matthews

Psychosocial assessment rather than severity of liver failure dominates selection for liver transplantation (LT) in patients with alcohol-related liver disease (ALD)

Title

Psychosocial assessment rather than severity of liver failure dominates selection for liver transplantation (LT) in patients with alcohol-related liver disease (ALD)

Authors

Lindsay A. Matthews, Kimberly E. Daniel, Nimrod Deiss-Yehiely, Jaime Myers, Maureen Garvey, John R. Rice, Jens Eickhoff, Michael R. Lucey

Introduction

Patients with ALD undergoing evaluation for LT are assessed for psychosocial predictors of adherence to complex medical care and likelihood to abstain from harmful alcohol or substance use (1). The Stanford Integrated Psychosocial Assessment for Transplant (SIPAT) is a validated, semi structured interview tool to assess psychosocial well-being in solid organ transplant candidates. SIPAT assesses four domains: SIPAT-A: readiness; SIPAT-B: social support; SIPAT-C: psychological stability; and SIPAT-D: substance use. A higher SIPAT indicates greater psychosocial vulnerability (2). We hypothesized that ALD patients undergoing LT evaluation would have higher SIPAT scores than non-ALD candidates, thereby restricting access to LT for ALD patients.

Methods

We analyzed retrospectively the following data on consecutive patients undergoing LT evaluation at a single US institution from June 2018 to December 2019: demographics, etiology (ALD vs. non-ALD), SIPAT, MELD-Na at evaluation, and LT listing decision. Comparisons between ALD vs. non-ALD patients were made using the nonparametric Wilcoxon rank sum test, plus a multivariate analysis to determine independent predictors for approval.

Results

Among 380 evaluated patients, 22 (5.8%) were excluded with incomplete data. In the study cohort of 358, there were 199 (56%) ALD subjects, mean age 55 years, with 133 (67%) males;

and 159 (44%) non-ALD, mean age 57 years, 95 (60%) male. Mean MELD-Na scores were similar for selected versus not selected ALD (25.0 v. 25.6) and non-ALD patients (18.3 v. 17.4), although the non-ALD had substantially lower MELDs. Patients with ALD had higher mean SIPAT composite and individual domain scores compared to their non-ALD counterparts. Proportionately more non-ALD candidates were selected compared to ALD candidates (68% vs 42%, p

Conclusion

We conclude that, while ALD patients undergoing LT evaluation are significantly sicker and have more hazardous psychosocial statuses than non-ALD candidates, psychosocial assessment has greater influence than acuity of liver failure on selection for LT listing of ALD patients.

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RESIDENT FELLOWS - CLINICAL VIGNETTES

CONNECTICUT PODIUM PRESENTATION - CLINICAL VIGNETTE Tien-Chan Hsieh, MD

COVID-19 Associated Warm Autoimmune Hemolytic Anemia

Title

COVID-19 Associated Warm Autoimmune Hemolytic Anemia

Authors

Tien-Chan Hsieh, Christopher Kinne, Egor Potekin, Prajay Rathore, Guillermo Ballarino, Oleg Sostin, Wenli Gao 1. Department of Internal Medicine, Danbury Hospital, Danbury, CT, USA

Introduction

Warm autoimmune hemolytic anemia (AIHA) is a rare autoimmune disorder mediated by autoantibodies that are active at normal body temperature. It is commonly associated with underlying conditions, such as viral infections, autoimmune disorders, lymphoproliferative diseases, immunodeficiency states, and pregnancy. Here we present a case of new onset AIHA in a patient with COVID-19.

Case Presentation

This is an 84-year old Caucasian man with a past medical history of hypercholesterinemia who developed dry cough, mild shortness of breath, generalized weakness, and fever 13 days prior to the presentation. Three days after onset, he was tested positive for SARS-CoV-2 virus. His shortness of breath continued to worsen, and the patient was hypoxic upon arrival to the hospital, requiring 4 liters/min of supplemental oxygen. Physical exam revealed scleral icterus. Laboratory work was significant for severe anemia (hemoglobin - 4.4 g/dL) and indirect bilirubinemia (2.3 mg/dL). CT scan of chest, abdomen and pelvis did not show any occult hemorrhage but revealed diffuse patchy bilateral ground-glass opacities within the lungs and splenomegaly. The patient was found to have positive direct Coombs test with anti-K antibodies and IgG pan-agglutinins. He received packed RBCs that were type-specific, K-negative, and “least incompatible” based on cross-match. Further analysis showed lactate dehydrogenase of 1253 U/L, haptoglobin

Discussion

Recognizing AIHA in the setting of COVID-19 is important to avoid delay in treatment. In COVID-19 patients with warm AIHA, anemia-related symptoms are common. Physical exam may show jaundice and splenomegaly. In addition to low hemoglobin, laboratory evaluation may be notable for increased reticulocyte count, elevated lactate dehydrogenase, low haptoglobin, indirect bilirubinemia, and spherocytosis/microspherocytosis. Diagnosis is made based on presence of hemolytic anemia mediated by warm antibodies. Due to the presence of pan-reacting autoantibodies, identifying cross-matched blood products may not be possible. If severe anemia is present, clinicians should contact blood bank immediately for type-specific, "least incompatible" blood products. Glucocorticoids have been shown to be effective for management of AIHA in addition to transfusion. Since glucocorticoids are also used in moderate to severe COVID-19 cases, it is reasonable to treat COVID-19 associated AIHA with glucocorticoids.

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CONNECTICUT PODIUM PRESENTATION - CLINICAL VIGNETTE Asma Syeda, MBBS

Drug-induced thrombotic microangiopathy (DITMA) - A Clinical Challenge

Title

Drug-induced thrombotic microangiopathy (DITMA) - A Clinical Challenge

Authors

Asma Syeda MBBS, Turab Mohammed MD, Nikola Perosevic MD Saint Francis Hospital, Department of Medicine, University of Connecticut, Hartford, CT.

Introduction

Drug-induced thrombotic microangiopathy (DITMA) is a rare and life threatening clinical entity. It poses significant diagnostic and therapeutic challenges. We are presenting the case of the drug-induced hemolytic uremic syndrome (HUS), a subtype of DITMA secondary to Gemcitabine use.

Case Presentation

A 60-year-old female with a history of ER +/HER2- invasive ductal carcinoma of the left breast with metastasis to the bone and liver, presented to the hospital with new-onset profound fatigue. Her current treatment regimen included gemcitabine 1000 mg/m² on days 1, 8, and 15 of a four-week cycle. She had received 4 doses of gemcitabine (GEM) prior to hospitalization. Her review of systems and vital signs were unremarkable. The only striking physical exam finding was of pallor. Investigations revealed normocytic anemia with a hemoglobin level of 6.5 g/dL, acute thrombocytopenia with platelet count 75,000/µL and an elevated creatinine of 1.6 mg/dL, consistent with acute kidney injury (AKI). Urinalysis and CXR were normal. Blood culture and procalcitonin were unremarkable. Given the acute anemia and thrombocytopenia, a peripheral smear was requested which demonstrated schistocytes. Hemolytic work-up disclosed a decreased haptoglobin and an elevated LDH level suggesting microangiopathic hemolytic anemia (MAHA). ADAMTS13 level was within the normal range and Coomb's test was negative. Given the MAHA, thrombocytopenia, and AKI in the background of recent GEM use, a diagnosis of DITMA was made. Further treatment with gemcitabine was discontinued and the patient was treated with eculizumab with minimal response followed by plasmapheresis.

Discussion

Differential diagnoses for TMA in adults include DITMA, Immune Vs. Nonimmune, other TMA variants like TTP, atypical HUS, and cancer-related TMA. Our patient had normal ADAMTS13 ruling out TTP. When TMA is suspected, it is imperative to rule out TTP by measuring ADAMTS13 levels since management is different for TTP and TMA variants other than TTP. Cancer-related TMA has significant bone pain and pulmonary symptoms due to metastatic micro thrombosis which were absent in our patient. She only had gradual onset fatigue suggesting non-immune mediated DITMA from GEM since immune-mediated reaction likely presents acutely with fever and other constitutional symptoms. The etiology of AKI is renal ischemia/infarction secondary to vaso-occlusion of smaller arterioles from platelet-rich thrombi and is often reversible. TMA is a life-threatening condition that needs accurate diagnosis and urgent treatment. For immune-mediated DITMA, permanent drug withdrawal is paramount along with supportive care. For non-immune mediated, drug withdrawal is often sufficient.

CONNECTICUT PODIUM PRESENTATION - CLINICAL VIGNETTE Yuyao Wang, MD

Co-infection of COVID-19 and Cytomegalovirus, how often should we expect it?

Title

Co-infection of COVID-19 and Cytomegalovirus, how often should we expect it?

Authors

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Introduction

By December 1st of 2020, more than fourteen million COVID-19 cases had been identified in the United States. Elderly patients have higher COVID-19 mortality rates and are more susceptible to complications. Cytomegalovirus (CMV) seroprevalence increases with age and could be as high as 91% by the age of 80. The role of CMV in the COVID-19 pandemic is unclear. Here, we describe a case of CMV co-infection in a critically ill patient with COVID-19.

Case Presentation

A 78-year-old woman with a history of insulin-dependent diabetes and hypertension presented to hospital with one-day history of fever, weakness, and near-syncope. Patient was diagnosed with COVID-19, community-acquired pneumonia, and dehydration. She received lopinavir/ritonavir, hydroxychloroquine, and ceftriaxone, and was discharged home with supplemental oxygen. On day 7 after the symptom onset, the patient returned to the ED with worsening hypoxemia. Despite treatment with tocilizumab, cefepime, enoxaparin, and methylprednisolone, intubation was required on day 10. Enoxaparin was subsequently discontinued as she developed bilateral thalamic petechial hemorrhages. On day 19, she was extubated but then re-intubated on day 27. Later she was transitioned to tracheal intubation. On day 38, the patient was found to be apneic, pulseless, and expired, despite 30 minutes of resuscitation efforts. The autopsy concluded that the plausible cause of death was acute respiratory failure secondary to CMV pneumonia superimposed on pulmonary changes from COVID-19. Other significant autopsy findings included rare, organizing peripheral pulmonary arterial thrombi/thromboemboli, patchy acute lobular hepatitis, and localized small thyroid abscess; the latter two were attributed to CMV infection.

Discussion

To our best knowledge, this is the first autopsy-confirmed case of COVID-19 and CMV co-infection. Immunocompromised state, mechanical ventilation, and sepsis are known to be strongly associated with CMV reactivation. Systemic corticosteroid therapy, blood product transfusion, and stress are known to have weak association. In COVID-19 patients, immunosuppressive therapy (tocilizumab), mechanical ventilation, convalescent plasma transfusion, and steroids all are commonly used. Therefore, COVID-19 patients have multiple risk factors for CMV reactivation. Currently, there is no data to support routine testing for CMV in COVID-19 patients. However, histologic evidence of CMV pneumonia on open lung biopsy have been described in many patients with ARDS. Studies are required to investigate the relationship between CMV reactivation and COVID-19 and to determine the role of testing and treatment for CMV in critically-ill COVID-19 patients.

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FLORIDA PODIUM PRESENTATION - CLINICAL VIGNETTE
Jose D Rivera

AIDS presenting as stroke

Title

AIDS presenting as stroke

Authors

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Introduction

It is well established that the human immunodeficiency virus (HIV) infection and its treatment increases the risk of stroke via multiple mechanisms: cardio thromboembolism, increased clotting, and HIV-associated vasculopathy. Around 15% of HIV patients that present with acute focal neurological deficits (AFND) will be a “stroke-mimics”. These causes are mostly opportunistic infections (toxoplasmosis, viruses, PML) but can also include CNS malignancies. Although the previously mentioned causes are for known HIV patients, our literature search did not find any statistics about patients with no HIV/AIDS diagnosed, which initial presentation was a stroke or "stroke-like". Our intent with this report it’s to present internists another differential diagnosis for previously healthy patient’s presenting with AFND.

Case Presentation

44-year-old health care worker female with no known past medical history from Haiti was admitted to our hospital as a stroke alert, after family members began noticing a right-sided facial droop and dragging of her right lower extremity. Vitals signs on admission significant for fever (Tmax 101.3F), tachycardia, and tachypnea. On exam, along with aforementioned AFND, there was a 5-centimeter left clavicular mass. Eventually, a brain MRI exposed multiple enhancing intraparenchymal lesions along with multiple axillary and supraclavicular lymphadenopathy corroborated on abdominal CT with further concern for lymphoma versus metastatic disease. Given concern for advanced lymphoma, a biopsy was performed of the clavicular mass. Unexpectedly, showed necrotic lymphadenitis, positive for mycobacterium tuberculosis and the bone marrow biopsy was positive for caseating granuloma morphologically consistent with MAI. Given the diagnosis and risk factors, an HIV test performed returning

positive. She began RIPE therapy and although measures were taken to prevent TB-associated IRIS, two weeks after starting treatment the patient had new-onset tonic-clonic seizures which required intubation. CD 4 count came back at 7 and antiretroviral therapy was started. At this point a brain biopsy was taken which resulted positive for toxoplasmosis. The patient has since been extubated, doing well, and currently is undergoing further care at a TB center.

Discussion

Although AIDS can present itself in many ways, it is important to note that in this case the patient was thought to be a healthy young female before she started exhibiting any signs or symptoms. Without warning, our patient started to become febrile with stroke-like symptoms. Even with these symptoms what gave us a diagnosis was not the admission symptoms, but the biopsy taken from a clavicular mass, luckily done early in the admission. Within two weeks, she had been diagnosed with disseminated tuberculosis, mycobacterium avium complex, toxoplasmosis leading to seizures, and HIV/AIDS. As stated above, HIV presents with stroke-mimics in 15% of cases but what made this case more challenging was having HIV undiagnosed likely for many years. It should also be noted that an effort was made to prevent TB-associated IRIS (immune reconstitution inflammatory syndrome) which was the reason in this case AART therapy was delayed before initiation, as patient was already on RIPE therapy. As a team, we had many teaching points in such a complex case such as, AIDS presentations and guidelines to prevent TB-associated IRIS.

MICHIGAN PODIUM PRESENTATION - CLINICAL VIGNETTE
Nourelhuda Abbas Hamed

Wernicke's Encephalopathy and Bariatric Surgery: an Overlooked link

Title

Wernicke's Encephalopathy and Bariatric Surgery: an Overlooked link

Authors

Nourelhuda Abbas Hamed, MD, Majd Faraj, BS, Asadullah Mahmood, MD, Falgun C.Patel, MD, Ziad Berri, MD

Introduction

Bariatric surgery is a highly effective treatment for severe obesity with a significant reduction of obesity-related co-morbidities and mortality. Though, without proper nutritional supplementation postoperatively Bariatric surgery can lead to Wernicke's Encephalopathy, a serious neurological complication caused by thiamine (Vit B1) deficiency. It can mimic other neurologic diagnoses with worse prognosis requiring extensive workup like stroke and Guillian-Barre syndrome. Here we present a case of a patient developing Wernicke's encephalopathy after sleeve gastrectomy who presented with ophthalmoplegia, auditory symptoms and ataxia. It was evident that thiamine Supplementation ultimately resolved patient's symptoms completely.

Case Presentation

A morbidly obese, non-alcoholic 34-year-old female, status post laparoscopic sleeve gastrectomy performed overseas two months prior to presentation presented to the emergency department with diplopia, dizziness, auditory symptoms, and ataxia. Her postoperative course was complicated by recurrent, severe nausea and vomiting requiring multiple hospitalizations. Upon presentation, wide-based gait was noted on physical exam. The orbital exam revealed mild left ptosis, restricted abduction and adduction, and upbeat nystagmus bilaterally. Initial CT and CTA head were unremarkable. Labs for HIV, syphilis, acetylcholine receptor antibodies, TSI, T4, and TSH levels were all within normal limits. Lumbar Puncture ruled out the Miller Fisher variant of GBS. MRI brain revealed T2 flair hyperintensity around the cerebral aqueduct which is a radiological feature of Wernicke's Encephalopathy. While thiamine level was pending, empiric management of Wernicke's encephalopathy started with IV thiamine infusions. Symptoms and signs improved significantly within 2 days. Once

retrieved, Lab work for thiamine level was low at 19 (normal range is 38-122). Days later patient's symptoms completely resolved with the completion of IV thiamine infusions, she was discharged on PO thiamine 100 mg daily and thiamine levels remained normal over the next months.

Discussion

Wernicke's encephalopathy is a triad of mental confusion, ataxia, and ophthalmoplegia. If promptly diagnosed, it responds well to thiamine replacement and can resolve completely, however, if left untreated, it can lead to irreversible neurological damage. Therefore, in a post-bariatric surgery patient presenting with confusion, visual/auditory symptoms, or ataxia, Wernicke's encephalopathy should be suspected, and the first imperative clinical management should be immediate administration of IV thiamine, rather than waiting for a confirmation of the diagnosis or proceeding with an extensive workup to rule out other differentials. In this clinical case, inadequate thiamine supplementation following BS coupled with the postoperative course of recurrent nausea, vomiting, and decreased oral intake, both synergistically aggravated the patient’s thiamine deficiency. ? She presented with symptoms suggestive of WE with abnormally low thiamine level two months after sleeve gastrectomy and her symptoms resolved completely with proper thiamine supplementation. Sleeve gastrectomy patients should have their thiamine levels checked preoperatively and postoperatively periodically at 1 month, 3 months, and 12 months after surgery and then annually after that. For prevention of thiamine deficiency after Bariatric surgery, the daily recommended dose of thiamine is 12 mg/day or more, preferably 50-100 mg/day.

MICHIGAN PODIUM PRESENTATION - CLINICAL VIGNETTE
Muhammad Khan, MD

Crohn's Duodenitis: The uncommon manifestation of Crohn's disease in an elderly woman

Title

Crohn's Duodenitis: The uncommon manifestation of Crohn's disease in an elderly woman

Authors

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Introduction

Crohn's disease has been reported to involve any particular segment of the gastrointestinal (GI) tract whether it be aphthous ulcers or anal fistulas. The upper GI tract involvement in the form of duodenitis or duodenal ulcers is uncommon, particularly in the geriatric population. Symptomatic disease can be managed with medical therapy. Herein we discuss the case of an 89 year old woman with Crohn's disease who presented with a GI bleed and was later found to have Crohn's duodenitis as the source of the bleeding.

Case Presentation

We report the case of an 89 year old pleasant female with a medical history notable for Crohn's disease being managed with Cimzia (certolizumab), pulmonary embolism on Eliquis and hypertension who presented to the emergency department with black tarry stools for the past week. She had also noticed some interspersed frank blood with the passage of stools. No history of non steroidal anti-inflammatory drug (NSAID) use was reported. On arrival, her vitals were as follows: BP of 124/58 mmHg, heart rate of 55/min, oxygen saturation of 92% on room air and a temperature of 97.9º F. Abdominal exam was benign but a digital rectal exam revealed melanotic stools. There was no evidence of internal or external hemorrhoids. The complete blood count (CBC) was remarkable for a hemoglobin of 6.2 g/dl consistent with acute blood loss, lipase was twice the upper limit of normal for the lab range but the remaining labs were unremarkable. One unit of packed red blood cells (PRBC) was transfused, 80 mg of intravenous Protonix administered and she was admitted for further evaluation. Gastroenterology was consulted and an upper GI endoscopy and colonoscopy was performed.

Superficial erosions and ulcers were noted at the duodenal sweep with evidence of dried blood. Colonoscopy revealed prior ileocolic anastomosis with right hemicolectomy. No active bleeding was noted and biopsies were taken. Twice daily proton pump inhibitor therapy was started. Serial blood counts were monitored and her hemoglobin improved to 10.6 g/dl over the course of next few days. Duodenal biopsy results were notable for the following: Small intestinal mucosa with superficial mucosa ulceration, moderate mixed inflammation and atypical glandular cells in adjacent mucosa. After clinical correlation, it was determined that there was duodenal involvement secondary to Crohn's disease. She was later discharged from the hospital with instructions to continue her Cimzia and follow up with the primary gastroenterolgist.

Discussion

Upper GI Crohn's disease is an under-reported and under-recognized phenotype of Crohn's, especially in the older population. It is now being diagnosed with increased frequency in the younger population as a result of routine screening although still uncommon in the elderly. Complications in the adult population can include GI bleeding, perforation of the bowel wall, strictures and gastroduodenal fistulas. It is important to recognize the different manifestations of the disease process and obtain an endoscopic and histolgic diagnoses. Medical therapy which includes the immunomodulators, improves outcomes in symptomatic patients and results in prolonged disease free survival.

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MICHIGAN PODIUM PRESENTATION - CLINICAL VIGNETTE
Priyanjali Pulipati, MBBS

Transient Visual Hallucinations in Acute Occipital Stroke- Charles Bonnet Syndrome

Title

Transient Visual Hallucinations in Acute Occipital Stroke- Charles Bonnet Syndrome

Authors

1. Priyanjali Pulipati, MD 2. Priyadarshini Dixit, MD 3. Ali Khan, MD 4. Sarah Fatima, MD 5. Cecilia Cosma, MD 6. Geetha Krishnamoorthy, MD, FACP

Introduction

Acute stroke can lead to motor, sensory, cognitive, or perceptual deficits based on the location of the stroke. Visual perception is affected in 16.7% of stroke patients and is often undiagnosed or misdiagnosed.

Case Presentation

A 70-year-old man came to the Emergency Department (ED) with complaints of blurred vision while driving his car. He drove into trash cans on the sidewalk one day ago. He had a past medical history of atrial fibrillation on oral anticoagulation and second-degree heart block with pacemaker placement. He reported nonadherence to the oral anticoagulant. On examination, he had left-sided hemianopia without motor or sensory deficits. CT head showed acute to subacute right occipital lobe ischemic infarction involving visual cortex in the right posterior cerebral artery territory. He was diagnosed with ischemic stroke, treated, and discharged after 4 days. Two weeks later, he presented to the ED again with complaints that he has been seeing smoke coming out of his left arm and imaginary people standing on his left side. He had an insight that these scenarios were not real. He was hemodynamically stable and physical examination did not reveal any motor or sensory deficits and NIH score was 0. Laboratory evaluation was normal except for pyuria, raising the possibility of urinary tract infection. CT scan of the head showed a small focus of hemorrhage in the area of the previous subacute right occipital lobe infarct. Oral anticoagulation and antiplatelet therapy were stopped at admission, and neurology, neurosurgery, and psychiatry were consulted. Possibilities of infection-induced delirium due to urinary tract infection and psychiatric causes were considered. Urine culture showed no growth. Atypical antipsychotics were considered to treat the symptoms but not

administered immediately. Symptoms started to self-resolve over the next couple of days. Repeat CT brain in 2 weeks showed decreased conspicuity of the known hemorrhagic focus. The patient was restarted on oral anticoagulation and antiplatelet therapy.

Discussion

The case described above highlights an important and often ignored or misdiagnosed symptom of stroke- visual hallucinations. These hallucinations, called Charles Bonnet syndrome, are more commonly seen after a sudden vision loss or deficits, like the left hemianopsia deficit at initial presentation in our case. The mechanism is thought to be due to deafferentation- a loss of signals from the eye to the brain resulting in spontaneous nerve activity perceived as hallucinations. They are usually temporary but may last for several months before self-resolving. It occurs more commonly than perceived by practitioners since most patients are reluctant to express their symptoms for the fear of being diagnosed with a psychiatric illness. Identifying and acknowledging the symptom and providing reassurance is critical to avoid unnecessary medications as well as to alleviate patient concerns.

NEW YORK PODIUM PRESENTATION - CLINICAL VIGNETTE
Maie Abdullah

Unusual case of severe non-hepatic hyperammonemia with an atypical presentation of suspected urea cycle enzyme deficiency in the ICU setting

Title

Unusual case of severe non-hepatic hyperammonemia with an atypical presentation of suspected urea cycle enzyme deficiency in the ICU setting

Authors

Maie Abdullah, MD; Kareem Ebeid, MD; Thomas Genese, MD

Introduction

The etiology of non-hepatic hyperammonemia in the ICU can be obscure to recognize. The process of scavenging and removing excess nitrogen from the breakdown of proteins is regulated by several enzymes and transporters in the urea cycle, and a milder variant of the deficiency can be seen in adults.

Case Presentation

A 59-year-old male with a PMHx of APS, previous left MCA stroke, PE s/p IVC filter placement, PFO s/p patch closure, and hypertension. presented with complaints of generalized fatigue, nausea and vomiting 2 days after eating Chinese takeout. He then experienced RUE weakness and dysarthria, prompting his wife to call EMS. Initial workup revealed no abnormalities, including CT head. However, an ammonia level ordered by Neurology was found to be 267 mg/dL despite normal LFT's and no history of cirrhosis. Lactulose and rifaximin proved to be ineffective as his ammonia levels continued rising. Once his level reached 444 mg/dL, emergent HD was requested. Unfortunately, the patient's mentation deteriorated rapidly, requiring intubation & mechanical ventilation for airway protection before starting HD. Soon after intubation, he developed generalized seizures and myoclonus controlled with large IV boluses of Ativan and Versed. Hemodialysis was initiated by the time his seizures were controlled for 4 hours. The following morning, the patient's ammonia level climbed to 801 mg/dL. His seizures recurred despite full dose Propofol, Ativan, Versed, and Fentanyl IV drips. Pentobarbital IV finally controlled his seizures and he was switched to CVVHD. Repeat CT Head demonstrated an 8 mm leftward subfalcine herniation. He was started on IV Mannitol for severe cerebral edema and 3% NS to maintain a serum sodium of 145-155. Venous CT A/P with contrast ruled out

portosystemic or splenorenal shunt. Abdominal duplex ultrasound showed no evidence of portal vein thrombosis. Serum and urine amino acid profiles were inconclusive for a urea cycle enzyme deficiency. Ammonia scavengers, including Arginine IV & Sodium phenylbutyrate PO were started, which helped to normalize his ammonia levels and allow CVVHD to be discontinued. However, discontinuing the ammonia scavengers caused his levels to rise, requiring reinitiation of treatment. MRI brain demonstrated extensive gyral/cortical swelling with hyperintensity and mild diffusion involving bilateral temporal lobes, medial frontal lobes and right insular cortex. Given the poor prognosis, the patient's family decided on hospice care without any further testing.

Discussion

An atypical presentation of hyperammonemia includes headaches, vomiting, fatigue, and loss of appetite under increased catabolic stress or a high protein meal is consumed (1). The cascade of multiple metabolic and cellular dysfunctions leads to increased cerebral edema and neurological decompensation, including refractory tonic-clonic seizures, metabolic encephalopathy, and coma. Hyperammonemia alters the brain-blood barrier and causes increased L-amino acid transporter activity, leading to increased cerebral uptake of ammonia (2). The increased intracerebral ammonia undergoes metabolism by astrocytes and is converted to glutamine in the cytoplasm before entering the mitochondria via a histidine-sensitive glutamine carrier, where it is metabolized into ammonia and glutamate (3). Increased astrocyte mitochondrial ammonia causes oxidative stress leading to severe dysfunction, and ultimately increased swelling (4).

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OHIO PODIUM PRESENTATION - CLINICAL VIGNETTE
Pritika Manaktala

To treat or not to treat, that is the question: A case of simultaneous hemorrhagic conversion of stroke, STEMI and LV thrombus

Title

To treat or not to treat, that is the question: A case of simultaneous hemorrhagic conversion of stroke, STEMI and LV thrombus

Authors

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Introduction

Cardio-cerebral infarction (CCI) is an uncommonly encountered challenge. Here, we present a case where we were faced the predicament of treating an anterolateral STEMI and LV thrombus, when the patient had a concomitant hemorrhagic conversion of her stroke.

Case Presentation

A 71 yo female with history of hypertension was admitted to the ICU from another hospital for left sided weakness, facial droop, slurring speech after she was found to have right middle cerebral artery (MCA) ischemic stroke. The next morning her neurological deficits worsened. A repeat CT head showed hemorrhagic conversion with mild local mass effect and she CTA head confirmed right MCA involvement and CTA neck showed 50 % left carotid artery stenosis. MRI confirmed right MCA infarct with hemorrhagic conversion, edema and 5mm midline shift. Echocardiogram revealed EF of 50-55%, hypokinesis of apical myocardium with 1.0 x 1.2 cm apical thrombus. Neurosurgery was immediately consulted, and in an effort to minimize her edema, 3% hypertonic saline and mannitol were started. Due to her hemorrhagic conversion and shift, we initially chose not to anticoagulate her. On Day4, the patient complained of nausea, telemetry showed ST changes, and EKG showed anterolateral STEMI. Cardiology agreed to proceed for emergent cardiac catheterization only after Neurosurgery agreed to manage

potential worsening of hemorrhage and cleared the patient for dual-antiplatelet therapy (DAPT). She underwent suction thrombectomy, PCI with drug eluding stents to LAD, and was started on DAPT. Daily head CTs were done and patient was kept on hypertonic saline and mannitol until day5. Repeat echocardiogram showed worsening LV systolic function with a drop in EF to 25-30% and two apical thrombosis: 0.6 cm x 1.6 cm and 1 cm x 0.5 cm. On day6, after CT head showed no further bleed or worsening of edema, cardiology, neurology and neurosurgery mutually agreed to start the patient on warfarin, using heparin IV as a bridge. Patient was continued on clopidogrel and aspirin was discontinued. She was later transferred to the floor where her medications including for heart failure were optimized and she was discharged to rehab on a 30 day monitor, with a plan for close follow up.

Discussion

The term Cardio-cerebral Infarction (CCI) was first introduced in 2010. Multiple mechanisms have been proposed, in our case it was secondary to embolization from an LV thrombus. Our case was unique in the fact that our patient developed hemorrhagic conversion of her infarct, further complicating matters. Each scenario was life threatening and hence we chose to treat her STEMI and thrombus despite her intracranial bleed as a delay in treatment of her STEMI was potentially fatal, and a delay in anticoagulation would further increase her risk for thromboembolic phenomenon.

TEXAS PODIUM PRESENTATION - CLINICAL VIGNETTE
Helen Kreit

MEDULLARY AND PAPILLARY THYROID COLLISION TUMOR

Title

Medullary and Papillary Thyroid Collision Tumor

Authors

Helen Kreit, DO, Texas Tech University Health Sciences Center El Paso; Jesus Guzman, MD, Texas Tech University Health Sciences Center El Paso; Fatma Dihowm, MD, Texas Tech University Health Sciences Center El Paso

Introduction

The incidence rate of thyroid cancer has been steadily increasing over the past several decades, with thyroid cancer being the most common type of endocrine cancer in the U.S.A. Papillary thyroid cancer (PTC) and medullary thyroid cancer (MTC) are two remarkably distinct neoplasms, with differences in their incidence, cell origins, histological features, clinical presentation, and most importantly, their prognosis. The simultaneous occurrence of both cancers in the same thyroid accounts for less than 1% of all thyroid cancers. There have only been a few cases documenting the occurrence of this phenomenon of simultaneous tumor findings.

Case Presentation

A 64-year-old male with a history of COPD was recently diagnosed with PTC presented with acute hypoxemic respiratory failure, dysphagia to solids, weight loss, and hoarseness. Patient was hemodynamically stable on admission requiring supplemental oxygen saturating 98% via nasal cannula. Physical exam was remarkable for non-tender bilateral cervical lymphadenopathy and a palpable, non-tender, non-mobile mass in the right anterior neck. CT neck showed a 4.3 x 5.2 x 14 cm solid enhancing tumor in the right thyroid extending into the superior mediastinum and eroding into the trachea with approximately 70 degree focal stenosis and metastatic cervical lymph nodes. Labs: TSH 1.19, Ca 8.8, PTH 32.1, CEA 1270, calcitonin 4070. Molecular testing: RET. Initial right neck biopsy was consistent with PTC. Immunohistochemistry: positive for PAX8, Ck7, CK AE1/3, TTF1 and negative for thyroglobulin, CK20, p63, Napsin, CK5/6 with Ki-67 at 5%. Left neck lymph node biopsy was consistent with MTC. Immunostains: positive for CK7, calcitonin, CD56, chromogranin, synaptophysin, with Ki-

67 at 5-10%, and negative for thyroglobulin and S100. Mass Resection and debulking was not feasible. The patient was transferred to an outside facility for tracheal stent placement. He was to undergo radiotherapy and based on molecular testing results, the patient will be started on systemic treatment with selpercatinib.

Discussion

The differences between MTC and PTC not only stems from their cell origins but also from their clinical presentation, prognosis, and management. Although prior biopsy was consistent with PTC, there was a discordance between the tissue diagnosis and aggressive clinical presentation, prompting a repeat biopsy to confirm the diagnosis. This case raises the question on the origins of this phenomenon and how these findings will dictate the patient's prognosis and management. The random collision theory provides an answer for the simultaneous occurrence of MTC and PTC. The theory states that two separate, distinct tumors get initiated near one another resulting in a polyclonal neoplasm. Coexistence of these cancers can be seen as mixed tumors or collision tumors. Collision tumors are two histologically distinct tumors that developed in the same site, which is most consistent with this case since mixed tumors have a common cell of origin. Due to these rare findings, the clinical outcomes are poorly studied, presenting a significant diagnostic and treatment challenge since pathologic biopsy helps guide overall treatment. As data is collected, we will learn more about the prognosis and will be better able to tailor therapies best suited for these tumors.

ALABAMA POSTER FINALIST - CLINICAL VIGNETTE James Coley

"I can't stop these bruising and bleeding episodes Doc!": A case of Acquired Hemophilia A Secondary to Amiodarone use"

Title

"I can't stop these bruising and bleeding episodes Doc!": A case of Acquired Hemophilia A Secondary to Amiodarone use"

Authors

Dr. James M. Coley, Dr. Thomas Butler

Introduction

Hemophilia A is defined as a deficiency of Factor VIII that is essential for coagulation via the Intrinsic pathway of the clotting cascade. Acquired Hemophilia A is a rare variant compared to Inherited Hemophilia A known to occur via X-linked recessive inheritance. Acquired hemophilia occurs secondary to the production of anti-bodies to factor VIII leading to diffuse ecchymosis, mucosal bleeding, large hematomas, and rarely hemarthrosis formation. Acquired Hemophilia A has been associated with many inciting events such as post-partum, malignancy, medication-induced, and Auto-Immune conditions. This diagnosis is challenging due to it being rare, requiring advanced diagnostic testing, and often occurring in the setting of a critically-ill patient.

Case Presentation

A 72 Year-old male with a PMH of CAD s/p CABG, HFrEF requiring pacemaker, and atrial fibrillation who presented with a chief complaint of dyspnea, lower extremity swelling and diffuse ecchymosis. On physical exam, patient had 2+ lower extremity edema, bilateral crackles in lower lung fields, and diffuse ecchymosis diffusely as well as a large hematoma in his umbilical region. Initial work-up revealed BNP of 22,057, H/H of 7.9/26.9, Plt count of 189, PT/INR of 16.8/1.3, PTT of 76, and MCV of 105.9. CXR, physical exam, and labs were consistent with CHF exacerbation for which he received aggressive diuresis. Clotting panels showed Factor VIII level of 4, Factor IX of 118, X of 70, factor VIII activity of

Discussion

Acquired Hemophilia A has a clinical presentation similar to this case with a patient presenting with large volume bleeding, ecchymosis, and hematomas after an inciting event or unfortunately an idiopathic etiology. The typical pattern will be prolonged PTT, normal PT that is followed with mixing study and Bethesda assay. The mixing study will show prolonged PTT that fails to correct with the Bethesda assay showing the extent of inhibitor present. This patients case is confounded by the significant anti-phospholipid testing with negative SLE and other auto-immune testing. True APS should result in thrombosis as opposed to hemophilia as in this case. The exact cause of his acquired hemophilia A is uncertain but Is likely related to his recent Amiodarone use due to the timeline of his clinical presentation. This case highlights the importance of having a high index of suspicion required for acquired hemophilia's in the appropriate clinical presentation given the substantial morbidity and mortality. This clinical presentation is often seen with hematologic malignancies, DIC, and various platelet disorders making acquired hemophilia an often-overlooked differential diagnosis to the detriment of patients.

ALABAMA POSTER FINALIST - CLINICAL VIGNETTE James Coley

“Backed Into A Corner.”: A Medical Decision-making Dilemma in the Setting of Untreated TB, Untreated Chronic Hepatitis C, and Acute Aspergillus Infection

Title

“Backed Into A Corner.”: A Medical Decision-making Dilemma in the Setting of Untreated TB, Untreated Chronic Hepatitis C, and Acute Aspergillus Infection

Authors

Dr. James M. Coley, Dr. Ashley Andrews, Dr. Amber Bokhari, Dr. John Vande Waa

Introduction

The following case report centers around a patient with a complicated medical history including Untreated Chronic Hepatitis C, Untreated TB, and Aspergillus Infection creating a treatment challenge for his multi-disciplinary team. While these conditions are fairly commonly individually, having a patient present with all three acutely Ill is quite uncommon. This case highlights important diagnostic, management, and interdisciplinary care teaching points of these conditions as well as the common scenario of prioritizing therapy of conditions given complicating factors.

Case Presentation

Patient is a 60 Yo male with a PMH of Untreated Chronic Hepatitis C, Advanced COPD, History of poly-substance abuse, and “TB exposure” who presented with a chief complaint of generalized fatigue, worsening dyspnea, and 20 lb weight loss over the past month. On arrival to the ED, he was found to have severe cachexia with diffuse muscle wasting. He had increased work of breathing with plain film CXR showing enlarged lung fields and flattened diaphragms consistent with COPD as well as a large cavitating LUL mass concerning for malignancy vs. TB. Out of concern for TB, the patient was placed on appropriate precautions with serial AFB’s obtained with no growth to date. CT Chest was obtained confirming LUL mass with no noted lymphadenopathy. Unfortunately, patient developed acute hypoxic respiratory failure transfer to the ICU. Bedside Bronchoscopy was performed with no masses identified, copious secretions noted diffusely with no bronchial obstructions. Cytology returned with no evidence of malignancy with BAL showing extensive growth of Aspergillus Fumigatus in 2/2 samples. Additional testing resulted with 1,3-beta-glucan of 115, negative Galactomannan, Hep. C. Quant

of 2.5 Million, and negative HIV. Public health records were obtained given history of exposure which showed prior positive PPD and CXR with cavitary lesion with failure to follow-up for treatment. The patient was eventually extubated with goals of care discussions had given his performance status and co-morbidities. Multi-disciplinary team conference was held with consensus that patient had culture negative TB with active Aspergillus Infection and Hepatitis C. Given the baseline liver dysfunction and the drug interactions between RIPE therapy and Voriconazole a patient-care team decision was made to treat his Aspergillus infection then culture negative TB following completion of therapy.

Discussion

Chronic Hepatitis C, Pulmonary TB, and Aspergillus Infections are commonly seen on an Internal Medicine service but rarely seen simultaneously. This patients clinical presentation and performance status presented a medical decision making dilemma for the services involved in this patients care. Significant concern was raised regarding his ability to tolerate any therapy given his advanced COPD and severe cachexia. The patient was offered hospice but was adamant he receive aggressive therapy. The contraindication to treating his Untreated TB simultaneously with his Aspergillus Infection required the multidisciplinary team prioritize his Aspergillus Infection. His baseline hepatic dysfunction further complicated therapy given the known hepatotoxicity of Voriconazole. This case highlights the importance of prioritizing the acute cause of a clinical presentation as well as the importance of multidisciplinary care, and most importantly valuing the autonomy of the patient in providing guidance to care.

ALABAMA POSTER FINALIST - CLINICAL VIGNETTE Divya Devabhaktuni

Cryptococcus and the Element of Surprise: An Overlooked Cause of Sepsis in Patients with End Stage Liver Disease

Title

Cryptococcus and the Element of Surprise: An Overlooked Cause of Sepsis in Patients with End Stage Liver Disease

Authors

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Introduction

Cryptococcosis is typically considered an opportunistic infection in patients with untreated acquired immunodeficiency syndrome (AIDS) or those on immunosuppressive therapy. Given the immunocompromised state in end stage liver disease (ESLD), it is also important to have a high index of suspicion for Cryptococcus neoformans as a cause of sepsis in this population.

Case Presentation

A 58-year-old woman with history of alcohol use disorder presented to the ER with a two-week history of jaundice, weakness, and decreased appetite, including decreased alcohol consumption due to the severity of her symptoms. Her initial clinical condition was felt to be most consistent with alcoholic hepatitis with a modest elevation of AST (244 U/L) and ALT (81 U/L) and hyperbilirubinemia (total bilirubin 27.5 mg/dL), new onset of jaundice, and her known history of heavy alcohol consumption. Additional work-up for causes of acute liver injury was unrevealing. Her hospital course was further complicated by upper gastrointestinal bleeding due to a gastric ulcer and hepatic encephalopathy. Four days into the admission, she developed septic shock with worsening encephalopathy and chest x-ray findings concerning for pneumonia, prompting transfer to the intensive care unit (ICU). On arrival to the ICU, she was intubated due to encephalopathy, received broad-spectrum empiric antibiotics, and was

started on vasopressors for shock. However, she developed refractory shock and severe acidosis leading to cardiac arrest. Following return of spontaneous circulation, the patient's family made the decision to defer further escalation of care, focusing instead on palliation and she died shortly thereafter from refractory shock. Several days later, blood cultures collected upon her transfer to the ICU grew a fungus identified as Cryptococcus neoformans.

Discussion

Disseminated cryptococcal infection is most often discussed in the context of patients with AIDS or those on immunosuppressive therapy; however, ESLD should be recognized as an emerging risk factor for cryptococcosis (1). This increased risk is potentially related to a decline in cell-mediated immunity in ESLD, as the liver, a key organ in the reticuloendothelial system, plays an important role in clearance of microbes from the circulation. Studies have indicated that Kupffer cells in the liver sinusoids function to engulf circulating Cryptococcus neoformans, resulting in reduction of fungal dissemination (2). Additional immunodeficiencies in ESLD are caused by decreased antibody and immunoglobulin concentrations, as well as impaired complement response (3). Mortality in patients with ESLD who develop cryptococcal infection has been shown to be as high as 80%, with a majority of deaths occurring early in the course of the disease (4). Delay in diagnosis may occur as ESLD is not routinely considered a traditional risk factor for cryptococcal infection. Many medical centers have implemented cryptococcal antigen testing that can provide faster diagnosis of cryptococcosis than traditional blood cultures, making Cryptococcus an easier target for appropriate early intervention. Given its high mortality, it is critical to adopt a high index of suspicion for the presence of cryptococcal disease in patients with ESLD, especially when concomitant with sepsis. Further research is needed to clarify the true extent of cryptococcosis in the ESLD population.

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ALABAMA POSTER FINALIST - CLINICAL VIGNETTE Cesar Moreno

Hepatocellular carcinoma in a patient with Fanconi anemia: the importance of long-term cancer surveillance

Title

Hepatocellular carcinoma in a patient with Fanconi anemia: the importance of long-term cancer surveillance

Authors

Cesar Moreno, MD, R. Scott Jordan, DO, Nicholas Ludvik, MD University of South Alabama, Mobile, AL

Introduction

Fanconi anemia (FA) is a rare autosomal recessive disorder caused by improper cell repair of DNA interstrand crosslinks. FA leads to bone marrow failure and malignancies such as leukemia, myelodysplastic syndromes and solid tumors. Hematopoietic stem cell transplantation (HSCT) cures bone marrow failure caused by FA but does not prevent occurrence of solid tumors. We present the case of a patient with FA treated with HSCT who developed gradual abdominal pain and distention due to a new diagnosis of hepatocellular carcinoma (HCC). He had been lost to follow-up since an incidental finding of cirrhosis two years earlier. Long-term follow-up after HSCT must involve a multi-disciplinary team pursuing long-term cancer surveillance and ongoing patient education about increased non-hematologic cancer risk.

Case Presentation

A 30-year-old male with history of FA who had undergone HSCT at age 5 presented with worsening abdominal pain and distention. He had incidental finding of cirrhosis two years earlier during an admission for ventriculoperitoneal shunt malfunction. Unfortunately, the patient was lost to follow-up. On this admission, physical exam was significant for short stature, decreased breath sounds over right lung field and abdominal distention with positive fluid wave. Serology was significant for cholestatic pattern of liver injury along with elevated alpha-fetoprotein tumor marker. Ascites interpretation was negative for spontaneous bacterial peritonitis and viral hepatitis panels were non-reactive. Model for End-Stage Liver Disease sodium score was 6 and his Child-Pugh class was A. Abdominal computed tomography showed a liver mass with peripheral enhancement and central hypoattenuation. Magnetic resonance

imaging confirmed HCC. Medical oncology team planned discussions at interdisciplinary tumor board for consideration of optimal therapeutic plan. The patient's post-hospitalization course was complicated by sepsis from urinary source. He subsequently passed away one month following index admission.

Discussion

FA has traditionally been a pediatric disease diagnosed in early childhood and typically managed by the pediatric medical system. With advancements in HSCT, greater than 80% of patients with FA survive to 18 years of age with a median age of survival of 33 years (1). While HSCT is curative therapy for bone marrow dysfunction, it does not alter a patient's risk of solid organ tumors. In contrast to bone marrow failure, which mostly occurs in pediatric patients, solid organ tumors have a median age of 26 years, placing tumor surveillance in the purview of adult primary care providers. With a 46% risk of liver tumor and up to a 76% cumulative risk of developing any solid tumor by age 45, it is critical to raise awareness of the increased risk for non-hematologic malignancy in the FA adult population (2). Long-term follow up is an essential part of the routine medical care of the FA patient population. Primary care physicians must work in close collaboration with the patient's primary hematologist among other specialties to ensure proper long-term follow up. This case provides an opportunity to discuss FA and the importance of disease specific preventive care in a patient population that is increasingly surviving well into adulthood.

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ARIZONA POSTER FINALIST - CLINICAL VIGNETTE Syeda Mina

An unusual case of hematochezia: rare submucosal colonic mass

Title

An unusual case of hematochezia: rare submucosal colonic mass

Authors

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Affiliations: (1) Department of Internal Medicine, Mayo Clinic, Phoenix, Arizona (2) Division of Gastroenterology & Hepatology, Mayo Clinic, Phoenix, Arizona (3) Division of Pathology, Mayo Clinic, Phoenix, Arizona

Introduction

Plasmacytomas are localized neoplastic proliferations of plasma cells; whereas systemic involvement entails the disease multiple myeloma. Extramedullary plasmacytomas are a rare entity comprising only 4% of all plasma cell tumors, where the upper respiratory tract is a relatively common site of involvement in comparison to the gastrointestinal system. In this case we describe a rare cause of a gastrointestinal mass: a primary, isolated, extramedullary plasmacytoma of the colon.

Case Presentation

An 82-year-old male presented with 1-week history of hematochezia associated with intermittent constipation and diarrhea for several weeks. Of note, colonoscopy 1 year prior to presentation showed diverticulosis but no polyps or masses. ? Past medical history included type 2 diabetes mellitus, hyperlipidemia, hypertension, and squamous cell cancer (SCC) of the scalp status-post resection and radiation therapy (RT) in 2016. On physical examination, all vital signs were within normal limits. Abdomen was soft, non-tender with active bowel sounds. Rectal exam revealed no palpable mass, bright red blood or melena. Initial CT abdomen-pelvis was impressive for a recto-sigmoid mass, measuring approximately 5.6 cm in length, presumably adenocarcinoma. Prior abdominal CT scan from 4 years ago wass negative for any colonic mass. The following day, colonoscopy revealed an obstructing, sub-mucosal appearing mass with intact overlying mucosa in the recto-sigmoid colon. Given limited visualization on colonoscopy, subsequent endoscopic ultrasound (EUS) confirmed it to be sub-epithelial in origin, arising from the submucosa and muscularis propria layers of the colon, without

breaching the mucosa. Biopsy showed the mass to be a plasma cell neoplasm, staining positive for CD138 and kappa light chain stain, which warranted a comprehensive multiple myeloma work up. SPEP showed only a mildly elevated monoclonal IgG kappa, although M-spike was not quantifiable. Free light chains kappa was 2.87. UPEP did not show a M-spike. Ultimately, bone marrow biopsy demonstrated no evidence of plasma cell neoplasm. A PET scan ruled out involvement of other sites, confirming the mass to be a solitary, extramedullary plasmacytoma. Initial treatment plan involved targeted radiation therapy. However, two weeks after diagnosis patient sustained recurrence of hematochezia with radiographic evidence of colorectal intussusception warranting expedited surgical intervention with lower anterior resection and ?stoma formation.

Discussion

Plasmacytoma is a neoplastic proliferation of plasma cells; referred to as multiple myeloma with systemic involvement. Extramedullary plasmacytomas comprise 4% of all plasma cell tumors. Most extramedullary plasmacytomas occur in the upper respiratory tract; only 10% of reported cases have involved the gastrointestinal tract. The stomach and small intestine are the most commonly involved sites in the gastrointestinal tract. Colonic origin is extremely rare. These tumors may be solitary or may precede, accompany, or follow the onset of multiple myeloma. Therefore, comprehensive multiple myeloma work-up is indicated. Given the rarity of the disease, there is no uniform consensus about prognostic factors and treatment. The role for radiation therapy, surgery and chemotherapy varies on a case-by-case basis.

ARIZONA POSTER FINALIST - CLINICAL VIGNETTE
Kimberly Pham

An unusual presentation of a common condition: venous thromboembolism in pernicious anemia

Title

An unusual presentation of a common condition: venous thromboembolism in pernicious anemia

Authors

Kimberly Pham, Bianca Varda, Christine Firth

Introduction

Hyperhomocysteinemia resulting from vitamin B12 deficiency may confer a hypercoagulable state, leading to venous thromboembolism. We present a case of venous thromboembolism in a patient with previously undiagnosed pernicious anemia.

Case Presentation

A 56-year-old female with a past medical history of diabetes mellitus type 2 and hypertension presented after a right thigh deep venous thrombosis (DVT) had been found on an outpatient ultrasound. She reported a five-day history of swelling of her right lower extremity with calf tightness. Review of symptoms was otherwise unremarkable. She denied any predisposing factors including recent surgery or immobility, history of malignancy or venous thromboembolism (VTE), or use of hormone replacement therapy. Her family history was negative for VTE or autoimmune disorders. On admission, vital signs were 37oC, HR 103, RR 23, BP 170/94, and SpO2 100% on room air. Physical examination was notable for conjunctival pallor and +1 pitting edema to mid-shin in the right lower extremity. Initial labs demonstrated a hemoglobin of 6.8 gm/dL, mean corpuscular volume of 105 fL, and platelet count of 521 thousand/uL. Ultrasound revealed a DVT of the anteromedial right thigh with non-compressible right common femoral, right profunda femoral, and right femoral vein. Further work-up revealed an elevated homocysteine level of 51.0 mcmol/L and an undetectable vitamin B12 level. Ferritin, folate, protein C, protein S, antithrombin III, factor V Leiden, methylenetetrahydrofolate reductase (MTHFR), lupus anticoagulant and JAK-2 studies were all unremarkable. Intrinsic factor (IF) blocking antibody and gastric parietal-cell antibody were both positive. A diagnosis of pernicious anemia was made and she was started on intramuscular

cyanocobalamin. Her DVT was initially treated with enoxaparin in the setting of initially unclear anemia etiology and chronicity. She was transfused 1 unit packed red blood cells with appropriate response and stable hemoglobin level. She was switched to apixaban at discharge.

Discussion

Pernicious anemia is an autoimmune disorder characterized by a megaloblastic anemia secondary to B12 deficiency. It is caused by autoantibodies against IF and/or gastric parietal cells, which produce IF. Because IF is necessary for vitamin B12 absorption at the terminal ileum, those with pernicious anemia are often vitamin-B12 deficient. Hyperhomocysteinemia may be noted as a physiological consequence of vitamin B12 deficiency, as homocysteine is normally processed by vitamin B12 to produce methionine. Hyperhomocysteinemia has been associated with a hypercoagulable state and increased risk for venous thromboembolism, as elevated homocysteine levels may have a toxic effect on vascular structures. One hypothesis is that homocysteine interferes with the production of nitric oxide, leading to an impairment in vascular dilation and creating a pro-inflammatory state in endothelial cells. This in turn creates a hypercoagulable state and can predispose patients to atherosclerosis. We have described DVT as an unusual presentation of pernicious anemia. The clinician should be aware of this uncommon association when forming a differential for anemia with VTE. It is crucial that patients are diagnosed with pernicious anemia in a timely manner, so they may begin vitamin B12 supplementation to prevent long-term complications and potentially reduce their risk of thrombosis.

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ARIZONA POSTER FINALIST - CLINICAL VIGNETTE Damir Vukomanovic

Giant Coronary Aneurysms - A Late Complication of Kawasaki's in the Adult

Title

Giant Coronary Aneurysms - A Late Complication of Kawasaki's in the Adult

Authors

Damir Vukomanovic, MD - University of Arizona College of Medicine Phoenix; William Reichert, MD - University of Arizona College of Medicine Phoenix; Suzanne Sorof, MD - Banner Heart Hospital

Introduction

Kawasaki disease (KD) is an acute vasculitis primarily affecting children and is characterized by fever, mucositis, cervical lymphadenopathy, extremity edema, and rash. The most feared complication of the disease is progression to coronary artery vasculitis, leading to aneurysm formation in 25% of cases. We report the case of an adult with known KD presenting with unstable angina and giant coronary aneurysms.

Case Presentation

A 69-year-old woman with a history of KD and repaired abdominal aortic aneurysm presented to her outpatient cardiologist with atypical chest pain. She was diagnosed with KD 20 years ago following a retinal artery occlusion workup that incidentally revealed coronary aneurysms. She has since been managed conservatively with anti-coagulation and strict blood pressure control. At current presentation, she reported a few days of centralized chest pressure at rest and exertion, partially relieved by nitroglycerin, and associated right shoulder pain. Physical examination revealed a laterally displaced point of maximal impulse but was otherwise non-remarkable. Her atypical chest pain prompted evaluation with a treadmill stress test significant for ST-depression, and subsequent pharmacological regadenoson stress test that reproduced her angina and demonstrated moderate anterior wall ischemia with hypokinesis and hypoperfusion. She was then transferred for coronary angiography that revealed minimal stenosis but a significant 30mm aneurysm in the proximal left anterior descending artery and a 30mm heavily calcified aneurysm at the ostium and proximal portion of the left circumflex artery. Three years prior, these aneurysms were reported to be 15mm, half their current size. Additional smaller aneurysms were visualized in the obtuse marginal and right coronary arteries

as well. Management of her unstable angina and giant coronary aneurysms was debated but ultimately deemed surgical given the difficult anatomy. A 3-vessel CABG was successfully performed with internal mammary grafting to the mid-left anterior descending artery, saphenous vein graft to the posterior-lateral ventricular branch of the distal left circumflex artery, and saphenous vein graft to the distal right coronary artery. At 2-month postoperative follow-up, she reported drastic improvement in her anginal symptoms and continues improving with cardiac rehabilitation.

Discussion

Kawasaki's disease is categorized as an acute systemic inflammation of medium-sized vessels. The most feared complication is development of coronary aneurysms, predominantly of the proximal segments and bifurcations of major coronary arteries (1). Coronary aneurysms are often classified by their maximal internal diameter. In the adult, giant aneurysms are typically >20mm and have a greater propensity for thrombus formation and aneurysmal rupture (2,3). Conservative management consists of anti-platelet and/or anti-coagulation with blood pressure control. In cases complicated by acute coronary syndrome, treatment with surgical or percutaneous coronary intervention (PCI) is often deliberated. CABG appears to be superior for giant coronary aneurysms given the more challenging anatomy and additional risks for coronary wall rupture, distal embolization, and stent thrombosis seen with PCI (3). For aneurysms

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ARKANSAS POSTER FINALIST - CLINICAL VIGNETTE
Amanda B Abbott, DO

Osteopathic Manipulative Treatment for Hiccups in a Dying Patient: A Case Report

Title

Osteopathic Manipulative Treatment for Hiccups in a Dying Patient: A Case Report

Authors

Amanda Abbott, DO; Janet Lieto, DO; David Mason, DO; Francesca Filipetto, DO; Kelly Klein, MD

Introduction

When a patient is nearing the end of life (EOL) and their goal is comfort-focused care, symptom control is essential. Common symptoms are pain, dyspnea, and terminal agitation. Less commonly, hiccups can be a persistent and distressing symptom that can be difficult to treat. While most bouts of hiccups are episodic and relatively mild, hiccups at the end of life can be persistent. The goal of treatments is to disrupt the irregular nerve activity involved in the hiccup reflex. This is often accomplished with IV/SQ medications such as Haldol. Oral medications such as baclofen, valproic acid, and chlorpromazine are typically not options at EOL because patients are frequently unable to swallow. Therefore, treatment options are significantly limited in this population. Here, we present a case involving hiccups that were refractory to the limited medication options available but responded to manipulation techniques aimed at addressing the nerve dysfunction involved in the hiccup reflex.

Case Presentation

This patient was an 89-year-old man admitted to an Inpatient Hospice Unit for end-stage Alzheimer's disease. On day 4 of his admission, he developed hiccups which were distressing to his family as he appeared to be uncomfortable. He was unable to swallow and IV Haldol was administered without relief; due to his multiple comorbidities and medications, osteopathic manipulative treatment (OMT) was performed to attempt to resolve his condition without risking too many side effects or interactions. OMT performed first included indirect diaphragm techniques and cervical soft tissue treatments. His hiccups persisted so his cranial motion was assessed and he was treated with frontal lift, parietal lift, and balanced membranous tension (BMT) to the falx cerebri. At this point his hiccups ceased. Treatment concluded with BMT of the tentorum cerebelli, and temporal bone release. The hiccups did not return upon completion

of the treatment and were absent for at least two hours per the family which gave them a sense of relief and contributed to allowing him to die comfortably.

Discussion

When addressing symptoms at the end of life, treatment options are often limited. Osteopathic manipulative treatment (OMT) can be utilized to help bring comfort to these patients and their families. Special care must be taken in this population as the actively dying patient is physically frail; however, this is not a contraindication. Treatment of somatic dysfunctions can alleviate restrictions of the nerves, muscles, and other tissues. By resolving restrictions of the vagus nerves, phrenic nerves, and diaphragm, OMT may be able to interrupt the hiccup reflex and provide non-pharmacological relief. Sometimes, as in this case, treatment of cranial somatic dysfunctions can be effective. The use of OMT as an adjunctive therapy at EOL has not been extensively studied. However, it is likely that this modality would be useful for other EOL symptoms as well. OMT offers a non-pharmacological option for a population whose pharmacologic choices are often significantly limited. Further studies on the use of OMT to control hiccups and other distressing EOL symptoms are warranted.

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ARKANSAS POSTER FINALIST - CLINICAL VIGNETTE Balreet K Dhami, MD

NAVIGATING CARDIOGENIC SHOCK WITH A CO-PILOT - CASE REPORT AND REVIEW OF MECHANICAL CIRCULATORY SUPPORT DEVICES IN CARDIOGENIC SHOCK

Title

NAVIGATING CARDIOGENIC SHOCK WITH A CO-PILOT - CASE REPORT AND REVIEW OF MECHANICAL CIRCULATORY SUPPORT DEVICES IN CARDIOGENIC SHOCK

Authors

Balreet Kaur Dhami, MD Dylan Hooks, DO Andrew Russell, DO

Introduction

Cardiogenic shock (CS) is a state of low perfusion due to pump failure. A profound decline in myocardial contractility can initiate a futile cycle where reduced cardiac output leads to hypotension, hence further ischemia, and yet again a reduction in cardiac contractility and output. Treatment of CS includes medical management and ventricular support via mechanical circulatory support devices, as demonstrated in this case.

Case Presentation

A 67 y.o. male with a PMH of HTN, IDDM, and HLD presented with hemoptysis. He was hemodynamically stable and denied chest pain but noted to have hypertroponinemia and T wave inversions in inferior leads. Upon admission, he developed back pain and acute hypoxic respiratory failure. Repeat ECG showed inferior wall STEMI. Cardiac catheterization was performed and revealed severe disease in the left main, LAD, LCx, and RCA. The RCA was successfully ballooned and stented. PCI to LCx was aborted d/t worsening hypoxia, hypotension/CS, ventricular fibrillation, and eventually complete heart block. An Impella LVAD was placed d/t cardiogenic shock. He was defibrillated 2x with 200J shocks for ventricular fibrillation and given multiple rounds of IV atropine and epinephrine for severe bradycardia and hypotension. A transvenous pacemaker was placed for complete heart block and the patient was started on Epinephrine and Norepinephrine drips. His hospital course following Impella placement was complicated by symptomatic hemolytic anemia requiring blood transfusion, acute kidney injury though to be secondary to hemolysis as well as thrombocytopenia. Clinical improvement allowed for the Impella to be removed on Day 10, following which anemia,

thrombocytopenia and renal function improved to baseline. He continued to improve and was eventually discharged with further treatment, including CABG.

Discussion

Circulatory support devices are used to perform some or all functions of the heart. Temporary support is for those individuals whom the heart is fully expected to recover and include IABP, ECMO, left or right VD, and PMCAD. Full support devices are used as a bridge to cardiac transplantation and includes BiVAD and TAH. The appropriate support device for each individual is decided by the amount of support needed as well as the advantages and disadvantages of each. This case involves the placement of an Impella device and review of complications associated with the device. CS has historically been treated via vasopressors and inotropes, but there is a notable benefit in ventricular assist devices partly due to adverse effects associated with medical management including increased myocardial O2 demand and arrhythmogenicity. In this case, a VAD was needed to improve the patient's cardiac function allowing for recovery, while also assessing and treating the complications that arose.

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California Clinical Vignette Poster Finalist - Shiva Barforoshi

Title

A Rare Case of Steroid-Resistant Neurosarcoidosis of the Cavernous Sinus With Optic Neuropathy: A Case Report

Authors

Shiva Barforoshi, BA; Nikhil A. Patel, BS; Alvin P. Singh, MS; Terrence Li, MD; Benjamin Mba, MD

Introduction

Sarcoidosis is an inflammatory disease that presents with nervous system involvement in 5-10% of cases, commonly known as neurosarcoidosis.1 While there are no randomized controlled trials for the treatment of neurosarcoidosis, expert opinion supports initial treatment with corticosteroids and the use of steroid-sparing or anti-TNF agents in refractory or severe cases.

Case Presentation

A 48-year-old African American male with a past medical history of biopsy-proven hepatic and renal sarcoidosis and progressive headache, dizziness, and blurry vision for 5 months presented with an acute exacerbation of right-sided vision loss over one day. MRI of the brain revealed a dural-based mass extending into the right cavernous sinus and compressing the right optic nerve. Given the pathological confirmation of systemic granulomatous disease consistent with sarcoidosis, clinical manifestations, bilateral hilar and mediastinal lymphadenopathy, MRI findings typical of central nervous system inflammation, and exclusion of other possible etiologies, the patient was diagnosed with probable neurosarcoidosis. Biopsy of the dural-based mass to meet the diagnostic criteria of definite neurosarcoidosis was considered but deferred due to the risk of permanent neurological deficits induced by the procedure.2 In our workup, other pathologies that commonly cause granuloma formation and cavernous sinus lesions were considered, including systemic and CNS infections (e.g., neurosyphilis, tuberculosis, etc.), neoplastic processes (e.g., systemic lymphoma, CNS tumors, etc), and other neuro-inflammatory and autoimmune disorders (e.g., granulomatosis with polyangiitis, IgG4-related hypertrophic pachymeningitis, etc.). Corticosteroids initially resolved his symptoms; however, he suffered an acute relapse. Combination therapy with corticosteroids plus mycophenolate mofetil (MMF) led to the eventual resolution of his symptoms. The patient was instructed to follow up in 1 month for rheumatologic consultation and consideration for initiation of infliximab to minimize long-term steroid toxicity.

Discussion

Only 8 cases of neurosarcoidosis involving the cavernous sinus have been reported. 3-8 Expert opinion and small retrospective studies support early, aggressive treatment for severe cases of neurosarcoidosis, as relapses are frequent.1 Our patient represents the only reported case of probable neurosarcoidosis of the cavernous sinus with optic neuropathy successfully treated with corticosteroid plus MMF combination therapy. This case presentation supports the need to develop criteria for classifying patients with neurosarcoidosis into mild, moderate, and severe cases to guide treatment decisions. These criteria may be based on neurolocalization and the degree of neurological disability, with the notable exception of isolated facial nerve paralysis, which can most often be treated with only a few weeks of prednisone monotherapy and rarely recurs. Given its potentially devastating neurological consequences, we would classify optic neuropathy as a severe case of neurosarcoidosis, similar to cases of spinal cord disease. In severe cases of neurosarcoidosis, steroids and steroid-sparing agents in addition to anti-TNF agents, especially infliximab, are initiated earlier on in the course of treatment.1 Presumably, our patient's optic neuropathy would have resolved sooner with earlier initiation of corticosteroid and MMF combination therapy and/or infliximab. We highlight the need to consider early, aggressive treatment in cases of neurosarcoidosis with optic neuropathy and to develop criteria to guide treatment strategy based on neurolocalization and the degree of neurological disability.

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California Clinical Vignette Poster Finalist - Tina Huang

Title

Refractory Hypokalemia and Ectopic ACTH in Small Cell Lung Cancer

Authors

Tina Q. Huang, Gavin Ho, Tyler Larsen

Introduction

Small cell lung cancer (SCLC) is an aggressive malignancy associated with paraneoplastic syndromes such as ectopic Cushing's syndrome (ECS), syndrome of inappropriate ADH secretion, and parathyroid related hormone secretion. Acute metabolic abnormalities, such as refractory hypokalemia, should raise suspicion for ECS.

Case Presentation

A 72-year-old man presented to the emergency department with swelling of all four extremities and severe dyspnea. One week prior to his presentation, the patient was diagnosed with small cell lung cancer. The patient was diagnosed with acute hypoxic respiratory failure and superior vena cava syndrome secondary to progressive SCLC and admitted to the hospital. Admission labs were notable for a severe hypokalemia to 2.3 mEq/L and a new metabolic alkalosis. He was treated for several days with oral and intravenous potassium chloride, but his hypokalemia only modestly improved. An afternoon cortisol level was elevated to 61.5 mcg/dL. Elevated ACTH and morning cortisol indicated likely ACTH-dependent hypercortisolism. Dexamethasone administration failed to suppress cortisol levels (AM cortisol 47mcg/dL), indicating a likely ectopic source. Endocrinology recommended a pituitary MRI, which showed potential 1.4 mm microadenoma. However, this was ultimately inconclusive as the suspected adenoma was too small to be evaluated without additional imaging, which the patient declined. Given the recent diagnosis of SCLC, refractory hypokalemia, metabolic alkalosis, and lack of cortisol suppression post-dexamethasone test, hypokalemia was suspected to be secondary to hypercortisolism from ectopic ACTH secretion from small cell lung cancer. Urgent chemotherapy (carboplatin/etoposide/atezolizumab) was initiated in the hospital with close monitoring for tumor lysis syndrome, which did not occur. The patient's extremity swelling improved modestly with chemotherapy. Potassium improved to 3.1 at discharge with daily PO repletion. The patient was discharged with plans for continued chemotherapy and palliative radiation for his SVC syndrome. He was discharged with supplemental potassium, which was eventually tapered down with resolution of hypokalemia as an outpatient.

Discussion

Since being reported by Brown in 1928, limited presentations of ECS in the setting of SCLC have been described. Recognition of this paraneoplastic syndrome in SCLC is important for prognosis staging of SCLC as well as effective correction of electrolyte derangements of paraneoplastic processes. In this patient, hypercortisolism secondary to ectopic ACTH secretion caused refractory hypokalemia. Ectopic ACTH caused the elevated levels of hypercortisolism observed in this case. Cortisol has possible mineralocorticoid activity in renal tubules, but is usually inactivated to cortisone via 11ß hydroxysteroid hydrogenase type II activity. However, elevated levels of cortisol overwhelm inactivation of cortisol to cortisone. As a result, cortisol binds to mineralocorticoid receptors, causing the persistent hypokalemia found in this patient. Refractory hypokalemia is a relatively rare presentation of hypercortisolism secondary to ectopic ACTH secretion, and diagnosis of ECS in the setting of SCLC has important implications for patient prognosis.

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California Clinical Vignette Poster Finalist - Yvonne Lu

Title

Antibiotic Spacers as a Cause of Hypercalcemia

Authors

Yvonne Lu, BS; Khwaja Hamzah Ahmed, BS; Maryam Rahimi, MD

Introduction

Hypercalcemia may present with a wide range of symptoms, including abdominal, psychiatric, or bone issues. Calcium regulation is a complicated process influenced by a number of variables, of which parathyroid hormone is the most prominent. However, in the absence of a parathyroid disorder, the etiology of hypercalcemia can be difficult to discern. In this case, we examine a post-surgical patient with an initially unclear etiology of hypercalcemia.

Case Presentation

A 65-year-old male presented to clinic for post-hospitalization follow-up. Medical history was significant for hypertension and bilateral hip osteoarthritis with an uncomplicated left hip replacement. In June 2018, the patient had a right hip replacement complicated with MSSA infection requiring multiple IV antibiotic courses. In December 2018, he had a fall requiring open reduction and internal fixation of the right hip. This was complicated with hardware-associated osteomyelitis, prompting placement of an antibiotic spacer in January 2019. Due to continued infection, a second antibiotic spacer was placed in April 2019. He was hospitalized twice in April and August of 2019 for abdominal pain and constipation, and was diagnosed with hypercalcemia and acute renal failure. The etiology of his renal failure was not apparent at this time, and it was unclear whether hypercalcemia was the cause of his renal failure or vice versa. Common causes of acute renal failure and hypercalcemia such as multiple myeloma, sarcoidosis, and malignancy were ruled out. Bone turnover, seen in osteoporosis, is another cause of hypercalcemia and is often evaluated by bone biopsy. However, the patient did not wish to undergo a bone biopsy and opted for serum bone turnover markers such as C-telopeptide (CTX) assays. He was found to have elevated CTX levels, but a bone density scan did not show osteoporosis. The patient continued to be treated with oral and IV fluids until his calcium and renal function stabilized around November 2019, and repeat x-rays showed resolution of the antibiotic spacer beads.

Discussion

Given that the common etiologies of hypercalcemia and renal failure were ruled out, the patient's presentation was likely related to his antibiotic spacers, which were loaded with calcium-sulfate-antibiotic beads. Currently, the side effects of antibiotic spacers reported in the literature are mostly mechanical, such as fracture or displacement. Systemic side effects are less commonly reported, highlighting an area for further study. Additionally, while bone turnover markers such as CTX may help identify cases of high bone turnover such as in osteoporosis, the usage of such markers may be limited in cases of kidney failure given that the markers are renally excreted. This case showcases the importance of keeping antibiotic spacers in the differential when working up hypercalcemia, especially in a complicated post-operative patient.

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CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE
Marium Asad

Imitator of Multiple Sclerosis

Title

Imitator of Multiple Sclerosis

Authors

Marium Asad M.D., Meena Srai M.D.

Introduction

Multiple Sclerosis (MS) is an immune-mediated inflammatory demyelinating disease that affects the brain and the spinal cord resulting in a variety of clinical presentation due to the deposition of demyelinating plaques that lead to neuronal dysfunction. Due to its varied presentation and multitude of symptoms including motor, sensory and cognitive deficits, it becomes difficult to diagnose based on history and clinical examination alone. Therefore, it is important to utilize imaging studies and to recognize trademark features of other differential diagnoses.

Case Presentation

A 33-year old male presented with worsening weakness in his legs, gait ataxia, slurred speech and double vision for six months. On examination, he had reduced strength with hyperreflexia and clonus in his lower extremities. His MRI brain without contrast revealed T2 hyperintense foci scattered in the periventricular, lobar white matter, pericallosal and juxtacortical lesions. There were also multiple asymmetric white matter hyperintense foci within the cerebral peduncles, pons, medulla and cerebellum. No active plaques were noted except some minor enhancement in the medulla oblongata. A lumbar puncture demonstrated WBC 2, RBC 2, Glucose 64, Protein 37 and positive oligoclonal bands. Patient received five days of IV Methylprednisolone 1gm daily with significant improvement in his symptoms with plan for outpatient Neurology follow up. Upon review of the patient's symptoms and radiologic features, the patient's presentation was similar to Chronic Lymphocytic Inflammation with Pontine Perivascular Enhancement Responsive to Steroids (CLIPPERS) Syndrome rather than MS.

Discussion

MRI's of the brain and spine are frequently utilized to diagnose MS as they are highly sensitive and specific, up to 87% and 73%, respectively. However, there are many other diseases that may mimic MS on MRI studies; therefore, it is important to identify the key characteristics of MS plaques. MS plaques are seen in T2 imaging sequences, are round to oval, and can range from a few millimeters to centimeters. MS typically affects white matter regions including corpus callosum, periventricular and juxtacortical white matter, pons, cerebellum and the cervical segment of the spinal cord. Classically, they are known to be "disseminated in time and space." In contrast, the trademark feature in CLIPPERS syndrome on MRI imaging is multiple patchy 'speckled' and gadolinium enhancement of the pons, often described as a 'salt and pepper' appearance. The pathophysiology of CLIPPERS, however, is poorly understood compared to MS making it difficult to designate it as its own separate entity. Nonetheless, the recognition of the differences of MS and CLIPPERS on imaging is crucial as it will steer both short- and long-term treatment options.

CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE
Danielle Brazel, MD

Chronic Lymphocytic Leukemia Transformed into Multiple Myeloma

Title

Chronic Lymphocytic Leukemia Transformed into Multiple Myeloma

Authors

Danielle Brazel, MD, Lisa Lee, MD

Introduction

Chronic lymphocytic leukemia (CLL) and multiple myeloma (MM) are malignancies of B cells at different stages of maturation. Concurrent cases of CLL and MM are rare and previous reports in the literature have shown conflicting evidence for whether these malignancies originate from a single origin or two distinct clones. Given the light chain alterations and immunoglobulin switching that occurs naturally in B cell maturation, the etiology has been unclear. We present a patient with CLL who developed MM 18 years after her original diagnosis, and 5 years after treatment with ibrutinib.

Case Presentation

We present the case of a 68-year-old woman diagnosed with CLL in 2002. At diagnosis, she had an unmutated IgHV gene and a TP53 deletion portending for shorter progression free survival and overall survival. She was observed until 2009 when treatment was prompted due to symptomatic lymphadenopathy. She received standard treatment with rituximab followed by rituximab and bendamustine. In March 2015, she progressed and was started on ibrutinib. Patient subsequently cycled through multiple CLL therapies including venetoclax, venetoclax/obinatuzumab, and Car-NK therapy on a clinical trial. Multiple bone marrow biopsies at times concerning for relapse demonstrated marrow with CLL without plasma cell involvement. In December of 2019, she was noted to have increase in serum calcium levels concurrent with bone pain and worsening cytopenias. PET scan demonstrated the development of diffuse osteolytic bone lesions. Bone marrow aspiration showed a population of CLL cells as well as a new plasma cell population at 5% of total WBC. For this relapse, she received acalabrutinib. She continued to have refractory hypercalcemia. In August 2020, a subsequent bone marrow biopsy showed 10-20% IgM-positive, lambda-restricted plasma cells suggestive of plasmacytic differentiation of CLL. Bone marrow biopsy of a skull lesion in September 2020

demonstrated nodular and diffuse infiltrates of lymphoma cells surrounded by IgM plasma cells, with both populations of cells demonstrating lambda-restriction. She was treated with myeloma directed therapy with daratumumab, carfilzomib, and dexamethasone, but ultimately succumbed to the disease

Discussion

The incidence of Richter's transformation of CLL to Diffuse Large B Cell Lymphoma is well known and is estimated at 2-9% of CLL diagnosis (1). However, the incidence of transformation of CLL to other B cell malignancies is much rarer and the pathophysiology of the transformation is not well understood. This patient's workup is consistent with CLL with a clonal plasmacytic differentiation consistent with multiple myeloma, which is rare and indicates a more aggressive phenotype. It is hypothesized that either concurrent diagnoses occur coincidentally, as suggested in the majority of the existing literature or a causal relationship exists through the following mechanisms: 1. CLL cells are more prone to DNA damage 2. CLL facilitates malignant transformation of normal cells 3. therapies used to treat CLL cause MM (2). In contrast to our case, the majority of the existing literature suggests a biclonal origin for concurrent CLL and MM (2-7). To our knowledge, only one other case has been reported in the literature of CLL transforming into MM after 6 cycles of ibrutinib (8).

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CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE
Joshua Chang, MD

A Rare Case of Central Nervous System Disseminated Sporotrichosis with Amoebic Co-Infection

Title

A Rare Case of Central Nervous System Disseminated Sporotrichosis with Amoebic Co-Infection

Authors

Joshua Chang MD MPH, Nathan Juergens MD, Nardine Riegels MD, Carson Lawall MD, Sally Slome MD

Introduction

Sporotrichosis is caused by Sporothrix schenkii, a ubiquitous dimorphic fungus found in soil and plant material. Infection is typically limited to cutaneous manifestation, with disseminated sporotrichosis rarely seen except in immunocompromised individuals. Here, we report a case of central nervous system (CNS) sporotrichosis in a patient without known immunodeficiency.

Case Presentation

A 79-year-old active man with remote history of chemoradiation-treated prostate cancer presented to his primary physician with 11-days of headache, fatigue, arthralgias, mild dizziness and tremor. Exposure history was notable for viral illness in household contact, gardening, and global travel. Given normal complete blood count, metabolic, endocrine, and viral studies, post-viral syndrome was suspected. However, he soon developed worsening ataxia and tremor. Extensive serologic studies, serum protein electrophoresis, and brain magnetic resonance imaging (MRI) were unrevealing. The patient was hospitalized for progressive altered mental status 8 weeks after symptom onset. Cerebrospinal fluid (CSF) analysis revealed elevated white blood cell (WBC) with lymphocytic pleocytosis, low glucose, and elevated protein suggestive of atypical or fungal infection, but all cultures and antibody tests were negative. Repeat MRI revealed acute right internal capsule infarct, but the size and location of lesion were inconsistent with examination findings. Post-stroke management and empiric steroids for autoimmune encephalitis were initiated, and patient had transient improvement in symptoms allowing his return home. However, the patient's symptoms deteriorated further over the following 3 weeks, leading to rehospitalization. Repeat MRI showed multiple new infarcts, obstructive hydrocephalus, and leptomeningeal thickening and enhancement. Repeat CSF

analysis re-demonstrated hypoglycorrhachia and elevated WBC, but CSF culture and extensive viral, paraneoplastic, tuberculosis, and fungal studies remained negative. Steroids were stopped and empiric antibiotics, antiviral, and antifungal therapy were initiated. On the fourth day, the patient became unresponsive and underwent emergent craniotomy. Intraoperative CSF fungal cultures speciated to Sporothrix schenkii. Antifungal therapy was escalated. Unfortunately, the patient developed frontal lobe intracranial hemorrhage post-craniotomy and expired soon after. Post-mortem testing were conducted at the California Department of Public Health (CDPH) and Centers for Disease Control (CDC), where CSF PCR tested positive for Sporothrix and Acanthamoeba. Final brain autopsy demonstrated granulomatous meningitis consistent with Sporothrix as well as structures suggestive of degenerating amoebae. Further follow-up studies at the National Institutes of Health (NIH) for possible underlying immunodeficiency are pending.

Discussion

This is a rare case of rapidly progressive disseminated Sporotrichosis with CNS involvement confirmed by positive Sporothrix and Acanthamoeba PCR in a patient without known immunodeficiency. Recent studies suggest interplay between Acanthamoeba and Sporothrix, where the amoeba-phagocytosed fungi may utilize amoeba as nutrient, possibly providing pathway to CNS infection. Additional immunodeficiency testing at the NIH, including whole genome sequencing may elucidate whether specific gene defects are associated with disseminated fungal infections.

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CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE Annie Chen

A Lesion In The Lungs

Title

A Lesion In The Lungs

Authors

Annie Chen, MD, Vincent Chan, MD

Introduction

Echinococcosis most often manifests as hydatid liver cysts in the adult population. While cyst formation can occur in other organs such as the lungs, extrahepatic disease generally develops as a secondary infection following hematogenous seeding. We present an unusual case of primary pulmonary Echinococcosis without evidence of liver involvement.

Case Presentation

A previously healthy 28-year-old Armenian female was referred to the emergency department after an outpatient CT thorax revealed an 8.5 x 4.5 cm right middle lobe cavitary lesion with an air-fluid level. She had a persistent dry cough for two months that recently became productive, but no other symptoms. She denied substance use and animal exposures. On presentation, she was febrile to 39.2° C and tachycardic to 140 bpm with an unremarkable physical exam. CBC showed leukocytosis 14.7 K/cmm with neutrophilic predominance and elevated absolute eosinophils 2.8 K/cmm. Basic chemistry and hepatic panels were normal. Blood, sputum, and stool cultures as well as tests for Tuberculosis, Cryptococcosis, Coccidioidomycosis, Aspergillosis, and HIV all resulted negative. Pulmonology performed a bronchoscopy with bronchoalveolar lavage, and the patient was discharged with a six week Augmentin course. The BAL results subsequently returned showing numerous eosinophils, foamy pulmonary macrophages, and rare multinucleated giant cells. Daily prednisone 40mg was prescribed for chronic eosinophilic pneumonia. Three weeks later the patient returned with new shortness of breath and right chest pain. A stat chest x-ray revealed a large pneumothorax with tension physiology, and a chest tube was placed emergently. Steroids were tapered off with resultant uptrend of the eosinophil count, however the air leak persisted. Hematology Oncology evaluated the eosinophilia, and after an extensive negative workup, which included an unremarkable CT abdomen, favored a primary pulmonary disorder. Infectious Diseases agreed

chronic pulmonary eosinophilia was the most likely culprit, though also suggested Echinococcosis as a rarer cause; serology was subsequently sent. Thoracic Surgery proceeded with a VATS lobectomy and cavitary lesion resection, intraoperatively noting a 4 cm RML white cyst cavity and thick visceral pleural gelatinous rind. The Echinococcus IgG antibody returned positive the following week and an acellular cyst wall suggestive of Echinococcus was reported on the finalized surgical pathology. Albendazole was started and a repeat CT thorax two months later showed no evidence of infectious recurrence.

Discussion

While most Echinococcus larva attach to the liver after entering portal circulation, smaller embryos may pass through the hepatic sinusoids without latching and circulate into the pulmonary vasculature. Similarly, lymphatic routes leading to the lungs and direct inhalation of eggs can allow the larva to circumvent the liver completely. Recognition of Echinococcus' capacity to present as a primary pulmonary lesion is crucial to timely initiation of appropriate therapeutics and interventions, as well as a favorable prognosis for the patient.

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CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE Joyce Ho

The Other Jaundice: Carotenoderma Following Thyroid Cancer

Title

The Other Jaundice: Carotenoderma Following Thyroid Cancer

Authors

Joyce L. Ho and Marina M. Roytman

University of California San Francisco, Fresno, California

Introduction

Carotenoderma is a benign condition that can mimic jaundice from hyperbilirubinemia. We describe a case of carotenoderma mistaken for jaundice in a patient with post-treatment hypothyroidism.

Case Presentation

A 38-year-old Caucasian woman with recent history of total thyroidectomy for papillary thyroid cancer was referred to hepatology clinic for presumed jaundice. The patient reported noticing darkening of her knees, elbows, and palms approximately 10 months after thyroidectomy. She developed a progressive deep golden hue to her skin which was presumed by her acquaintances to be due to overzealous spray tanning. She also reported hair thinning, difficulty concentrating, and fatigue. She had a well-balanced diet, and denied use of dietary or herbal supplements, tobacco, alcohol, or drugs. When her endocrinologist noticed the golden skin hue and nontender hepatomegaly, her levothyroxine formulation was changed due to concern for drug-induced hepatitis which prompted referral to hepatology clinic.

Physical exam revealed a moderately overweight woman with anicteric sclerae. Abdomen was soft and tympanic, without tenderness or appreciable hepatosplenomegaly. Diffuse orange skin discoloration was most prominent in the bilateral palms. Laboratory studies were notable for low TSH (

Discussion

Carotenoids are lipid-soluble compounds that impart yellow, orange, or red hues to plants. Carotenemia can be driven by excess dietary intake, hyperlipidemia, or impaired carotenoid metabolism. Carotene concentrations exceeding 250 ug/dL cause the skin to develop a deep yellow to orange hue. Due to the pattern of beta carotene deposition in the stratum corneum, sweat, and sebum, the pigment in carotenoderma is most noticeable along the nasolabial folds, palms, and soles.

In primary carotenoderma, excessive ingestion of foods containing high levels of carotenoids, including many fruits and vegetables, leads to yellow to orange discoloration of the outer skin. This is most commonly found in infants and young children consuming large amounts of pureed carrots and carotene-rich foods. Excess beta-carotene does not lead to vitamin A toxicity. Accumulation of the carotenoid lycopene can also lead to lycopenemia, which is associated with a deeper orange hue than in carotenemia.

Secondary carotenoderma can also be associated with hypothyroidism, liver dysfunction, and other diseases. Carotenemia in hypothyroidism is driven by two mechanisms: impairment of the conversion of beta-carotene to retinol, and increased levels of beta-lipoproteins which serve as major carriers of carotene. Liver disease can also impair carotene metabolism. In liver disease with hyperbilirubinemia, carotenoderma can coexist with jaundice. The skin manifestations can be differentiated based on scleral and mucosal involvement.

In this patient, the absence of scleral icterus and normal liver enzymes was not consistent with jaundice from liver disease. Carotenemia was likely driven by postsurgical hypothyroidism, and diagnosis was confirmed by elevated beta carotene levels. Clinicians must be able to recognize this benign condition that can mimic more serious diseases to avoid burdening patients with unnecessary tests, increased healthcare costs, and added stress.

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CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE
Adnan Khan

When It's No Longer an Infection: HLH as a Complication of COVID-19

Title

When It's No Longer an Infection: HLH as a Complication of COVID-19

Authors

Adnan Khan MD, Steve Lee MD, Leslea Brickner MD

Introduction

Hemophagocytic lymphohistiocytosis (HLH) is a life-threatening syndrome of excessive immune activation. If recognized promptly, it is also relatively treatable. Recent clinical data has shown that COVID-19 can trigger the cytokine storm seen in HLH. We present the case of a 29-year-old female with type 2 diabetes mellitus and obesity found to have COVID-19 pneumonia who experienced persistent fevers despite recovery from her pneumonia.

Case Presentation

A 29-year-old female with type 2 diabetes mellitus and obesity presented with fevers and dyspnea and was subsequently admitted for hypoxic respiratory failure secondary to COVID-19 pneumonia. After a lengthy hospital course, she recovered from her pneumonia but continued to experience daily fevers despite an extensive yet benign infectious workup which included multiple negative blood cultures, a urine culture growing Pseudomonas and Enterobacter that was appropriately treated, and a CT chest, abdomen, and pelvis that revealed stable pulmonary opacities and new hepatosplenomegaly. Her pertinent lab included a leukocytosis, elevated inflammatory markers, hyperferritinemia, and hypertriglyceridemia. Hematology was consulted due to concern for secondary HLH as the patient met 4 of the 8 diagnostic criteria. Although she did not meet the required 5 criteria at this time, clinical suspicion was high enough that she was started on treatment dose of dexamethasone for HLH. Following treatment initiation, her soluble interleukin-2 receptor levels came back elevated, confirming the diagnosis of HLH secondary to COVID-19 pneumonia. Her fever subdued, her labs normalized, and she was continued on dexamethasone at discharge.

Discussion

Hemophagocytic lymphohistiocytosis is a syndrome characterized by abnormal immune system activation. Primary HLH is mostly seen in infants under 18 months of age with an associated genetic component, but secondary HLH is seen in children and adults in association with malignancies, immune disorders, and infections such as COVID-19. The pathophysiology of HLH consists of increased release of proinflammatory cytokines from macrophages and a lack of inhibitory response from natural killer (NK) cells and cytotoxic lymphocytes. The diagnosis of HLH is based off fulfillment of specific criteria derived from the HLH-2004 protocol, which include fever, splenomegaly, cytopenias, hyperferritinemia, hypertriglyceridemia, hemophagocytosis, decreased NK cell activity, and increase in soluble CD25/soluble IL-2 receptor alpha level. Due to the high mortality risk associated with HLH, clinical suspicion is paramount as not all diagnostic criteria need to be met prior to treatment initiation. Treatment aims at controlling the hyperactive immune response with induction therapy of dexamethasone and etoposide. Interestingly, there has been a recently discovered relationship between HLH and COVID-19. HLH is most commonly caused by viral infections, and case reports have revealed COVID-19 as the most recent culprit. The proposed mechanism shows COVID-19 serving as the initial insult that stimulates cytotoxic lymphocytes to release pro-inflammatory cytokines that ultimately spark the cytokine storm seen in HLH. Such cases of COVID-19-induced HLH have been reported across the globe, with the major takeaway being the importance of screening these patients with inflammatory markers so as to prevent a delay in diagnosis and determine when immunosuppressive therapy is warranted.

CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE
Midhat Lakhani

Diagnosing E-cigarette or Vaping product use-Associated Lung Injury (EVALI) during the COVID-19 Pandemic

Title

Diagnosing E-cigarette or Vaping product use-Associated Lung Injury (EVALI) during the COVID-19 Pandemic

Authors

M, Lakhani; J, Buckely; V, Ricardo

Introduction

E-cigarette or Vaping product use-Associated Lung Injury (EVALI) gained recognition a few months before the COVID-19 pandemic began and remains a diagnosis of exclusion. In the overwhelming scenario of a pandemic, it is easy to diagnose a young person with COVID that did not follow social distancing protocols, presented with classic symptoms and with typical imaging finding of viral pneumonia.

Case Presentation

31 year old female with medical problems of anxiety presented to the Emergency Department for evaluation of fever and chills for the past 5 days. Associated symptoms included productive cough, shortness of breath, vomiting and diarrhea. Vital signs were significant for fever of 102 F, heart rate in the 130s, respiratory rate 22-25 and saturating 93% on room air. Chest exam significant for bilateral rhonchi. Labs were significant for elevated white blood cell count of 23.2x10e3/mcL and platelet count of 629x10e3/mcL. Manual differential indicated neutrophilia and lymphopenia. Procalcitonin was elevated at 0.85. Chest X-ray demonstrated perihilar groundglass opacities, predominantly in the lung bases concerning for infiltrate secondary to atypical or viral pneumonia. Flu A and B antigen were not detected, SARS-CoV-2 swab and blood culture was sent off. Patient was started on symptomatic treatment for fever, diarrhea and cough along with ceftriaxone and doxycycline for community acquired pneumonia with atypical coverage. Patient's oxygen saturation dropped to 88% overnight and supplemental oxygen was initiated. Patient tested negative for the SARS-CoV-2 virus, patient was started on oral dexamethasone 6 mg and a repeat SARS-CoV-2 PCR swab was sent. On hospital day #2, oxygen requirements went up to 6L oxygen via nasal cannula to keep oxygen saturation >90%.

CT angiogram chest showed no evidence of pulmonary embolism, but noted severe bilateral ground glass opacities indicative of developing acute respiratory distress syndrome. Radiologist also remarked upon some areas of relative subpleural sparing that was atypical for SARS-CoV-2 pneumonia. Patient kept denying use of e-cigarettes and/or recreational drugs. On hospital day 3, due to increasing oxygen requirements patient was put on 15L oxygen via Oximizer. Patient's white count remained elevated at 24.9 x10e3/mcL and vitals showed fever of 100.6 F, tachycardia of 145 and blood pressure of 154/94 mmHg. Blood cultures did not show any growth and the second COVID test also came back negative. Patient admitted to use of vaping pen, after confirming that this admission would not get back to her parents and being assured of her privacy. At this time, pulmonology was consulted and dexamethasone was switched to intravenous Solu-medrol 80mg every 6 hours. Patient continued requiring 15 L of oxygen via oxymizer for another 12 hours and then gradually improved. She was discharged on hospital day 7 with prednisone taper, satting 93% on 2L oxygen via nasal cannula.

Discussion

Going back to the basics, it is important to build a rapport with the patient to be able to elicit the correct social history. It is also essential to keep this relatively new diagnosis in the list of differentials, especially when the patient is not responding to appropriate treatments and/or worsening.

CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE
Conan Liu

A Leaky Case of "Recurrent Sepsis"

Title

A Leaky Case of "Recurrent Sepsis"

Authors

Conan Liu, MD; Jeffrey Stenger, MD, FACP; Amit Gupta, MD; Kristen Kelley, MD

Introduction

Idiopathic systemic capillary leak syndrome (ISCLS) is a rare condition characterized by recurrent episodes of the three "H's" - hypotension, hemoconcentration, and hypoalbuminemia. Since it was first described by Clarkson in 1960, less than 500 cases have been reported worldwide. However, this likely underestimates this condition's true prevalence as it is frequently misdiagnosed as septic shock, anaphylaxis, or polycythemia vera. Early recognition of ISCLS is important as severe complications such as flash pulmonary edema and compartment syndrome are common and associated with high rates of mortality.

Case Presentation

A 57-year-old morbidly obese man with a history of systolic heart failure presented to the hospital after an episode of near syncope and abdominal pain radiating to his back. On initial presentation, he was hypotensive with a BP of 72/61 and had 3+ pitting edema and cold extremities bilaterally. Labs revealed leukocytosis with a WBC of 19, hemoglobin of 17, and albumin of 2.9 which later trended down to 2.3. He was treated for presumed sepsis with empiric antibiotics and fluid resuscitation. However, after 5 liters of fluid he continued to be hypotensive and repeat labs revealed a WBC of 33.3 and hemoglobin of 20.2. Notably, the patient was consistently afebrile and a comprehensive infectious workup was negative. His echocardiogram showed a stable EF of 40%, and workup for pancreatitis was also negative. The patient had three similar episodes of hypotension, leukocytosis, and hemoconcentration over the past 1.5 years. Each time he had been treated for presumed sepsis and improved with IV antibiotics, however a clear infectious source was never identified. On this admission, he improved with aggressive IV fluid resuscitation hospital days 1-3 followed by high doses of furosemide on subsequent days. Further workup during his stay was significant for an M-spike on SPEP which is often seen in patients with ISCLS. His hospital course was complicated by

acute kidney injury, upper GI bleed, and ischemic colitis leading to E. coli bacteremia on hospital day 8. He was discharged on hospital day 15.

Discussion

ISCLS is a diagnosis of exclusion which should only be considered once more common conditions such as sepsis and anaphylaxis have been ruled out. The disease process consists of prodromal, extravasation, and recovery phases. Although rare, ISCLS is an important condition for physicians to be aware of as delays in diagnosis are frequent and contribute to increased mortality. Physicians must quickly recognize the beginning of the recovery phase in order to discontinue fluid administration and begin diuresis. Recent increases in the number of reported cases of ISCLS suggest that this condition may be more prevalent than previously thought, and there is now some data supporting the use of VEG-F inhibitors and IVIG to reduce the severity and frequency of attacks.

CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE
Maryam Nemati

A Rare Case of Moyamoya in a Young Female

Title

A Rare Case of Moyamoya in a Young Female

Authors

Maryam Nemati MD, Siamak M. Seraj MD, MPH Department of Internal Medicine, San Joaquin General Hospital

Introduction

Moyamoya refers to chronic progressive cerebrovascular (CV) diseases characterized by bilateral large intracranial artery stenosis or occlusion and development of prominent small vessel collaterals creating a smoky appearance on imaging. We hereby present a rare cause of a large stroke in a previously healthy young female hospitalized for gastrointestinal bleed (GI) bleed.

Case Presentation

Patient is a 35-year-old African-American female without any significant past medical history who presented to our hospital with generalized weakness and dark stools for 3 days. Initial physical exam was unremarkable except for heart rate of 106. Rectal examination revealed melanotic stool. Laboratory results were only significant for low hemoglobin of 4.9. Following routine resuscitation our patient underwent endoscopy which showed large 2 cm gastric ulcer with dark pigmented base and oozing edges. After endoscopic intervention with cauterization and vasopressin injection, hemoglobin remained stable above 8 during the rest of hospitalization. On second day of hospitalization, our patient developed right-sided facial droop, slurred speech, right upper and lower extremity weakness, and numbness. Right hemianopia was also noted. MRI and MRA of brain were immediately obtained and showed acute bilateral MCA infarcts in superficial an deep watershed areas, proximal right MCA occlusion, and left MCA artery segment. The vascular anomalies included leptomeningeal collaterals which were consistent with moyamoya disease (fig1&2). Patient was not a candidate for TPA as she had a recent GI bleed. Transthoracic echocardiogram with bubble studies did not show any thrombus, atrial or ventricular septal defect. Autoimmune and hypercoagulability studies were all normal.

Discussion

Moyamoya is a rare condition commonly seen in East Asia with bimodal age onset peaking at 10 and 40. Our patient's presentation and imaging were consistent with moyamoya disease. Bilateral watershed pattern ischemia shown in MRI of brain is not a classic finding in embolic events. Hypoperfusion could potentially occur with low hemoglobin of 4.4 but should not have caused a CV accident in an otherwise healthy young patient. It is worth mentioning that our patient was never hypotensive. Our patient did not have any risk factors for vasculopathy, autoimmune diseases or thromboembolic events. Interestingly, she had never developed similar symptoms during her childhood. Our patient is from African American descent while moyamoya is commonly seen in East Asian population. She was referred to a tertiary care for external to internal carotid artery bypass as a preventive measure for future ischemic events. Moyamoya disease, although rare, should be considered as a differential for CV events in younger patients. Timely cerebral angiography and referral for external to internal carotid artery bypass can decrease the risk of debilitation in these rare cases.

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CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE
Maryam Nemati

A Rare Case of Statin-induced Autoimmune Myopathy

Title

A Rare Case of Statin-induced Autoimmune Myopathy

Authors

Maryam Nemati, Meena Srai, Rajani Rudrangi

Introduction

Statins are one of the most widely prescribed drugs in the world. One of the common side effects of statin use is myopathy. Statin-associated autoimmune myopathy is a very rare condition with an incidence rate of about 1 per 10,000 person per year. We report a rare case of statin induced autoimmune myopathy, which is a rare variant of statin-induced myopathy.

Case Presentation

Our patient is a 56-year-old female who presented with generalized progressive weakness in the bilateral lower extremities that started about three weeks prior to presentation. The weakness extended up to her bilateral upper extremities to the point that she was not able to do her activities of daily living. She also endorsed having difficulty swallowing and a headache but did not have any fever, chills, nausea, or vision changes. She has history of hypertension, hyperlipidemia, cerebral aneurysm status post clipping, and seizure disorder. Her home medications were Amlodipine, Aspirin, Atorvastatin, Topiramate, and Levetiracetam. Patient's vital signs were within normal limit. The lungs were clear. She had normal S1, S2, with regular rate and rhythm. Abdomen was soft and non- tender. On neuromuscular exam she had intact cranial nerves, sensation, and reflexes. She had bilateral lower extremity strength of 1/5 and upper extremity strength of 3/5 with more significant in the proximal muscles. She also had tenderness over her lumbar spine. She had depressed mood and affect. Given her significant history of brain aneurysm, CT of the head was done which was unremarkable. Lumbar spine CT also did not show any acute findings. Given her ascending muscle weakness, she had Lumbar puncture which was normal, and we ruled out Guillain-Barre Syndrome. Patient's labs were significant for CK level: 17,144 IU/L, ALT:647 IU/L, AST: 599 IU/L. She had normal CBC, kidney function, and TSH. Her weakness was thought to be related to a myositis. She was on Atorvastatin for three years, and this was discontinued. She was started on high dose steroid

therapy along with IV fluids. The patient underwent muscle biopsy and the pathology result was consistent with necrotizing myopathy. Her rheumatologic work-up was significant for elevated HMG- Co reductase antibody at 458 IU/L. She had negative ANA, Anti Jo, Mi-2. Anti- Signal Recognition Antibody which is specific for Necrotizing Myositis was negative. A diagnosis of statin-induced autoimmune myopathy was thus confirmed. After receiving high dose steroids, patient's symptoms and CK levels improved and she was discharged on Prednisone 60mg daily.

Discussion

Statin associated autoimmune myopathy is a rare side effect of statin therapy characterized by proximal muscle weakness and significant elevated CPK level that does not improve with statin cessation. High suspicion is essential for diagnosis. Diagnosis is confirmed by positive anti-HMG-CoA reductase autoantibody. Treatment plan includes statin discontinuation, steroids, immunosuppressive therapy, or IVIG. Although some patients have relapses or need longer treatment, the prognosis is usually good.

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CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE Seyed S Pairawan, MD

Above-Knee-Amputation After Missed Arterial Central Line Placement: A Case Report

Title

Above-Knee-Amputation After Missed Arterial Central Line Placement: A Case Report

Authors

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Introduction

Central venous catheters (CVC) in the femoral vein are frequently used to accomplish rapid volume resuscitation in trauma patients. In an emergent setting, this procedure is frequently performed using landmarks without the assistance of an ultrasound, with failure rates of 3.7% (1). There are risks to CVC placement, with the most common complication being inadvertent placement of the catheter into an artery (2-3). In this report, we describe a case where an inadvertently placed CVC into the femoral artery during trauma resuscitation caused acute lower limb ischemia and ultimately resulted in an Above-the-Knee Amputation (AKA).

Case Presentation

A 61-year-old male suffered a neck laceration after falling onto a piece of glass requiring intubation, subsequent tracheostomy, blood transfusions although no major neck vascular structures were injured and vasopressors through a right femoral CVC. Six hours postoperatively the patient's right leg was noted to be dusky and cold without doppler signals. Ultrasound demonstrated index CVC was present in the right femoral artery. The patient was emergently taken for thromboembolectomy, angiogram and repair of the femoral artery. Patient was transferred to a tertiary care center after completion of his vascular surgery procedure. At the accepting facility, patient was taken emergently for neck exploration, right upper and lower leg fasciotomies. A pharyngeal injury was identified and repaired. The muscles of the leg were noted to be swollen in the all compartments with palpable DP. On return to the operating room majority of the muscles were noted to be necrotic except for posterior

hamstring muscles and proximal part of sartorius and adductor magnus. Discussions were held with the patient about the non-functionality of the leg due to the extent of necrosis and the need for right sided AKA. Patient underwent right sided AKA and was successfully discharged to a rehabilitation facility.

Discussion

Femoral vein catherization is associated with multiple complications, with some studies finding that inadvertent arterial cannulation may be more common in CVC's placed in the femoral vein (4-5). This underscores the need for utilizing landmarks with a preference to utilizing ultrasound when placing femoral vein central lines in emergent situations. Landmarks include going 1 cm medial to the femoral artery and 2 cm inferior to the inguinal ligament. Alternatively, the distance between pubic tubercle and anterior superior iliac spine can be divided into thirds with the femoral vein 1/3 from pubic tubercle and inferior to inguinal ligament. In addition, early recognition of a misplaced line with frequent neuro-vascular exams by physicians and nursing may result in a shorter limb ischemia time. Patients with prolonged ischemia time (> 3 hours) consideration must be given to early fasciotomy to decrease the risk of necrotic muscle and amputation in the setting of compartment syndrome. In summary, we highlight a case where accidental placement of a CVC into the femoral artery with delayed recognition resulting in compartment syndrome, muscle necrosis and AKA. Additional training for central line placement and a multi-disciplinary team approach to monitor for post-line placement procedural complications may improve outcomes.

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CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE
Navneet Ramesh

Age Matters: Esophageal Adenocarcinoma in a Young Patient Despite Optimal Medical and Surgical Management

Title

Age Matters: Esophageal Adenocarcinoma in a Young Patient Despite Optimal Medical and Surgical Management

Authors

Navneet Ramesh MD, Aubrey Ingraham MD, Jeffrey Velotta MD

Introduction

Despite medical or surgical management, a subset of patients with gastroesophageal reflux disease (GERD) develop Barrett's esophagus, with a fraction progressing to esophageal adenocarcinoma. We present a case of a young man who underwent Nissen fundoplication as an infant, then maximal medical management for severe GERD, yet still developed early Barrett's esophagus leading to esophageal adenocarcinoma several decades later.

Case Presentation

A 42 year old man presented with progressive dysphagia to solid foods. He had a history of severe GERD as an infant, undergoing open Nissen fundoplication at 2 months. As a teenager, he continued to have reflux symptoms and was diagnosed with Barrett's esophagus at age 21. Over the next few decades, he was trialed on various anti-reflux medications and extensive dietary modifications which adequately managed his GERD. Surveillance EGDs had revealed stable Barrett's histopathology. However, subsequent EGD revealed a distal esophageal mass with biopsy consistent with invasive adenocarcinoma. On EUS, a 2.5cm uT2N0 lesion was characterized at the GE junction. He achieved a positive response on restaging PET scan after concurrent neoadjuvant chemoradiation consisting of five weeks of carboplatin/paclitaxel and 4140 cGY prior to successful minimally invasive esophagectomy. Surgical pathology revealed a complete pathologic response. He is currently doing well with no signs of recurrence on surveillance CT scan.

Discussion

GERD affects over one-fifth of the US population and remains the most prominent risk factor for esophageal adenocarcinoma. In individuals refractory to proton pump inhibitors (PPIs), addition of alginates, H2 blockers, or baclofen may be beneficial. Surgical and endoscopic interventions are typically reserved for those who fail medical management. Still, about ten percent of patients with longstanding GERD will develop Barrett's esophagus, regardless of therapy. These patients are subsequently started on lifelong PPIs, though recent studies have revealed that PPIs, while providing moderate symptomatic relief, may not prevent progression of Barrett's to adenocarcinoma, and ultimately may be a risk factor itself for the development of esophageal cancer. Additionally, surgical interventions in these patients may confer only a slightly decreased rate of cancer incidence compared to medical management.

The time for progression of dysplasia to adenocarcinoma remains poorly characterized. As a result, there is no clear consensus on screening for Barrett's. The current American Society for Gastrointestinal Endoscopy guidelines recommend risk-stratification of patients with refractory GERD when determining the role of endoscopic screening. However, while several characteristics, including male gender and tobacco use, are specified as risk factors to consider, age of onset of GERD is notably absent, even though earlier onset has been linked to increased risk of both Barrett's and esophageal adenocarcinoma. Of note, although patients younger than 50 present more often with later stage malignancy, their survival rates are better than their older counterparts. This may be partly due to younger patients being able to better tolerate chemoradiation and esophagectomy.

Therefore, given the ongoing concern for prolonged PPI use, it is imperative to discuss optimal timing of EGD screening in young patients with severe GERD, in addition to the risks and benefits of both medical and surgical options.

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CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE
Krishna Theja T Reddy, MD

Cocaine-induced Aortic Dissection in Young female - New E-Cigarettes Vaping Crisis

Title

Cocaine-induced Aortic Dissection in Young female - New E-Cigarettes Vaping Crisis

Authors

Krishna Theja Reddy MD, Humera Syeda MD, Galvin Dhaliwal MD, Sivaraman Gounder MD

Introduction

Aortic dissection among cocaine users without underlying connective tissue disorders is extremely rare and life-threatening. On the other hand, smoking is a well-known risk factor for abdominal aortic aneurysm/dissection and aortic wall stiffening. And the current trend of nicotine e-cigarettes vaping among the young population has augmented the progression of pathological aneurysmal and dissection changes in a hasty manner. Hereby, we present a case of an e-cigarette vaping young female with cocaine-induced abdominal aortic dissection extending up into the aortic arch and celiac axis.

Case Presentation

A 22-year-old previously healthy female presented with sudden onset of right-sided sharp abdominal pain, rated 9/10, intermittent, radiating to periumbilical region, worsening with an upright position. No associated symptoms. No variation with meals. Social history was positive for cocaine abuse (5 times) and three years of heavy e-cigarette vaping. Family history was negative for connective tissue disorders, aortic dissections, and sudden cardiac death. Vital signs remained stable during the hospital course. Physical examination remarkable for tenderness over the right lower quadrant, peripheral pulses were even and intact. Wrist and thumb signs for Marfan's were negative. Laboratory studies, including C-reactive protein, Troponin, Lactic acid, were negative. Abdominal ultrasound was negative for hepatobiliary and appendiceal pathology but revealed an echogenic region in the abdominal aorta concerning for dissection. Computed Tomographic (CT) angiogram of the abdomen revealed a small dissection flap along the intra-abdominal aorta with possible extension into the celiac axis and right renal artery. Echocardiogram was unremarkable with EF 55-60% and normal aortic root. Cardiothoracic and Vascular surgery teams recommended conservative medical management.

During the hospital stay, pain resolved and subsequently, the patient was discharged with outpatient follow-up for repeat imaging in 6 months.

Discussion

As per the literature review, cocaine-induced aortic dissections are rare; however, the incidence increases with concurrent risk factors such as smoking, hypertension, or prior aortic disease. Cocaine causes aortic dissection by increasing the aortic wall shear stress that penetrates the intimal vessel layer, allowing blood flow to separate intimal and medial layers. On the other hand, the molecular mechanism between e-cigarettes vaping and aortic aneurysms/dissection is minimally explored. Given the fact that e-cigarettes deliver nicotine at a higher concentration and faster rate compared to traditional cigarettes, in our patient we can postulate that nicotine e-cig use augmented the rate of aortic wall changes. It is imperative to have a high index of clinical suspicion for aortic dissection in cocaine users with vaping history as opposed to non-vaping/smoking cocaine users. Further studies are warranted to better understand the relationship between cocaine and e-cigarettes in the pathologic process of aortic dissection and screening.

CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE
Arena Shafeque

Fungal Infection Disguising as a Malignancy

Title

Fungal Infection Disguising as a Malignancy

Authors

A. Shafeque, MD, K. Parikh, MD, FACP, N. Kethineni, MD

Introduction

Coccidioidomycosis manifests from asymptomatic infection to self-limiting, febrile illness to severe complications. Challenge arises when it presents with overlapping features of malignancy.

Case Presentation

A 45-year-old Cambodian female was referred to the neurosurgery clinic by an outside physician for evaluation of a scalp wound and concern for 'a brain mass' seen on imaging studies. She complained of generalized headache and an open lesion on the left frontal scalp with intermittent drainage for about three months. She also had low grade fever and weight loss. Patient denied any history of trauma and focal neurological deficits. Physical examination showed 2 cm circumferential wound on the left frontal area of the scalp with an eschar in the middle. CT scan and MRI of head showed lytic lesions of the left frontal and parietal bone with possible soft tissue mass suspicious for metastasis. Patient underwent excisional biopsy of the left frontal bone followed by reconstructive cranioplasty. Initial Gram stain was positive for Gram positive cocci and Infectious Disease was consulted for suspected osteomyelitis of the left frontal bone. Upon further questioning, it was revealed that patient had a history of coccidioidomycosis pneumonia two years ago for which she was initially on Fluconazole for several months. Review of patient's past cocci antibody titers showed a gradual increase from 1:4 to 1:32 over the first six months while on Fluconazole. She was later switched to Itraconazole due to concern for Fluconazole intolerance including gastrointestinal side effects and possible resistance. The titer reduced to 1:8 in six months after starting Itraconazole. Eventually pathology report of biopsy specimen revealed severe granulomatous inflammation with empty spherules consistent with coccidioidomycosis. She received IV Amphotericin B for

four weeks followed by oral Voriconazole for several months which improved her symptoms and reduced immunoglobin titer to 1:4.

Discussion

Over the past two decades, incidence of coccidioidomycosis has significantly increased both in endemic and non-endemic regions. This case highlights the importance of thorough history and high clinical suspicion for fungal infections especially in endemic areas. Early detection of dissemination by careful monitoring of antibody titers and correlating it with clinical presentation might have prevented progression of the disease and requirement of invasive surgery in this patient. For rising antibody titer in a patient on fluconazole, sensitivity to the drug should be checked, given the recent reports of azole resistant coccidioidomycosis cases and compliance to the medication due to various side effects of azoles. Timely recognition of the unusual features of coccidioidomycosis is essential to prevent late diagnosis and dissemination. This case also emphasizes importance of taking detailed history and monitoring patient's compliance to medications as well as possible resistance to antifungals.

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CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE
Harjeet Singh, MD

SARS-COV-2, Not the Only Virus Around

Title

SARS-COV-2, Not the Only Virus Around

Authors

Dr. Harjeet Bongbong Singh Dr. Sujana Balla Dr. Eyad Almasri Dr. Mohamed Fayed

Introduction

SARS-COV-2, the virus responsible for the Coronavirus Disease 2019 (COVID-19) global pandemic has reshaped our world. Here we present a case of a pregnant woman with COVID-19 with a complicated course that included co-infection of the lungs with Herpes Simplex Virus (HSV) bronchopneumonia. It is reasonable to maintain a high index of suspicion for viral co-infections in COVID-19 patients on broad spectrum antibiotics with minimal improvement. Next generation sequencing (NGS) of bronchoalveolar lavage (BAL) samples is an effective method for diagnosing viral pneumonia. Acyclovir remains the mainstay of treatment for HSV bronchopneumonia. The effects of co-infection with HSV in COVID-19 patients requires further study.

Case Presentation

A twenty-five year old primigravid female with type 1 diabetes presented at 27 weeks age of gestation. She was transferred from an outside hospital for COVID-19 acute respiratory distress syndrome (ARDS) requiring intubation and mechanical ventilation. Early in her hospital course, she was taken for an urgent cesarean section due to her worsening clinical status. On the 18th day of hospitalization, she experienced sudden and severe hemodynamic decompensation and thrombolytics were empirically given for possible pulmonary embolism. Shortly after, due to the lack of improvement and worsening of her hypoxemia, she was started on ECMO. Her oxygenation improved, but her fever continued. Her leukocytosis and hemodynamics continued to deteriorate, with an uptrend in WBC despite broad spectrum antibiotic coverage. A repeat SARS-COV-2 test was negative. Bronchoscopy showed vesicular lesions and NGS of BAL fluid revealed HSV-1. Acyclovir treatment was initiated, and the patient made a full recovery.

Discussion

Our patient had ARDS secondary to COVID-19 pneumonia complicated by HSV-1 bronchopneumonia as shown by gross findings on bronchoscopy and NGS. One study showed that 94.2% of COVID-19 patients were co-infected with a different respiratory pathogen (1). HSV-1 consisted of only 3.1% of the co-infections. Another study showed that 24% of severe COVID-19 patients had reactivation of HSV demonstrated by PCR of tracheal aspirate. These patients had statistically significant longer length of stay and mechanical ventilation (2). Prolonged mechanical ventilation itself is a known risk factor for HSV bronchopneumonia (3). Though viral culture is considered the gold standard for diagnosis, viral pneumonias are typically detected through PCR (4). In our patient, we diagnosed HSV through NGS which offers high-speed sequencing with the potential for more accuracy and information regarding different virus subtypes (5, 6, 7). Acyclovir is the standard of care for HSV pneumonia but it's effects on mortality are debated (3, 8, 9, 10). The implications of HSV bronchopneumonia in the setting of COVID-19 pneumonia requires further elucidation.

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CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE Amy Wang

Slow down! No immunity can be better than some? Considerations in a case of secondary Dengue

Title

Slow down! No immunity can be better than some? Considerations in a case of secondary Dengue

Authors

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Introduction

Dengue fever is caused by a mosquito-transmitted flavivirus endemic to tropical and subtropical regions and has significant variations in clinical presentation, ranging from a mild febrile illness to a life-threatening shock syndrome. In general, antibodies are thought to confer immunity against future infections; however, recent research has shown that antibodies from prior Dengue infection may increase the risk of developing severe Dengue. Here we present a case of a 60-year-old man with history of an undiagnosed febrile illness in the 1980s who presented with fever, headache, and Brugada syndrome after returning from El Salvador.

Case Presentation

A 60-year-old man presented to the emergency department for acute onset fever, headache, and back pain five days after returning from El Salvador. On admission, he was febrile to 102.6F and tachycardic. EKG revealed changes consistent with Brugada pattern. On hospital day 2, a rapid response was called for chest pain, which was accompanied by a troponin leak. Additionally, he began developing a thrombocytopenia, which eventually reached a nadir of 22. By hospital day 3, he was no longer febrile, but developed a mild transaminitis. He had no obvious signs of bleeding and maintained a stable hematocrit. However, pleural effusions were seen on CT but were too small for thoracentesis, making a hemorrhagic syndrome challenging to definitively rule out. On hospital day 7, Dengue IgG returned elevated (3.85), and upon further questioning, the patient recalled experiencing a febrile illness in the 1980s. Dengue IgM was normal (1.39), so empiric treatment based on a broad differential was continued. When

Dengue antibodies were retested after discharge to assess for delayed IgM positivity, both IgG and IgM were elevated (12.3, 7.12 respectively), confirming a diagnosis of secondary Dengue.

Discussion

The risk of severe Dengue, characterized by vascular leakage, hemorrhage, thrombocytopenia, and shock, is greater in patients who have had previous exposure to the disease. However, this is not true for all-comers who have had Dengue. Recent research has elucidated the mechanism through which this suspected phenomenon occurs in humans: antibody-dependent enhancement (ADE). In ADE, suboptimal antibodies bind but do not neutralize viruses, enhancing viral entry into host cells and thereby facilitating viral replication. The Katzelnick et al. study published in Science in 2017 showed that ADE occurred in Dengue at a specific range of antibody concentrations. While low levels did not enhance disease and high titers protected against severe disease, intermediate levels worsened disease. However, Dengue IgM typically takes 5 days after symptom onset to become detectable. Although IgM was retested in this case, recent research suggests that in early infection, an IgG/IgM ratio > 1.1 can be used to diagnose secondary Dengue infection. Had this ratio been used for this patient, a diagnosis could have been made sooner, which would have limited the duration of empiric antibiotics.

While not directly associated with Dengue, Brugada pattern can be triggered by fever. Moreover, fever can precipitate cardiac arrest in patients with Brugada syndrome, making antipyretic treatment particularly crucial for these patients.

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COLORADO POSTER FINALIST - CLINICAL VIGNETTE Caitlin Bell, MD

A Gran Case of Hypercalcemia

Title

A Gran Case of Hypercalcemia

Authors

Caitlin Bell MD, Corwyn McGee MD, Michael McDermott MD

Introduction

Compared to primary hyperparathyroidism and malignancy, granulomatous-mediated hypercalcemia is a much less common cause of hypercalcemia. Although hypercalcemia has been associated with many granulomatous diseases[1], until recently it was not known that Mycobacterium avium complex (MAC) infections could also lead to hypercalcemia.[2]

Case Presentation

A 48-year-old woman with a history of HIV/AIDS and disseminated MAC was admitted for two-weeks of progressively worsening diffuse abdominal pain and constipation. She consistently took daily anti-retrovirals but was only intermittently taking MAC treatment (azithromycin, ethambutol, and rifampin). Two months prior she was diagnosed with disseminated MAC with jejunal involvement when she presented with similar symptoms.

Her labs were pertinent for a serum calcium of 14.5 mg/dL, CD4 count of 81 cells/uL, and a suppressed HIV viral load. PTH was 5 pg/mL, PTHrP was < 2.0 pmol/L, and 25-hydroxy vitamin D was 38 ng/mL. Her 1,25-dihydroxyvitamin D level was elevated to 202 pg/mL. CT abdomen and pelvis showed mildly increased retroperitoneal and mesenteric lymphadenopathy. This was concerning for granulomatous-mediated hypercalcemia due to untreated disseminated MAC infection. She received lactated ringers, two doses of calcitonin, and pamidronate with normalization of her serum calcium after 48 hours. She returned one month later with recurrent severe hypercalcemia after again being non-adherent to her MAC regimen. A lymph node biopsy performed at this time confirmed disseminated MAC. She was set up for directly observed therapy (DOT) for outpatient antibiotics along with the addition of amikacin.

Discussion

Our patient had appropriately low PTH and PTHrP, a normal 25-hydroxyvitamin D, and elevated 1,25-hydroxyvitamin D that was concerning for granulomatous-induced hypercalcemia. Typically, hydroxylation of 25-hydroxyvitamin D occurs in the proximal tubules of the kidneys, but in granulomatous disease, there is extra-renal 1-alpha hydroxylase activity that is no longer regulated by PTH. This unchecked 1-alpha hydroxylase can cause severely elevated serum calcium.

Granulomatous-mediated hypercalcemia has classically been associated with sarcoidosis, Mycobacterium tuberculosis, or systemic fungal infections. Until recently it was not known that MAC could be another etiology for hypercalcemia.[3] According to one literature review, there are only eight cases that have reported hypercalcemia due to MAC; most of these cases were thought to have been triggered by immune reconstitution inflammatory syndrome (IRIS) or alterations in antibiotics.4 Our patient's hypercalcemia was likely from inadequate treatment of her disseminated MAC.

In addition to aggressive fluid resuscitation, calcitonin, and bisphosphonates, treatment of granulomatous-mediated hypercalcemia can include the addition of glucocorticoids to reduce the production of calcitriol.

In conclusion, Mycobacterium avium complex is being identified more often as a cause of granulomatous-mediated hypercalcemia and should be considered in high risk individuals who present with hypercalcemia.

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COLORADO POSTER FINALIST - CLINICAL VIGNETTE
Jennifer A Doran, MD

Scrotal Swelling in Adults, an Indication of IgA Vasculitis

Title

Scrotal Swelling in Adults, an Indication of IgA Vasculitis

Authors

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Introduction

IgA vasculitis, formally known as Henoch-Schönlein Purpura (HSP), is the most common form of systemic vasculitis in children (3-26.7 of 100,000 persons per year) and typically has an excellent prognosis. Typical characteristics include non-thrombocytopenic palpable purpura, abdominal pain, and arthritis. IgA vasculitis is far rarer in adults (0.8-1.8 of 100,000 persons per year) and this can lead to unrecognizable presentations of typical and atypical characteristics as seen in our case.

Case Presentation

A 46-year-old Caucasian man with history of current intravenous (IV) drug use presented to the Emergency Department with 12-hour onset of scrotal swelling, redness, and pain. He also endorsed 3-day history of mildly pruritic, non-painful rash of his thighs, buttocks, and trunk. He denied fever, abdominal pain, hematuria, or dysuria. He used heroin the day of presentation and injected into his right upper thigh. On examination he was afebrile, hemodynamically stable, and had a diffuse purpuric, non-blanching rash of his lower extremities that was more pronounced posteriorly. His anterior scrotum was edematous, erythematous and indurated with no apparent fluctuance. The scrotal pain worsened with testicular elevation and palpation. Initial laboratory findings included normal white blood cell and platelet count, C-reactive protein 91 mg/L, erythrocyte sedimentation rate >80 mm/hr, D-dimer 6.83 mcg/mL, urinalysis with 3+ protein, and urine protein to creatinine ratio of 1.39. A 24-hour urine protein collection had 4284 mg. Scrotal ultrasound demonstrated enlarged heterogenous appearance of the left

epididymis with hyperemia and bilateral scrotal wall thickening with no signs of torsion, varicocele, or hernia. He was started on IV antibiotics for concerns of scrotal cellulitis and epididymoorchitis. In addition, a skin and renal biopsy were obtained given his extensive rash and nephrotic range proteinuria concerning for a systemic process. By hospital day 3, the scrotal edema, erythema, and pain had completely resolved and antibiotics were discontinued the following day. Biopsy results showed IgA vasculitis with associated focal proliferative glomerulonephritis. The patient was discharged with outpatient follow up to monitor renal function and discuss ongoing management.

Discussion

While scrotal manifestations including epididymitis, orchitis, and spermatic cord involvement are reported in about one fifth of children with HSP, very few reports have described scrotal involvement in adults. Given this uncommon presentation, there is high risk for misdiagnosis and diagnostic complications including unnecessary surgical exploration. In our case, the clinical picture was further complicated by ongoing IV drug use, raising the concern for an infectious etiology of scrotal findings. However, the purpuric rash combined with nephrotic-range proteinuria described a systemic process prompting a biopsy that ultimately revealed the diagnosis. HSP should therefore be on the differential for adults presenting with scrotal swelling and rash so that an early diagnosis via biopsy can prevent unnecessary interventions.

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COLORADO POSTER FINALIST - CLINICAL VIGNETTE
Viridiana Estrada, MD

Triple Threat: A case of Bubonic, Septicemic, and Pneumonic Plague Through Feline Transmission

Title

Triple Threat: A case of Bubonic, Septicemic, and Pneumonic Plague Through Feline Transmission

Authors

Viridiana Estrada, MD. Isabel Z. Fernandez, PhD. Amanda V. Johnson, MD. Samuel Carpentier, MD, PhD. Jason John, MD. Kellie Hawkins, MD, MPH.

Introduction

Yersinia pestis is a gram-negative bacterium that causes plague and is primarily transmitted to humans through flea bites or animal exposure. It can present with three main clinical forms: bubonic, septicemic, and pneumonic plague. Infection with Y. pestis can cause a severe and rapidly progressing disease that can be lethal in the absence of treatment (1,2).

Case Presentation

The patient is a 37-year-old previously healthy male who experienced fevers and nausea two days after cutaneous and respiratory secretion exposure to an infected cat in rural Colorado. He began treatment with azithromycin for presumed Bartonella versus Francisella infection. Two days after antibiotics, he continued having high fevers and new painful axillary swelling, at which time he was admitted to the hospital. Gentamicin was added after a lymph node biopsy. He subsequently developed progressive encephalopathy, respiratory failure requiring intubation, and pressors for septic shock. CT chest was notable for multifocal pneumonia. Admission blood cultures and lymph node biopsy were ultimately confirmed as Y. pestis by the state laboratory. Levofloxacin was added and the patient clinically improved with extubation two days later. The patient was discharged on oral levofloxacin and doxycycline after a thirteen-day stay. He presented to the hospital several days later with high-grade fevers, worsening left upper extremity swelling, and was found to have a left brachiocephalic vein deep vein thrombosis. His course of doxycycline was extended given concern for thrombophlebitis and he was initiated on anticoagulation. The patient continues to follow with Infectious Disease as an outpatient to ensure full resolution of symptoms and laboratory abnormalities.

Discussion

There are several notable features of this case, including the exposure from feline host, delayed directed antibiotic coverage, and the complex clinical course. There have been several cases of feline transmission over the last few decades in the US; these represent a fairly large proportion given its low incidence. Interestingly, most of the primary pneumonic plague exposures in the US have been associated with exposure to feline respiratory secretions (3). While our patient had possible respiratory exposure to a feline from an endemic area, his clinical course correlates most closely with either bubonic or septicemic plague as primary with progression to secondary pneumonic plague. Initial antibiotic coverage was targeted towards common zoonotic diseases. This may have unfortunately permitted bacterial dissemination and resulted in multiple complications (4). These rarer presentations of plague present with higher mortality than bubonic plague and in the case of pneumonic presentation can facilitate human-to-human transmission (1). Our report highlights the importance of high clinical suspicion and prompt antibiotic coverage for Yersinia pestis in endemic areas for patients with concerning presentations.

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COLORADO POSTER FINALIST - CLINICAL VIGNETTE Alana Freifeld

POEMS or Pastrami? Unravelling the Cause of Osteomalacia in a Young Man

Title

POEMS or Pastrami? Unravelling the Cause of Osteomalacia in a Young Man

Authors

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Introduction

Severe dietary restriction can lead to essential nutrient deficiencies including vitamin D, B12, and folate. Here we present an unusual case of osteomalacia, megaloblastic anemia, and thrombocytopenia that at first presentation appeared to be unified solely by disordered eating, but was later concerning for POEMS syndrome with immune thrombocytopenic purpura (ITP).

Case Presentation

A 24-year-old man presented to the Emergency Department with a left foot lesion, 20 lb weight loss, and diffuse bone pain. He was admitted for a platelet count of 7. Work-up revealed osteomalacia with hypocalcemia (6.2mg/dL), undetectable vitamin D, hyperparathyroidism (PTH 395 pg/mL), and X-rays with severe bone demineralization and subacute fractures. Labs were also notable for macrocytic anemia, severe B12 deficiency (

Discussion

POEMS syndrome is characterized by polyneuropathy, organomegaly, endocrinopathy, M-spike, and skin changes. This is a rare plasma cell disorder requiring a high index of suspicion for diagnosis. In this case, careful history-taking revealed a low-fat diet which may have contributed to his osteomalacia, but he was eating enough meat that he should have been B12 replete. In the absence of pernicious anemia, celiac disease, or any signs of terminal ileal disease, POEMS is a compelling unifying diagnosis. Comorbid POEMS and ITP has been rarely documented (1), and we propose that this could be another instance of this pattern. This case also illustrates the importance of closely trending post-transfusion platelet counts. ITP does not

always result in immediate return to pre-transfusion levels and missing intermediate consumption can result in delayed diagnosis and morbidity.

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CONNECTICUT POSTER FINALIST - CLINICAL VIGNETTE
Jason Y Chang, MD

Respiratory Failure Associated with Vaping-Induced Lung Injury

Title

Respiratory Failure Associated with Vaping-Induced Lung Injury

Authors

Jason Chang, MD; Mingwei Yu, MD; Christian Espana Schmidt, MD, FACP

Introduction

Vaping-associated pulmonary injury (VAPI) is associated with severe and often life-threatening respiratory failure and frequently mistaken for common pulmonary illnesses such as bacterial pneumonia or COVID-19 infection. The rarity of this disease poses significant challenges to timely diagnosis and management especially in the current era of COVID-19 pandemic.

Case Presentation

A 43-year-old male came to the emergency room because of worsening dyspnea, productive cough of rusty sputum, and high-grade fever for 2 weeks. He was diagnosed with pneumonia and also considered to be high-risk for concomitant COVID-19 infection. Treatment with broad-spectrum antibiotics was initiated. In the next few days his symptoms continued to worsen despite treatment and he had to be placed on high-flow oxygen. A computed tomography (CT) of the chest at the time revealed extensive lung injury and the characteristic finding of ground-glass opacities that are also seen in COVID-19 infections. Because of that he was tested 3 times for COVID-19 with high sensitivity PCR, however, each time he tested negative. Due to his known history of past incarceration and homelessness, the possibility of pulmonary tuberculosis was also explored. However, repeated tuberculosis testing with QuantiFERON and acid-fast bacilli cultures were negative. Other plausible causes of his illness including autoimmune diseases, fungal infections, and acute HIV infection were also considered, but all were eventually ruled out. His respiratory status quickly deteriorated to the point that intubation was under serious consideration, while the cause of his illness remained unknown. Later, on further investigation of his past history it was discovered that he has been vaping on daily basis with his girlfriend over the past month before he was admitted to the hospital. With this newly-obtained information decision was made to postpone intubation and begin daily intravenous injection of high-dose steroids for presumed vaping-induced lung injury, which

resulted in complete resolution of symptoms within a week. Eventually he was able to come off oxygen therapy and has remained free of symptoms.

Discussion

This case is particularly interesting as substances-induced lung injury is under-diagnosed and often mimics many common infections. It also underscores the importance of a detailed history including frequently-overlooked social habits in diagnosing patients with diseases of uncommon etiologies.

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CONNECTICUT POSTER FINALIST - CLINICAL VIGNETTE
Tien-Chan Hsieh, MD

Rare Synchronous Primary Cancers of Pancreas and Lung

Title

Rare Synchronous Primary Cancers of Pancreas and Lung

Authors

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Introduction

Synchronous multiple cancers are multiple primary tumors diagnosed within six months interval. More patients are found with multiple primary tumors due to the progress in diagnosis and treatment of cancers. Among the various combination of synchronous tumors, the presence of both primary pancreatic and lung cancers is extremely rare. There are only a few case reports in the literature. Here we share another case of synchronous pancreatic and lung cancer.

Case Presentation

This is an 81 years old man with diabetes and 20-pack-year smoking history presented with unintentional weight loss of 30 pounds in a year. Extensive workup at the primary care clinic was unremarkable. Computed tomography (CT) scan of the chest, abdomen and pelvis identified multiple lung mass, lymphadenopathy and an ill-defined pancreatic lesion. Subsequent Positron emission tomography (PET) scan showed focal activity of the aforementioned masses. Endobronchial ultrasound (EBUS) biopsy of right lower lobe nodule, hilar and mediastinal lymph node confirmed poorly differentiated adenocarcinoma. Immunohistochemical stains was positive for TTF-1, and negative for p40. Endoscopic ultrasound guided pancreas needle core biopsy found well-differentiated invasive ductal adenocarcinoma which was negative for TTF-1. The staining pattern and histologic difference would be consistent with a primary pancreatic adenocarcinoma independent of the pulmonary lesions. Patient began chemoradiotherapy for lung cancer first given the severity of the lung cancer. Carboplatin and pemetrexed were started together with radiation. Despite our effort, repeat CT showed evidence of disease progression in the lung. As for the pancreatic cancer, the

baseline CA 19-9 was 340 U/mL. Upon completion of lung cancer treatment, capeditabine with radiation for pancreas was provided. Repeat image 4 months after initial diagnosis showed shrinkage of the pancreatic lesion. The CA 19-9 also decreased to 61 U/mL.

Discussion

Clinician should not assume the synchronous masses are metastatic. Early diagnosis and treatment are crucial due to the prognosis difference in metastatic pancreatic cancers and synchronous primaries. Two separate biopsies should be pursued to confirm the two primary cancers. The treatment guideline of synchronous cancers is not well-established. Since the overall prognosis is dependent on the more aggressive cancer, it is reasonable to focus on the more advance malignancy initially.

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CONNECTICUT POSTER FINALIST - CLINICAL VIGNETTE
Long Qian, MD

Cyst-like subdural hematoma as a complication of probable catastrophic antiphospholipid syndrome

Title

Cyst-like subdural hematoma as a complication of probable catastrophic antiphospholipid syndrome

Authors

Long Qian, Yiduo I Hu, and George Goshua

Introduction

Catastrophic antiphospholipid syndrome (CAPS), a severe form of antiphospholipid syndrome (APS), is defined by (1)thrombotic events causing dysfunction of three or more organ systems (2)over a short time (i.e. within a week), (3)lab-confirmed presence of one or more APS antibodies, and (4)histopathological evidence of small-vessel occlusions. Probable CAPS is considered when most but not all criteria are met. The mainstay of treatment includes anticoagulation, steroids, intravenous immunoglobulin (IVIG), and plasma exchange (PEX). Rituximab and eculizumab may be considered for refractory cases. Here we present a case of probable CAPS complicated by ischemic stroke followed by a subdural hematoma (SDH).

Case Presentation

A 37-year-old woman with triple-positive APS on enoxaparin (40mg twice daily), recurrent right low extremity deep vein thrombosis (DVT), and multiple miscarriages presented for abdominal pain. Her enoxaparin was reduced to 20mg twice daily and then switched to argatroban in the setting of a surgery for hemorrhagic ovarian cyst. Three days later she had a right middle cerebral artery (MCA) ischemic stroke. Enoxaparin was resumed after her neurological symptoms improved to near baseline. Six days later, she returned with worsening abdominal pain. MRI found a new portal vein thrombus (PVT). Given the short interval after the stroke, concern for evolving CAPS was raised, for which she was transferred to our hospital. Labs showed thrombocytopenia (84), anemia (8.5), and elevated alkaline phosphatase (537), with normal leukocyte count, creatinine, transaminases, and bilirubin. She was started on heparin infusion, methylprednisolone, and IVIG. On hospital day 2, she developed new left arm weakness. Head CT showed an extra-axial cyst-like structure in the right frontal region, adjacent

to the prior MCA stroke. Heparin was held and she underwent craniotomy to evacuate the cyst-like lesion. It was composed entirely of clot. Heparin was re-started, but six days later the SDH expanded, for which heparin was reversed with protamine. In addition to steroids and IVIG, she also received two sessions of PEX, followed by rituximab and eculizumab, along with vitamin D, hydroxychloroquine and rosuvastatin. She was discharged on low-dose subcutaneous heparin (2500 units/day). She was admitted 2.5 weeks later with a urinary tract infection (UTI) but was found to have a new small right frontal SDH, right leg DVT, and persistent pancytopenia. No change was made to her probable CAPS management. She followed up in clinic one week later. Her pancytopenia improved. The outpatient plan was to complete eculizumab, then give one dose of ravulizumab, and resume anticoagulation if the SDH remains stable.

Discussion

This case illustrates the severe hemorrhagic and thrombotic complications that can occur with CAPS. Proactive treatment of suspected CAPS is critical to reduce risks of further thrombotic events and non-reversible organ injuries. Among the tetrad of anticoagulation, steroids, IVIG, and PEX, anticoagulation is the most important. However, anticoagulation initiation, dosing, and monitoring are challenging decisions against a backdrop of hemorrhagic complications, thrombocytopenia, and elevated baseline partial thromboplastin time. Finally, adjuvant therapies such as rituximab and eculizumab should be considered in refractory cases. Further high-quality research is needed to improve the evidence-based management of CAPS.

CONNECTICUT POSTER FINALIST - CLINICAL VIGNETTE
Rafae Shaikh, MBBS

Amyopathic dermatomyositis associated rapidly progressive Interstitial Lung Disease requiring venovenous extracorporeal membrane oxygenation

Title

Amyopathic dermatomyositis associated rapidly progressive Interstitial Lung Disease requiring venovenous extracorporeal membrane oxygenation

Authors

Stephen Simeone, DO, University of Connecticut Asiya Tafader, MBBS, University of Connecticut Rafae Shaikh, MBBS, University of Connecticut Sree Yelamanchili, MD, University of Connecticut

Introduction

Dermatomyositis (DM) is an idiopathic inflammatory myositis clinically characterized by proximal muscle weakness, serum elevations in muscle enzymes such as aldolase and creatine kinase (CK), along with characteristic dermatologic manifestations such as Gottron's papules and the heliotrope rash. Interstitial lung disease (ILD) is a common extramuscular manifestation of DM and can be associated with a high mortality. We present a case of amyopathic dermatomyositis associated rapidly-progressive interstitial lung disease ultimately requiring venovenous extracorporeal membrane oxygenation (VV-ECMO).

Case Presentation

A 56-year-old female with a past medical history of dyslipidemia, non-alcoholic fatty liver disease and obesity presented to the emergency department following referral by her primary care provider due to a two month history of progressive dyspnea, non-productive cough and exertional intolerance. She reported arthralgias in her hands and wrists bilaterally, non-bloody diarrhea and a 15lb unintentional weight loss in the preceding 6 to 8 weeks. She denied muscle weakness, dysphagia or muscle pain. Physical examination included pruritic papular rash distributed along the hairline, thorax and periorbital area with normal muscle strength of 5/5 MRC bilateral upper and lower extremities. Computed tomography thorax demonstrated mixed interstitial and alveolar process without evidence of fibrosis. Further work up revealed normal CK, positive anti-neutrophil antibody (ANA) with titres 1:320 and a speckled pattern, anti-smooth muscle antibody. Myositis panel and aldolase were requested. Microbiological assays for infectious etiology were negative for HIV, Pneumocysitis spp, acid-fast bacilli and respiratory

culture. Subsequent bronchoscopy with bronchoalveolar lavage demonstrated benign lung parenchyma with cellular interstitial pneumonia, minimal inflammatory infiltrate and no granulomas or fibrosis. Due to a decline in respiratory status and worsening oxygen requirements she underwent elective endotracheal intubation. She was then diagnosed with possible idiopathic inflammatory myopathy associated rapidly-progressive ILD and was given methylprednisolone pulse dose for 3 days. She also received rituximab for immunosuppressive therapy along with IVIG. Despite continued immunosuppressive therapy, the patient required increasing ventilatory support and was cannulated for VV-ECMO. A few days later, blood tests resulted with elevated aldolase, positive anti-Ro52, and anti-melanoma-differentiation-associated gene 5 (anti-MDA-5).

Discussion

The availability of new serological testing for myositis specific antibodies has made it possible to test for many different autoantibodies however there is a significant latency to results. Dermatomyositis can be complicated with ILD across a spectrum of clinical severity, ranging from chronic and symptomatically stable respiratory symptoms to rapidly-progressive respiratory failure. Clinical presentation includes weakness, myalgia, rash and polyarthralgia. Although, muscle weakness may be absent with normal muscles enzymes. The presence of anti-MDA-5 is associated with rapidly-progressive ILD. Amyopathic dermatomyositis associated rapidly-progressive ILD (ADM-ALD) describes the rare syndromic association of intractable disease of the pulmonary parenchyma and carries a poor prognosis with Gono et al. reporting a six month survival rate of 40.8% (1). Treatment usually comprises of immunosuppressive therapy with high dose glucocorticoids, cyclophosphamide (CYC), azathioprine, methotrexate (MTX), IVIG, and rituximab. In patients who are refractory to steroid therapy, current convention favors the use of CYC as an initial therapy, as other agents such as MTX, have toxidromes which mimic the progression of the disease (2).

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CONNECTICUT POSTER FINALIST - CLINICAL VIGNETTE
Rafae Shaikh, MBBS

Primary Hypotensive Transfusion Reaction: A classic case of a rare entity

Title

Primary Hypotensive Transfusion Reaction: A classic case of a rare entity

Authors

Rafae Shaikh, MBBS, University of Connecticut Asiya Tafader, MBBS, University of Connecticut Jasmin Hundal, MBBS, University of Connecticut David Inyangetor, MD, The Permanente Medical Group

Introduction

Acute blood transfusion reactions (ABTRs) range from clinically benign to potentially life-threatening reactions obliging the astute physician to expeditiously recognize and intervene. Circulatory collapse or symptoms of airway distress form the dreaded hallmark of many life-threatening reactions. Primary hypotensive transfusion reactions (PHTR) are rare and are characterized by an acute decline in blood pressure mirroring other potentially fatal reactions. We present a classic case of PHTR in a patient following initiation of an Angiotensin-converting enzyme inhibitor (ACEi).

Case Presentation

An 81 year old male with history of heart failure, hypertension and duodenal ulcer presented with rectal bleeding and dyspnea. A clinical diagnosis of heart failure exacerbation was made with laboratory evaluation revealing progression of iron deficiency anemia with a hemoglobin decline of 4.1g/dL over the previous 5 months. Electrocardiogram demonstrated atrial fibrillation with a ventricular rate of 82 beats/minute without ischemic changes. Cardiac biomarkers were negative and he was otherwise hemodynamically stable. He was transfused two units of leukocyte-reduced packed red blood cells (PRBC) with an inappropriate increase of 0.3g/dL in hemoglobin. Esophagogastroduodenoscopy demonstrated two duodenal angioectasias without evidence of recent bleeding which were treated with bipolar probe. Colonoscopy revealed two small sessile polyps with pathology demonstrating tubular adenomas. Due to systolic blood pressures ranging from 160-170mmHg, the patient was commenced on lisinopril alongside diuretic therapy. Repeat hemoglobin was 7.6g/dL and another PRBC transfusion was commenced but was immediately stopped due to concern for

ABTR. In contrast to the previous transfusion, the patient developed asymptomatic hypotension with blood pressure decline from 136/79mmHg to 99/44mmHg. He was otherwise clinically stable without respiratory symptoms, chest pain, pruritus or fever. Physical examination was unremarkable. Transfusion reaction evaluation was negative including peripheral smear, post-transfusion Coombs test, evidence of immune hemolysis or clerical discrepancies. The patient's blood pressure promptly normalized to 116/49mmHg without intervention. He remained asymptomatic throughout the entirety of the event and recovered well from his hospital admission.

Discussion

Several ABTRs can result in hypotension, namely, acute hemolytic reactions, transfusion-related acute lung injury, anaphylaxis and sepsis. As depicted by the 2010 US hemovigilance criteria, a definitive diagnosis of PHTR entails exclusion of other ABTRs, hypotension occurring during or within 1 hour of cessation of transfusion and a decrease of at least 30mmHg in the systolic blood pressure which is not more than 80mmHg in itself. Hypotension not meeting criteria falls into the possible category (1). The incidence of PHTR is unknown due to the rarity of the phenomenon. One retrospective study reported an incidence of 1.33 in 10,000 transfusions (2). The precise underlying pathophysiology remains unclear although alterations in the bradykinin pathway have been postulated. Associations have been made with the use of ACEi, negatively charged leukoreduction filters, platelet transfusions and pre-storage of blood products (3,4). Our case depicts a classic presentation of a rare phenomenon, whereby our patient inadvertently acts a crossover control to himself and developed a possible PHTR reaction upon commencement of ACEi and leukocyte-reduced blood. Despite its rarity, a knowledge of ABTRs is paramount as misidentification or mismanagement leads to fatal outcomes.

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CONNECTICUT POSTER FINALIST - CLINICAL VIGNETTE
Meher Singha

A Rare Case of Acute Right Sided Vision Loss and Desquamating Skin Lesions as Presenting Features for Syphilis in an Immunocompetent Individual

Title

A Rare Case of Acute Right Sided Vision Loss and Desquamating Skin Lesions as Presenting Features for Syphilis in an Immunocompetent Individual

Authors

Singha M, Rawi S, Anthony P

Introduction

Syphilis is a multisystem infection caused by bacterium *Treponema pallidum* with increasing incidence, especially in men having sex with men, with a current prevalence of 10.8 cases per 100,000 in the United States.[1] The prevalence of neurosyphilis from 2009 to 2015 was 0.84%, a likely underestimation of the burden in this country. Ocular syphilis can present in a variety of ways, at any stage of syphilis, with posterior uveitis being the most common.[2] We report a case of neurosyphilis with an unusual presentation of acute vision loss and desquamating rash.

Case Presentation

A 62-year-old male with a history of hypothyroidism, depression, and chronic proctitis presented to the ophthalmologist with a three-week history of right eye visual loss and associated headaches. Ophthalmological examination revealed a posterior uveal opacity with a concern for endophthalmitis, posterior uveitis, or a mass. The patient underwent a right eye vitrectomy with findings of rapidly progressive granulomatous uveitis and subtle findings in the left eye. Fluorescent treponemal antibody and Treponema pallidum polymerase chain reaction were positive and rapid plasma regain (RPR) was 1:128 positive. The patient was sent to the emergency department due to his reported anaphylactic penicillin allergy. On further questioning, the patient described a desquamating rash on the soles of his feet three weeks ago, without an accompanying rash on his palms. The patient had been sexually active with one male partner over the last year, denied any history of human immunodeficiency virus (HIV) infection and had herpes once. Magnetic resonance imaging of the brain did not show any evidence of neurosyphilis or central nervous system lymphoma. Lumbar puncture was performed and showed 24 nucleated cells, with neutrophils at nine percent, lymphocytes at 68%, three

histiocytes, normal protein and glucose. The patient underwent desensitization in the intensive care unit successfully without reaction. He was started on four million units of intravenous (IV) penicillin G every four hours. Cerebrospinal fluid (CSF) Venereal Diseases Research Laboratory (VDRL) was positive at 1:4, and it was decided to continue treatment for neurosyphilis. He was discharged from the hospital to complete a 14-day treatment with IV penicillin G and would require lumbar puncture in six months with RPR titers for follow-up.

Discussion

Ocular syphilis is recognized by subtle clinical manifestations as a presentation of neurosyphilis. This patient had a unique combination of a desquamating skin rash and vision loss, weeks after, reported in only a few case reports.[3,4,5] However, unlike our patient, these have been immunocompromised individuals with concomitant HIV infection. Due to the resurgence of syphilis and lack of pathognomonic findings in ocular syphilis, it has become crucial to recognize unique presentations regardless of CSF results. CSF tests with negative VDRL results do not necessarily rule out neurosyphilis[6] and delayed treatment could result in complications including permanent vision loss, permanent paralysis, dementia and death.[7,8] A keen suspicion in either immunocompetent or immunocompromised individuals, early diagnosis and treatment of syphilis can help avoid further complications in such patients.[9]

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CONNECTICUT POSTER FINALIST - CLINICAL VIGNETTE
Meher Singha

An Atypical Case of Rash and Severe Muscle Edema as Presenting Features of Dermatomyositis with NXP-2 Positive Antibodies without Malignancy

Title

An Atypical Case of Rash and Severe Muscle Edema as Presenting Features of Dermatomyositis with NXP-2 Positive Antibodies without Malignancy

Authors

Singha M, Alexander S, Feterman D, Mohammed T, McCrary C

Introduction

Dermatomyositis (DM) is an idiopathic myopathy presenting with progressive symmetrical muscle weakness and skin manifestations classically involving erythema over the face, neck and upper trunk.[1,2] We describe a patient who presented with a rare variant of nuclear matrix protein (NXP-2) positive DM with a severe debilitating muscle weakness and an atypical rash requiring prolonged hospitalization without any evidence of malignancy.

Case Presentation

A 55-year-old black, obese woman presented to the emergency department (ED) with new-onset progressive difficulty to perform activities of daily living (ADLs) like bathing, feeding herself, and walking for a week. Three weeks prior to hospitalization, she noticed a rash on her left knee and visited an urgent care. She was prescribed steroid cream as well as doxycycline for suspected Lyme disease.

In the ED, her vitals were normal. Physical examination revealed an erythematous rash on both knees, a vesicular rash on the lateral aspect of her thigh, and a diffuse non-blanching rash on the back, extending on to the upper chest and connecting through neck and arms bilaterally. Neurological examination revealed motor strength 3/5 in shoulders and hips with normal distal muscle strength.

Her blood examination revealed an elevated white blood cell count, elevated aminotransferases, elevated erythrocyte sedimentation rate of 60 mm/hr and normal C-reactive protein. Her creatinine phosphokinase was significantly elevated to 12,794 U/L and serum

myoglobin was 781 ng/ml (normal range 25-72 ng/ml). Infectious workup including outpatient tick borne disease was negative. The autoimmune panel showed a positive antinuclear antibody titer (1:160) with speckled nuclear pattern and was positive for NXP-2 antibody. A thorough further autoimmune workup was negative for any other antibodies.

Skin biopsy revealed vacuolization of basal keratinocytes, necrotic keratinocytes with lymphocytic infiltrate; and muscle biopsy showed focal active myofiber necrosis and myophagocytosis. A diagnosis of DM was made, and Thiopurine S-Methyltransferase (TPMT) genotype was sent in anticipation of starting azathioprine or 6-mercaptopurine. She was treated with intravenous immunoglobulins for three doses and intravenous prednisone. Her course was complicated by a positive quantiferon. She was treated with rituximab and discharged to an inpatient rehab facility. Malignancy workup, including endoscopy, colonoscopy, computed tomography of chest, abdomen and pelvis, transvaginal ultrasound, mammogram and positron emission tomography were all negative. Unfortunately, since her diagnosis, the patient has developed worsening hoarseness of voice, dysphagia and currently remains wheelchair bound.

Discussion

This case demonstrates an atypical, severe presentation of DM with marked muscle edema and weakness requiring prolonged inpatient management with intravenous immunoglobulin, rituximab, and glucocorticoids[3] for which there are only a few published cases.[4, 5] Another important feature was the atypical rashon both knees at presentation, similar to Gottron's papules. Patients with NXP-2 positive DM have an increased risk of malignancy,[6, 7] due to its involvement in activation of tumor suppressor gene p53.[8] However, our patient did not have any evidence of malignancy after extensive work up. This case adds to the growing body of evidence of NXP-2 positive patients as a unique subset of DM that present with severe debilitating disease even without an occult malignancy.

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CONNECTICUT POSTER FINALIST - CLINICAL VIGNETTE
Asiya Tafader, MD

Biliary Cast Syndrome: An unusual presentation in a non-liver transplant patient

Title

Biliary Cast Syndrome: An unusual presentation in a non-liver transplant patient

Authors

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Introduction

Biliary cast syndrome (BCS) is a remarkable yet rare phenomenon involving the formation of robust pigmented biliary debris which have molded to the biliary system. It is almost exclusively described as a complication of orthotopic liver transplantation (OLT) (1). We present a case of a 35-year-old male who developed BCS with resultant sequela of secondary sclerosing cholangitis and cirrhosis. This was likely precipitated by Veno-Venous ECMO for status asthmaticus. Only four cases have previously been described in the non-transplant population (2-4).

Case Presentation

A 35-year-old male was admitted for severe asthma exacerbation requiring intubation. CT chest demonstrated bilateral patchy tree-in-bud opacifications. His respiratory status remained tenuous and he ultimately required Veno-Venous ECMO (VV ECMO) due to severe respiratory acidosis. Of note, oxygenation was consistently maintained. Bronchoscopy revealed multiple mucus plugs and cultures grew aspergillus fumigatus. He received voriconazole in addition to antibiotic treatment for community-acquired pneumonia with azithromycin and ceftriaxone. The patient developed transaminitis in a mixed hepatocellular and cholestatic pattern: total bilirubin 2.0 (0.2–1.0 mg/dL), direct bilirubin 1.2 (0–0.2 mg/dL), AST 379 (10-55 U/L), ALT 557 (10–55U/L) and ALP 370 (45–128 U/L). Ultrasound demonstrated evidence of gallbladder sludge. The etiology was suspected to be drug induced and led to cessation of multiple medications. Liver biochemistry worsened and evaluation for other causes of hepatic dysfunction including hepatitis panel and autoimmune serology was negative. MRCP demonstrated widespread tubular filling defects of the common bile duct and intra-hepatic ductules with irregular beading which were not present on prior CT of the abdomen. ERCP demonstrated significant biliary tree sludge and multiple large pigmented casts which were

extruded with balloon extraction. Unfortunately, the patient ultimately developed secondary sclerosing cholangitis and cirrhosis with esophageal varices and recurrent variceal bleeding. He underwent two transjugular intrahepatic porto-systemic shunts due to initial in-stent thrombosis. He subsequently underwent evaluation for liver transplantation.

Discussion

To our knowledge, there are only four cases describing BCS in non-OLT patients. These cases were reported in patients with comorbidities including antiphospholipid syndrome, hematological malignancy, cholangitis with septicemia (2-4). We describe the fifth and only case to be reported in the last decade. Due to the rarity of the disease even in OLT patients, there is limited knowledge of the precise underlying pathophysiology. Multiple associations have been postulated and include cold ischemia, gallbladder sludge, hypoxia, systemic hypotension and acute cellular rejection (3,5,6). In our case, the likely etiology is multifactorial including ischemia, gallbladder sludge and a possible association with aspergillus infection (7). Gallbladder sludge is a relatively common finding on ultrasound and is frequently overlooked as an innocuous finding. Risk factors include prolonged fasting, parenteral feeding, critical illness and gallbladder hypomotility which can lead to biliary sludge formation and gallstones (2,8). Whether biliary sludge formation has a causal relationship in cast formation is yet to be determined. However, given the magnitude of complications seen in our patient and a possible relationship with biliary cast syndrome, it certainly warrants attention and prophylactic measures to mitigate its onset.

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CONNECTICUT POSTER FINALIST - CLINICAL VIGNETTE
Yuyao Wang, MD

A rare presentation of anterior mediastinal mass with pericarditis

Title

A rare presentation of anterior mediastinal mass with pericarditis

Authors

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Introduction

The anterior mediastinum is the most common location of mediastinal masses in adult, with 10% of these masses being germ cell tumors. Invasion into the pericardium and resultant malignant pericardial effusion is an extremely rare phenomenon, described mostly in pediatric patients. We present a case of a massive anterior mediastinal mass with pericarditis in an adult.

Case Presentation

A previously healthy 36-year-old male presented to the ED with one-day history of acute pleuritic chest pain, dyspnea, and cough, as well as ten-day history of intermittent facial congestion, dysphagia, and odynophagia. He also noted an unintentional weight loss of 15 pounds in one month. Physical exam revealed mild periorbital, labial, right sided facial, and right arm edema. Initial laboratory evaluation was unremarkable. Chest radiograph showed widening of the mediastinum. Computed tomography angiography was negative for aortic dissection; however, it identified a large (15 x 12 x 13 cm) anterior medial mediastinal mass with encasement of the aorta and great branches, partial encasement of the trachea, and compression of the superior vena cava. Further evaluation revealed beta-human chorionic gonadotropin (ß-hcg) of 41 mIU/mL, alpha-fetoprotein (AFP) of 47 ng/mL, and lactate dehydrogenase of 751 U/L. Scrotal ultrasound showed no evidence of an intratesticular mass. The mediastinal biopsy found germ cell neoplasm with seminoma component. Immunohistochemistry was consistent with non-seminomatous germ cell tumors (NSGCTs), positive for CD117 and OCT3/4, and negative for CD30, CD45, and Cytokeratin AE1/AE3. On hospital day 6, the patient experienced worsening of chest pain, with new ST segment

elevations in V5 and V6, diffuse PR depressions, and echocardiographic findings of pericardial effusion with right atrial collapse, consistent with pericarditis. Indomethacin was initiated. His chest pain improved, and repeat echocardiography showed resolution of the pericardial effusion. Further staging workup did not reveal any evidence of metastasis. Repeat chest imaging, performed after 4 cycles of VIP regimen (Etoposide, Ifosfamide, Cisplatin, with Neulasta support), showed substantial interval shrinkage of the mass, measuring at approximately 5 x 5 cm. Patient underwent surgical resection. The final pathology showed mature teratoma with negative surgical margins. Repeat tumor markers one month after the surgery showed ß-hcg

Discussion

Majority (90%) of adult malignant mediastinal germ cell tumors occur in men and are usually diagnosed in the third decade of life. A large anterior mediastinal mass typically presents with symptoms associated with local compression of adjacent structures. Malignant pericardial effusion is a very rare and potentially fatal complication of mediastinal germ-cell tumors. Even though no pericardial fluid drainage/analysis was performed in our case, we strongly suspect that the effusion was related to the patient's primary disease, occurring secondary to tumor erosion or rupture into the pericardium. The symptoms improved with treatment of the underlying malignancy. In patients with NSGCTs, surgical treatment is indicated if there is a residual mass noted after chemotherapy. Complete surgical resection of mediastinal NSGCTs can establish the diagnosis and decrease recurrence. Surveillance with tumor markers (AFP and ß-hcg) is commonly used.

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DISTRICT OF COLUMBIA POSTER FINALIST - CLINICAL VIGNETTE Xinyu Von Buttlar, MD

Obstructive Shock Presenting Like ST-Elevation Myocardial Infarction

Title

Obstructive Shock Presenting Like ST-Elevation Myocardial Infarction

Authors

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Introduction

Pulmonary emboli (PE) are responsible for 60,000 to 100,000 deaths in the United States annually.1 PE can sometimes have atypical presentations, mimicking conditions like myocardial infarctions (MI) or pneumothoraces, therefore making timely diagnosis challenging. In cases of massive PE that cause heart strain, there can be characteristic findings on an electrocardiogram: tachycardia, S1Q3T3 pattern, incomplete/complete right bundle branch block, atrial fibrillation, T wave inversion in leads V1-V4, and ST elevation in aVR.3 Being aware of how PE can present atypically allows physicians to recognize and treat it in a timely fashion. In our case report, we present a 66 year old African American male who presented to the emergency department in shock and with initial electrocardiographic findings consistent with left main stenosis but negative coronary artery disease and was later found to have extensive bilateral PE.

Case Presentation

The patient was a 66 year old African American male who presented to our hospital with cardiogenic and obstructive shock secondary to extensive bilateral PE. The patient had complaints of shortness of breath without accompanying chest pain. He had experienced a similar episode the previous week which had resolved with rest. Notably, the patient was active physically, including walking his dog daily and was not seeing a physician regularly. He also was a habitual cigar smoker. During the current episode, the shortness of breath did not resolve and when it worsened, EMS was called. Upon arrival at the emergency department, he was given 325 mg aspirin and was found to be diaphoretic, tachypneic, and hypotensive with blood pressure 67/48. Initial EKG showed ST segment elevations in leads V1, V2, and aVR with reciprocal ST depression in V4-V6 as well as a right bundle branch block. His initial troponin was

positive at 0.37 ng/mL. Within 10 minutes of arrival at the emergency room, the patient's working of breathing increased, and he required intubation. Following intubation, the patient became bradycardic to 33 and went into pulseless electrical activity (PEA) cardiac arrest. Cardiopulmonary resuscitation (CPR) and advanced cardiac life support (ACLS) was initiated, and return of spontaneous circulation (ROSC) was achieved after 3 minutes of CPR. Patient was started on a heparin drip and vasopressor norepinephrine. A cardiac catheterization did not reveal significant coronary artery stenosis. This patient developed PEA cardiac arrest again during the catheterization, and achieved ROSC after 2 minutes of CPR. Due to lack of significant coronary artery occlusion and left ventriculogram showing an ejection fraction of 60%, there was high suspicion of extensive PE. Alteplase 50mg was given intravenously followed by continuous heparin infusion. In addition, patient had transient atrial fibrillation; he did not have prior history of this condition. Following hemodynamic stabilization in the intensive care unit (ICU), a CT of the chest with intravenous contrast was obtained and confirmed extensive bilateral PE.

Discussion

The purpose of this report is to highlight the potential varied presentations for PE. Typically, elevated troponins and ST elevations on electrocardiogram are associated with MI. However, elevated troponins are increasingly becoming more recognized as typical in PE cases.4

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FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Ramy Abdelmaseih

STARI; FLORIDA'S LYME DISEASE VARIANT – A CASE REPORT

Title

STARI; FLORIDA'S LYME DISEASE VARIANT – A CASE REPORT

Authors

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Introduction

STARI (southern tick-associated rash illness) or Master's Disease is an emerging Lyme-like illness in the southeastern and south-central United States. It is vectored by the Lone-Star tick Amblyoma amercanum. Although it is still debatable, the disease is thought to be caused by Borrelia lonestari spirochete based on isolating the bacterium in a single case of STARI. The associated rash is similar if not indistinguishable from Lyme disease (LD) erythema-migrans, with lymphocytic dermal infiltrates. Here we present a case of STARI with pancytopenia to help raising the clinical awareness and knowledge of LD mimic.

Case Presentation

A 63-year-old female with non-significant past medical history presented with persistent fever, headache, and diffuse myalgia for 4 days after returning from a camping trip in Gainesville, Florida 2 week ago. She also reported noticing a tick on her right leg and having a pruritic target erythematous lesion after removing it. On presentation, she was febrile 100.5 F and tachycardic 127 bpm. She had an erythematous ecchymosis area on her anterior right shin surrounding the location of reported tick-bite. Her laboratory work-up was remarkable for pancytopenia with WBC 1.1 thou/mm3, neutrophils 0.4 thou/mcL, RBC 3.23 m/mcL, and platelets 27 thou/mm3. AST 316 unit/L and ALT 169 unit/L. Her chest radiograph and urine analysis were negative. Ehrlichiosis, Anaplasmosis, LD and hepatitis panels were negative. Peripheral smear showed pancytopenia without inclusion bodies or morula. Patient was started on doxycycline 100mg twice a day for 14 days. On day 5, she reported improvement of symptoms. Her pancytopenia

resolved with WBC 6.7 thou/mm3, neutrophils 2.2 thou/mcL, RBC 3.48 m/mcL, and platelets 151 thou/mm3. Her rash resolved after 1 month.

Discussion

STARI is an emerging tick-borne zoonotic disease that has been an enigma in the non-endemic states for the past 30 years. STARI meets the clinical and surveillance criteria of LD but not the microbiologic definition. The causative organism remains controversial, as Borrelia lonestari is not always isolated in STARI cases, questioning whether there are other possible etiologies. The STARI rash is almost similar to LD erythema-migrans. It tends to be smaller, more circular with central clearing, less uniform in color and pattern, and less tender. Patients with STARI can develop non-specific symptoms of fever, malaise and body aches, but less likely to have neck stiffness, arthralgia, and regional lymphadenopathy. No long-term sequelae have been reported. At the present time, there is no approved diagnostic modality to identify STARI, thus the diagnosis must be made on clinical evidence including erythema-migrans and tick exposure. Distinguishing STARI from LD is very complex due to their tremendous overlaps and similarities. Diagnosis usually relies on: geographic association, clinical presentation, laboratory work-up (LD serologic tests) and long-term sequelae. STARI is often treated as LD with doxycycline twice daily for 14 days; however, there is no approved treatment yet. Physicians should be aware of this emerging zoonosis and its acute presentation. Further research into the prevalence, causative organisms, laboratory testing, and proper treatment of STARI, is warranted.

FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Faheem Ahmad

Clinical dilemma & equipoise of Anti-N-methyl-D-aspartate receptor encephalitis associated with ovarian teratoma

Title

Clinical dilemma & equipoise of Anti-N-methyl-D-aspartate receptor encephalitis associated with ovarian teratoma

Authors

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Introduction

Anti N-Methyl D-Aspartate Receptor Encephalitis is an increasingly recognized cause of paraneoplastic encephalitis first recognized by Joseph Dalmau in 2007 (1). Incidence is approximately 1 in 1.5 million Americans per year and remains a diagnostic challenge (2).

Case Presentation

Our patient is a 34 y/o female with a past medical history of panic attacks, anxiety, depression, lumbago, and substance abuse disorder brought to the ED by her husband with complaints of altered mental status with behavioral changes and agitation. The patient's husband reported she had these symptoms for a week preceding admission with progressively frequent auditory hallucinations along with echolalia, violent behavior, and insomnia. Furthermore, her symptoms continually worsened after she allegedly started smoking "K2 /Spice," which is synthetic cannabis, along with her prescribed medication "orphenadrine" for lumbago. She was also taking benzodiazepines chronically for her anxiety disorder. She was admitted to the hospital with a broad working diagnosis of acute toxic/infectious/autoimmune encephalitis, benzodiazepine withdrawal, seizure, and acute psychotic disorder (3). The patient exhibited extreme agitation and self-harm behavior in the ED, necessitating ICU admission with sedation and intubation. During her clinical course in the ICU, she underwent fluctuations in mental status ranging from agitation to apparent seizures to catatonia with facial muscles' twitching. EEG obtained at bedside did not show any evidence of seizure activity. Our patient was under the care of multidisciplinary teams, including Critical Care/Neurology/Internal Medicine and Psychiatry. Of note, her family also arranged for multiple exorcisms to no benefit. CSF analysis

was unremarkable for infectious etiologies but positive for CSF anti-NMDA receptor antibodies with a high IgG titer of 1:160 against NR1a receptor subunit. Transvaginal ultrasound demonstrated a right ovarian hyperechoic fat-filled mass suspicious for ovarian teratoma, which was confirmed with an MRI pelvis (4). With new insights and evidence, the patient was medically treated with five cycles of plasma exchange and a course of Solumedrol, one gram daily for five days. She also had surgical removal of the paraneoplastic nidus (5). The patient responded well with management and underwent tracheostomy and PEG tube placement. She was discharged to a long-term acute care facility for long term neurological recovery with a persistent display of retrograde and anterograde amnesia, likely as a sequela of autoimmune Encephalitis. The patient's clinical diagnosis and management confounding factors include substance abuse, anxiety disorder & depression, and concomitant use of benzodiazepines and Orphenadrine.

Discussion

We postulate that Orphenadrine, which has NMDA receptor antagonism acted to exacerbate her disease process. This realization has implications for the use of other medications that act to antagonize the NMDA Receptor. Anti-NMDA receptor encephalitis is a potentially treatable form of neuropsychiatric illness that requires a high index of clinical suspicion and multidisciplinary management. Delay in diagnosis and proper management has long-term prognostic implications, including significant morbidity and mortality (6).

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FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Jessica Baek

Herpes Simplex Virus Encephalitis Complicated by Focal Ischemic Medullary Infarction

Title

Herpes Simplex Virus Encephalitis Complicated by Focal Ischemic Medullary Infarction

Authors

Jessica Baek MD, Tabitha Estica MD/MPH, Renuka Reddy MD, Alexander Kushnir MD

Introduction

Herpes simplex virus type 2 (HSV-2) meningoencephalitis is associated with significant morbidity and mortality. Rare complications of this syndrome include ischemic and hemorrhagic stroke in focal or multifocal vascular distributions. Cerebral vasculitis is thought to play a central role in the pathogenesis of cerebral infarction in HSV-2 infections. This has been described almost exclusively in the setting of multifocal ischemia in the anterior or posterior circulations. Focal ischemic stroke secondary to HSV-2 is rare.

Case Presentation

A 79-year-old man with history of recurrent urinary tract infections was hospitalized for subacute progression of altered mentation, somnolence, and falls. He was initially treated with broad-spectrum antibiotics and intravenous fluids. On initial presentation, his neurological exam was non-focal and a magnetic resonance imaging (MRI) of the brain revealed ventriculomegaly without acute intracranial lesions. After initial clinical improvement, the patient exhibited rapid cognitive decline characterized by tangential speech, incongruent thought processes, hypophonia, and dysphagia. Furthermore, he developed diffuse hyporeflexia and right hemiparesis. A lumbar puncture was performed and cerebrospinal fluid (CSF) analysis revealed significant lymphocytosis and elevated protein. The patient was empirically started on intravenous acyclovir and several days later, the CSF was positive for HSV-2 by PCR. An evolving focus of T2 hyperintensity in the central portion of the medulla was initially detected on repeat MRI of the cervical spine and better characterized in a follow up brain MRI as an acute or subacute ischemic stroke. Transthoracic echocardiography and continuous cardiac monitoring did not indicate a cardioembolic source. Despite treatment with acyclovir and the addition of prednisone, the patient developed worsening dysphagia,

hypoxemic respiratory failure secondary to aspiration pneumonia, and ultimately respiratory muscle fatigue requiring endotracheal intubation and mechanical ventilation. His condition progressed to sepsis and multi-organ failure. Based on the patient's values and goals of care, life-sustaining treatment was withdrawn at the request of his family.

Discussion

Cerebral infarction is a rare complication of HSV-2 meningoencephalitis. This case demonstrates how this syndrome can initially have an insidious and nonspecific presentation with rapid clinical deterioration in the setting of an ischemic event involving the brainstem. Further study is warranted to determine the pathophysiology and treatment of such complications.

FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Emily Butts, MD

Drug-Induced Immune Thrombocytopenia Secondary to Semaglutide

Title

Drug-Induced Immune Thrombocytopenia Secondary to Semaglutide

Authors

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Introduction

Glucagon-like peptide 1 (GLP-1) receptor agonists represent a class of medications frequently utilized for the treatment of type 2 diabetes mellitus. GLP-1 agonists, such as semaglutide, are known to be effective in lowering glycated hemoglobin level, while also providing cardiovascular benefit to high-risk patients [1, 2]. Known or suspected side effects of semaglutide include the possibility of thyroid malignancy, pancreatitis, visual changes, hypoglycemia, renal dysfunction, gastrointestinal side effects and allergic reactions [3]. We report the first case, to our knowledge, of drug-induced immune thrombocytopenia (DITP) secondary to semaglutide.

Case Presentation

A 60-year old woman who had chronic immune thrombocytopenic purpura (ITP) on maintenance romiplastin was recently started on semaglutide for management of type 2 diabetes. She developed petechiae and was found to have severe thrombocytopenia. She has a medical history significant for Burkitt's lymphoma, status post allogeneic stem cell transplant (18 years ago) with no recurrence of disease. She was diagnosed with steroid-refractory ITP 10 years ago, managed with weekly romiplastin injections with consistently stable platelet counts. Prior to initiation of semaglutide, platelet count was 160 (135 - 317 x10(9)/L). Two months after initiation of semaglutide, platelet count decreased to 19. Semaglutide was discontinued, and five weeks later platelet count improved to 75. Bone marrow biopsy was obtained to rule out recurrence of her lymphoma and other causes on thrombocytopenia. Increased megakaryocytes were observed with no evidence of lymphoma. Since the drop in platelet count

was noted after starting semaglutide and improved with discontinuation of the drug and there was no other etiology of thrombocytopenia identified on bone marrow biopsy, the patient's thrombocytopenia is suspected to be drug-induced secondary to semaglutide.

Discussion

DITP is a clinical syndrome that is often difficult to recognize and is associated with significant risk of bleeding. DITP is caused by drug-dependent platelet antibodies that bind to platelet surface glycoproteins resulting in platelet destruction only in the presence of the sensitizing drug. Typically, drug-dependent antiplatelet antibodies present after exposure to a new drug for 1 to 2 weeks, and recovery of thrombocytopenia begins within 1 to 2 days of drug discontinuation [4, 5]. The duration of platelet recovery depends on the drug half-life. Semaglutide has a half-life of approximately 7 days [6]. Around 3.13% of the drug would still be expected to be present after 35 days, explaining the prolonged platelet recovery in this case. DIPT is often misdiagnosed as ITP. In our patient's case, DITP is the more likely diagnosis given that 1) platelet count had been stable for years on romiplastin, 2) severe thrombocytopenia with petechiae started after initiation of semaglutide, and 3) thrombocytopenia improved with discontinuation of the drug. To our knowledge, only one case of drug-induced thrombocytopenia has been reported in the literature secondary to a GLP-1 agonist and was associated with use of exenatide [7]. This case highlights a potential risk of thrombocytopenia with semaglutide, suggesting it may be a GLP-1 agonist class side effect. Providers should exercise caution in prescribing semaglutide and exenatide to patients with ITP.

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FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Cristiana Cavallari

A Dire Case of Diarrhea: Uncovering Autoimmune Enteropathy in a Patient with Limited Systemic Sclerosis

Title

A Dire Case of Diarrhea: Uncovering Autoimmune Enteropathy in a Patient with Limited Systemic Sclerosis

Authors

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Introduction

Autoimmune enteropathy (AIE) is a rare condition characterized by chronic diarrhea and malabsorption, and patients with comorbid autoimmune conditions are more predisposed to it. AIE more commonly affects infants, while it is a rarely reported phenomenon in adults. Diagnostic criteria for adult AIE includes diarrhea for more than six weeks with malabsorption, partial or complete blunting of the small bowel villi, deep crypt lymphocytosis, crypt apoptotic bodies, minimal intraepithelial lymphocytosis, and the exclusion of other causes of villous atrophy. We present a patient diagnosed with adult-onset AIE after suffering with diarrhea for over a year.

Case Presentation

A 66-year-old female with limited systemic sclerosis presented with a 13-month history of diarrhea, 50-pound weight loss, and failure to thrive. Extensive workup in the past had been inconclusive. Treatment with gluten-free diet, rifaximin, and total parenteral nutrition did not resolve her symptoms. Physical exam revealed an emaciated woman with stable vital signs. Diagnostic testing revealed normal immunoglobulin A level and negative Celiac disease panel. A gastrointestinal pathogen workup was unrevealing. She was negative for HIV and had no other evidence of immunodeficiency. Investigation for pancreatic insufficiency, pancreatic neuroendocrine tumors, and carcinoid syndrome was negative. Thyroid and liver studies were normal, and QuantiFERON was negative. Computed tomography (CT) of the abdomen and pelvis revealed diffuse enterocolitis. Esophagogastroduodenoscopy (EGD) showed ulcerated esophagitis and biopsy revealed mild patchy gastritis and peptic duodenitis with patchy villous

blunting. Colonoscopy showed normal mucosa with large amount of oily-appearing stool. Biopsy of the colon was normal, but terminal ileum biopsy revealed mild lamina propria expansion and edema. Push enteroscopy was performed, and biopsy revealed slightly blunted villi and chronic inflammation with no intraepithelial or crypt lymphocytosis. Stool calprotectin and 24-hour fecal fat measurements were both elevated, suggestive of intestinal inflammation and malabsorption. Anti-enterocyte antibody was negative, but anti-parietal cell antibodies were present. A diagnosis of AIE was made based on clinical presentation, histopathological findings, presence of autoantibody against the gastrointestinal tract, and exclusion of other related diseases. She was treated with 40mg IV methylprednisolone for seven days and started on oral budesonide and azathioprine. During her outpatient follow-up, she was still symptomatic, and infliximab was initiated.

Discussion

It is important to consider AIE in adult patients with concomitant autoimmune diseases who present with refractory diarrhea. The pathophysiology is believed to be secondary to excessive activation of the immune system against autoantigens which results in alteration of intestinal permeability. The presence of circulating gut autoantibodies is supportive of the diagnosis; however, the absence of autoantibodies does not exclude AIE. Histopathological changes of AIE can be patchy; therefore, clinical investigation with EGD and biopsy may be subject to sampling error and may not always yield a diagnosis. This phenomenon could explain the biopsy findings from our patient which demonstrated villous blunting and lamina propria inflammation without deep crypt lymphocytosis or crypt apoptotic bodies. Initial management of AIE includes nutritional support and electrolyte repletion with some patients requiring total parenteral nutrition. Medical therapy is with corticosteroids; however, some patients may require immunosuppressants.

FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Daniel Cintron

An Atypical Presentation of Cardiac Perforation and Tamponade Following Pacemaker Implantation

Title

An Atypical Presentation of Cardiac Perforation and Tamponade Following Pacemaker Implantation

Authors

Daniel Cintron DO, PGY-1; Shannon Mohabir DO, PGY-1; Alejandro Dominguez DO, PGY-2; Logan Schamber, OMS-IV; Pedro Valdes DO

Introduction

The role of cardiac implantable electrical devices (CIEDs) have been steadily expanding in recent years due to both advances in electrophysiologic technology and prevalence of comorbid cardiovascular disease in patients with advanced age. Cardiac perforation is an important complication of pacemaker lead insertion that is immediately life-threatening in the periprocedural setting. In this presentation, we will discuss a case of a 76 year old female who underwent an uneventful pacemaker placement and presented to our facility 9 days afterward with RV myocardial perforation and early cardiac tamponade. Our goal will be to illustrate the importance of recognizing a dangerous complication of CIED implantation.

Case Presentation

A 76 year old female that had a past medical history significant for hypertension, atrial fibrillation status post multiple ablations, and sinus node dysfunction status post pacemaker insertion that presented with retrosternal chest pain. The patient stated that she had been having this intermittent retrosternal chest discomfort for over 1 week, but yesterday afternoon while she was moving boxes at home the pain worsened. She then began to feel her pain change in quality, become sharp, and radiate to her back. At that time, it was worsened by inspiration and exertion. She presented to our facility hemodynamically stable, with an unremarkable physical examination. EKG revealed sinus rhythm with multiple PACs. CT chest without contrast was performed that revealed diffuse, bilateral ground-glass opacities, cardiomegaly, and moderate pericardial effusion. Echocardiogram revealed a preserved ejection fraction and a large pericardial effusion with early signs of tamponade. At this time,

cardiothoracic surgery was called, and the patient underwent pericardial window with extraction and reimplantation of perforated RV pacemaker lead. She tolerated the procedure without complications and remained stable in the cardiovascular intensive care unit with an uneventful hospital course prior to discharge. Review of telemetry and subsequent chest imaging confirmed both proper functioning of the pacemaker lead and resolution of cardiac tamponade.

Discussion

RV perforation following pacemaker implantation remains a rare complication, and is associated with heterogeneous risk factors across patient populations. These risk factors include the presence of comorbid cardiovascular illness, age, low BMI, device type, and practitioner skill. Due to the paucity of data pertaining to the incidence of this complication in patients following CIED placement, this can be a difficult entity to recognize outside of a perioperative setting. Our patient underwent implantation of an active fixation lead, which is associated with a slightly higher rate of cardiac perforation due to the device's helical morphology. The anatomy of the thin-walled right ventricle, especially in patients with cardiomyopathy and comorbid disease, also leaves it vulnerable to injury in such procedures. In this case, the length of time following an uneventful lead placement brings to light the heterogeneity of the possible temporal patterns for procedure-related myocardial injury. Reviewing the clinical course of a patient who presented with atypical subacute chest pain following an uneventful device implantation will lead to prompt recognition of a deadly complication in a vulnerable patient population.

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FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Jose Cordoba

Sleeping with the Enemy. A Case Study Report.

Title

Sleeping with the Enemy. A Case Study Report.

Authors

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Introduction

Legionnaires' disease (LD) is a severe lung infection caused by breathing in small droplets of water that contain Legionella species, a ubiquitous, naturally occurring, aquatic organism. Risks of developing LD being 50 years or older, having predisposing factors like former smoker, chronic lung disease (COPD), diabetes, or kidney failure. We present a case of classic Legionnaires' disease with uncommon etiology from a CPAP machine.

Case Presentation

A 64-year-old Hispanic male with a past medical history of HTN, CKD, cardiac arrhythmia status post permanent pacemaker placement, chronic smoker, COPD and OSA on home CPAP presented to emergency department with a chief complaint of worsening SOB with one week of evolution associated with nonproductive cough and watery diarrhea. Patient was initially placed on a nasal cannula with no improvement in oxygenation and escalated to a non-rebreather mask with improvement of hypoxemia. Chest CT scan showed extensive interstitial and airspace opacifications throughout the upper, middle and lower lobe on the right lung along with scattered ground-glass opacifications in the left upper and lower lobes. Hematological laboratories significant for leukocytosis of 18,400 mm3, ESR of 72 mm/hr, CRP of 55 mg/dl, lactic acid of 3.3 mmol/L, Sodium of 131 mm/L, SARS-CoV-2 PCR negative, Mycoplasma IgM negative, rapid influenza A & B test negative, MRSA nasal screen negative and HIV (1&2) Ag/Ab negative. He was started on empirical antibiotic therapy with vancomycin, cefepime and doxycycline. Next day after admission the patient presented with increased work

of breathing, moderate respiratory distress, worsening SOB and hypoxemia on ABG despite being on high flow nasal cannula, he had to be placed on non-invasive positive pressure ventilation (BiPAP). Chest X ray showed development of near complete left lung consolidation with air bronchograms and diffuse right lung consolidation with air bronchograms. Upon further questioning the patient's wife reported that he works in architecture and denies any chemical occupational exposures or any sick coworker. Also it was reported that the CPAP machine's mask, tubing and humidifier has not been cleaned on a regular basis. Urine Legionella antigen came back positive. Antibiotic regimen was narrowed to Levofloxacin. Oxygen supplementation was weaned as respiratory status improved, completed antibiotic therapy for a total of 10 days and was discharged home with oxygen. The CPAP equipment which apparently was not cleaned on a regular basis is the most likely source of legionella pneumonia in this patient. CPAP complete equipment was replaced and counseling regarding appropriate CPAP care/cleaning was provided.

Discussion

Continuous positive airway pressure (CPAP) equipment can be colonized by Legionella and might cause Legionella pneumonia in the user. However very few data from literature documented these cases. This case report represents the importance of cleaning the humidifier water tub of CPAP after each use to prevent possible infection with Legionella specially in patients with predisposing risk factors.

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FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Edward Hu

No Flying or Diving with Birt-Hogg-Dubé Syndrome

Title

No Flying or Diving with Birt-Hogg-Dubé Syndrome

Authors

Edward Hu MD, Bryce Simes DO, Anas Dalloul DO, Jessica El-Bahri DO

Introduction

Birt-Hogg-Dubé syndrome (BHD) is a rare autosomal dominant condition characterized by benign skin hamartomas, pulmonary cysts and spontaneous pneumothorax, and an increased risk of renal cancer. In this report, we present a case of BHD syndrome, its initial workup, the recommendations for lifelong surveillance, and an incidental discovery of a thyroid nodule.

Case Presentation

A 34 year old female presented with shortness of breath and chest pain that started 20 minutes prior to arrival. On physical exam, the patient had multiple 1-2 millimeter white papules on her face. A CT pulmonary angiogram performed showed multiple bilateral pulmonary cysts as well as an incidental partially calcified thyroid nodule. On further history, the patient reported a family history of BHD syndrome in her father, paternal aunt, and paternal grandmother. All three relatives are reported to have similar facial lesions as well as a history of spontaneous pneumothoraces but no history of renal cancer. The patient's paternal grandmother is reported to have had a total thyroidectomy. A baseline CT abdomen and pelvis for surveillance for renal cancer was performed which showed no evidence of renal mass. A thyroid ultrasound showed a 33 millimeter mixed cystic and solid nodule with irregular margins. Fine needle aspiration biopsy was indicated for this TI-RADS four nodule. The patient was counseled extensively on the need to quit smoking as well as the need to avoid exposure to high atmospheric pressures such as air travel and scuba diving given her baseline lung pathology and increased risk for spontaneous pneumothoraces. She was given instructions to have abdominal imaging performed at least every 36 months to screen for renal cancer. The patient's symptoms resolved in the hospital without intervention, and she was discharged home with outpatient endocrinology follow up for fine needle aspiration biopsy of her thyroid nodule.

Discussion

In this case, we discuss the presentation, initial evaluation, and surveillance of BHD syndrome as well as a possible association with thyroid conditions. It is important to understand the significance of establishing lifelong surveillance in these patients. Although BHD cystic lung disease typically does not result in compromised respiratory function, patients do have an increased risk for renal cell carcinoma, and the majority of deaths are from metastatic disease. There is currently insufficient evidence to associate BHD with thyroid cancer, but multiple studies suggest a possible link. It may be prudent to screen for thyroid nodules in these patients as well.

FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Karla L Inestroza, MD

A rare cause of chronic cough and the value of a chest X-ray

Title

A rare cause of chronic cough and the value of a chest X-ray

Authors

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Introduction

Chronic cough is one of the most common symptoms for which patients seek care, and it has a broad differential diagnosis, posing difficulty to the most experienced clinicians. The initial treatment is often empiric, and if unsuccessful sequential diagnostic testing is essential.

Case Presentation

A 58-year-old woman presented to the clinic due to a chronic dry cough that started eight months prior, present throughout the day, and that had progressively worsened. She endorsed postnasal drip, intermittent nighttime wheezing, and bilateral lower extremity edema. The patient denied dyspnea on exertion, shortness of breath, or exposure to COVID-19 positive cases. Her past medical history was significant for stage 1B uterine leiomyosarcoma post total abdominal hysterectomy and bilateral salpingo-oophorectomy. She had received multiple therapies, including proton pump inhibitors, guaifenesin, fluticasone, montelukast, and cetirizine, with no improvement. She was thought to have heart failure, for which furosemide treatment was started and work-up with an echocardiogram ordered. She was also evaluated by an otorhinolaryngologist during that time, who performed a nasal scope and diagnosed her with severe allergies. On physical examination, oxygen saturation was 96% with no change during ambulation, with pharyngeal cobblestoning, bilateral clear breath sounds, and grade two bilateral lower extremities pitting edema. Initial blood work was unrevealing. The patient's lack of insurance prevented her from completing the echocardiogram. During her follow-up visit, she was re-evaluated by another physician who took into consideration the patient's chronic

cough, and her history of uterine leiomyosarcoma lost to follow-up due to loss of insurance. A chest X-ray was prioritized, which revealed large rounded opacities in the right lower lung and mid lung on the left. This finding prompted a CT scan of the chest, confirming a large mass in the right lower lobe that measured 9.4 x 10.1 x 9.2 cm, and a second large mass in the lingula that measured 8.1 x 7.3 x 6.9 cm. PET CT scan was recommended and revealed bilateral large hypermetabolic lung masses. Bronchoscopy with biopsy was performed and demonstrated two endobronchial lesions located at the superior segment of the right lower lobe and lingula. Biopsy immunohistochemistry revealed tumor cells with positive desmin and cyclin D1, and negative SMA, ALK, S-100, confirming metastatic lung sarcomas consistent with a uterine primary. Thoracic surgery was consulted and stated the lung masses were not resectable at the time. The patient was scheduled for two cycles of neoadjuvant chemotherapy with a plan to re-image and re-evaluate for possible resection.

Discussion

Leiomyosarcomas account for about 1% of uterine malignancies and have a high propensity for hematogenous spread, most commonly to the lungs (52-74%) or the upper abdomen, endobronchial spread is extremely rare. Overall, this case illustrates a chest x-ray has an important role in the diagnostic algorithm of chronic cough that has not responded to initial therapy, especially in the setting of cancer history. It has wide availability, low cost, and is safe. Close patient monitoring and communication with specialty services, especially during COVID-19 times, is fundamental to ensure prompt evaluation and treatment.

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FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Cynthia Lopez

Secondary Immune Thrombocytopenic Purpura complicated by COVID-19

Title

Secondary Immune Thrombocytopenic Purpura complicated by COVID-19

Authors

Cynthia Lopez MD, Carlos Tornes Laria MD, Nabir Babbar DO, Cesar Bertolotti MD

Introduction

As a novel virus surfaces, we present a case of suspected SARS-CoV-2 mediated immune thrombocytopenia and associated COVID-19 complications in hematologic and immunologic processes.

Case Presentation

This is a 57-year-old male with a past medical history of tobacco abuse, hypertension, and NIDDM type 2 who presented with complaints of worsening dyspnea, dry cough, generalized weakness, diarrhea, and fever for two days. Due to these symptoms, the patient sought medical attention and tested positive for SARS CoV-2. In the ED, the patient had hypoxemia, as defined by an increased A-a gradient based upon ARDSnet criteria. On physical examination, the patient appeared in mild distress. Lung exam revealed diffuse rales bilaterally. Abdominal exam had no tenderness to palpation, the rest of the physical exam was benign. Patient was placed on oxygen support. Imaging revealed bilateral ground-glass opacities consistent with atypical viral pneumonia. Upon admission, inflammatory markers were elevated. Due to an elevated D-Dimer, workup for DVT and pulmonary embolism were performed which were both negative. Patient was started on high dose methylprednisolone, remdesivir, tocilizumab, and given one unit of convalescent plasma per the MATH-Plus protocol as well as enoxaparin for thrombosis prophylaxis. Eighteen days after admission, platelets were noted to continuously decline from >160k to 5k, with all other cell lines normal. Patient had normal coagulation times, no signs of anemia, hemolysis, and peripheral smear was negative for schistocytes. The patient was switched from enoxaparin to argatroban out of an abundance of caution and concern for heparin induced thrombocytopenia (HIT), as 4T score was intermediate. HIV serology, hepatitis panel, and HIT workup were ordered. Hepatitis C antibody was reactive however quantitative analysis was negative. Serotonin release assay returned negative. Multiple rounds of platelets

were transfused with no increase in platelet count. Two rounds of IVIG were administered; after the first round of IVIG, platelets increased from 8K to 30K, then to 48K after the second round.

Discussion

COVID-19 has proven to manifest itself in hematological processes as thrombocytopenia and thrombosis. At the time of this writing, due to the novel nature of this pandemic, very limited information in regards to extrapulmonary manifestations of this virus are available in current literature. Within the timeframe of presenting symptoms, a significant platelet drop was evident in this case, when the platelets more than halved on day 18 of the patient's hospital course, prompting ICU transfer. A HIT differential arose due to an intermediate 4T score, however, SRA was negative. We believe that this thrombocytopenia is due to secondary ITP, complicated by COVID-19. The case could be argued that the ITP is secondary to Hep C reactivity, a common culprit, however, the quantitative analysis was negative. Thus, this timeframe correlates with the late onset of thrombocytopenia that is seen in ITP due to COVID-19 and as evidenced by a negative alternative diagnosis workup. Thus the authors hypothesize that as the COVID-19 inflammatory storm worsens, this Corona-RNA virus induces suppression of thrombopoietin production with an associated immunological-complex of destruction in circulating platelets.

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FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Rafael Miret, DO

An unusual cause of acute coronary syndrome

Title

An unusual cause of acute coronary syndrome

Authors

Rafael Miret, DO; Yelenis Seijo De Armas, MD; Mileydis Alonso, DO; Jose R Sleiman, MD

Introduction

Spontaneous coronary artery dissection (SCAD) is a non-iatrogenic and non-traumatic separation of the coronary arterial wall and is an underrecognized cause of acute myocardial infarction. It is the cause of acute coronary syndrome (ACS) in 0.1 to 4 percent of cases in the general population, although it has been reported to account for almost a quarter of cases of ACS in women less than 50 years old. The pathophysiology of SCAD is not fully understood. It has been proposed that an intimal tear or bleeding of vasa vasorum with intramedial hemorrhage might result in the formation of a false lumen filled with intramural hematoma. The false lumen expands under pressure by an enlarging hematoma leading to luminal invasion followed by myocardial ischemia and infarction. It is also thought that coronary artery tortuosity may be a marker for or a mechanism for SCAD; however, this is also associated with extracoronary vasculopathy such as fibromuscular dysplasia, in which case the tortuosity might be a manifestation of the underlying predisposing vasculopathy. Most cases of SCAD are associated with a predisposing arterial disease, however, up to 20 percent of cases are found to be idiopathic. In addition, most patients have no risk factors for coronary artery disease.

Case Presentation

We present a 51-year-old female with no significant past medical history who was brought to the emergency department with sudden onset substernal chest pain of approximately 2 hours duration. Pain began at rest, and it was described as “pressure like”, radiating to her left arm, 8/10 in intensity, and it was associated with diaphoresis and abdominal discomfort. Upon arrival of EMS, patient received aspirin and sublingual nitroglycerin which only mildly alleviated the pain. Patient was transferred to the hospital, where EKG showed ST- segment elevations in the precordial leads with inferior reciprocal changes. Cardiac alert was called, and patient was subsequently taken for cardiac catheterization. Coronary angiography revealed SCAD from the

proximal left anterior descending into the major diagonal branch. No further intervention was performed, and patient was started on anticoagulation, aspirin, clopidogrel, and beta blocker. She remained hemodynamically stable, and chest pain subsided within the next 24 hours. She was discharged home after 48 hours on dual antiplatelet therapy and beta blocker.

Discussion

There is lack of randomized trials comparing medical therapy to revascularization strategies. Observational data shows that when repeat angiography is performed, 70-97% of patients who are conservatively managed display angiographic healing of SCAD lesions. In addition, PCI is often challenging due to fragility of the vessel wall. Any instrumentation can spread the dissection and occlude side branches. Therefore, conservative treatment is recommended in most cases and revascularization is considered in patients exhibiting active myocardial ischemia, hemodynamic instability or left main dissection. Coronary artery bypass grafting surgery should be reserved for patients with left main or multi-vessel dissection, especially in the setting of hemodynamic compromise. While uncommon, SCAD should be considered in any young patient, particularly young women, without prior history of coronary artery disease or risk factors, presenting with an acute myocardial infarction.

FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Riya Mohan, MBBS

A rare case of aorto-pulmonary fistula post-surgical repair of aortic dissection presenting with symptoms of heart failure.

Title

A rare case of aorto-pulmonary fistula post-surgical repair of aortic dissection presenting with symptoms of heart failure.

Authors

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Introduction

Aorto-pulmonary fistula is a rare occurrence in which a connection develops between the aorta and the pulmonary arterial trunk. This is usually described in the setting of an aortic aneurysm and has been increasingly reported in association with trauma or surgical procedures of the aorta. Few cases of successful surgical management have been reported. Aorto-pulmonary fistula should be suspected in patients with history of aortic aneurysm and exhibiting signs of congestive heart failure. We report a case of a 75-year-old lady who presented with symptoms of heart failure and was diagnosed with aorto-pulmonary fistula.

Case Presentation

75 year old lady presented to the ER with insidious onset of shortness of breath for 2 weeks, worsened by exertion (NYHA class III), with acute worsening for 3-4 days. Past surgical history was significant for Type A -type I aortic dissection repair 6 months prior, with surgical aortic valve replacement. Past medical history of hypertension, diabetes mellitus type 2 and paroxysmal atrial fibrillation was noted. Vital signs were stable on admission. The laboratory tests demonstrated a normal CBC and metabolic panel unchanged from baseline, although pro-BNP was significantly elevated at 8684. ECG was significant for atrial fibrillation with left axis deviation, unchanged from the prior ECG. The chest X-ray revealed a small right pleural effusion. Transthoracic echocardiogram showed a continuous flow from aorta to the right ventricle seen by color doppler, consistent with an aorto-right ventricular fistula. CT angiogram revealed aneurysm of the thoracic aorta with multiple out-pouchings involving the aorta with

vascular attenuation just distal to the root. The patient and a multi-disciplinary medical team utilized shared decision making to transfer her to a tertiary care center specializing in complex cardiovascular surgical procedures. The patient underwent successful transverse hemi-arch replacement, ascending aorta replacement and aorta to pulmonary artery fistula repair.

Discussion

Aorto-pulmonary fistula is a rare cardiovascular complication that is described in the setting of an aortic aneurysm. More cases are recently reported after trauma (gunshot, stab wound), surgical or percutaneous procedures (aneurysm or dissection repair, aortic valve repair), but can also be associated with inflammation or infection (syphilis, infectious endocarditis involving aortic valve), aortic dissection, or aneurysm formation due to Marfan's syndrome. Clinicians should be mindful of the past medical history and past surgical history while evaluating patients, and aorto-pulmonary fistula should be considered in patients with history of aortic aneurysm or associated surgical procedures who later present with symptoms of heart failure. Prompt diagnosis and surgical intervention is key to a successful outcome.

FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Jonathan Ragheb

Always Wear a Seatbelt? An Unusual Cause for Traumatic Splenic Arteriovenous Fistula

Title

Always Wear a Seatbelt? An Unusual Cause for Traumatic Splenic Arteriovenous Fistula

Authors

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Introduction

Splenic arteriovenous fistulas (SAVF) are a rare pathologic cause of acute portal hypertension in patients without chronic liver disease. They most commonly occur when a splenic artery aneurysm ruptures into the splenic vein. They occur predominantly in females, particularly in the multiparous. They can be congenital or acquired. Congenital causes include Ehlers-Danlos and or Rendu-Osler-Weber-Syndrome. Acquired SAVF are often secondary to trauma. Patients describe abdominal pain, diarrhea, ascites, and/or hematemesis. Historically, exploratory laparotomy established the diagnosis. However, less invasive workup, like computerized tomographic angiography (CTA), is currently the diagnostic gold standard; an abdominal ultrasound may also confirm the diagnosis. Whereas most patients were traditionally treated with fistula ligation or splenectomy, less invasive therapy such as coil embolization can now be utilized. We present SAVF as a rare phenomenon with a potentially underestimated mechanism of injury.

Case Presentation

We describe the case of a previously healthy 71 year-old woman who presented with abdominal discomfort, diarrhea, and ascites beginning after a motor vehicle accident, as a restrained passenger six weeks prior to presentation. On admission, she was afebrile and hemodynamically stable. Physical exam revealed abdominal distension due to ascites. Labs (including CBC, CMP, INR, hepatitis panel, CA-125) were within normal limits. A non-contrast abdominal CT suggested moderate ascites and splenomegaly. Paracentesis elicited culture-negative transudative fluid with negative cytology. Stool studies were negative for occult blood, ova and parasites. Echo, colonoscopy and pelvic laparoscopy were unremarkable. Two days

after transfer to another hospital for further care, she was discharged home with diagnoses of new ascites, acute portal hypertension, and idiopathic diarrhea. She was recommended to start spironolactone and furosemide. Five days after discharge, she presented to another hospital with worsening symptoms. On physical exam, the patient was afebrile, tachycardic, hypotensive, cachectic with dry mucous membranes, anicteric conjunctiva, and without JVD. Abdominal exam revealed prominent, tense ascites and veins visible in the abdominal wall. Lab studies (CMP, CBC) were remarkable for mild anemia. A right upper quadrant ultrasound showed dilated portal veins. Abdominal angiography revealed SAVF. After an exploratory laparotomy with SAVF closure and splenectomy, the patient returned to her baseline state of health on routine follow up.

Discussion

This case highlights a rare finding of traumatic SAVF as a sequela of blunt force abdominal trauma. With concerns like diarrhea and nondescript abdominal pain, the importance of thorough history cannot be underestimated. The patient's age and female sex increased her risk of serious injury from motor vehicle accidents and risk of SAVF, respectively. Despite increased portal venous flow from her fistula, serum lab abnormalities were absent until the patient's symptoms progressed. In the absence of cirrhosis, acute onset portal hypertension in a patient with inciting trauma should raise concern for abdominal vascular injury, including portal vein thrombus, splenic vein thrombosis, and SAVF.

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FLORIDA POSTER FINALIST - CLINICAL VIGNETTE
Harshvardhan Rajen, MD

Behçet Syndrome vs Erythema Multiforme In A Young Male With Herpes Simplex Virus

Title

Behçet Syndrome vs Erythema Multiforme In A Young Male With Herpes Simplex Virus

Authors

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Introduction

Behçet syndrome is a disease that is characterized by a constellation of local and systemic disease which can include ocular lesions, genital aphthae, vascular disease, arthritis, and skin disease, as well as involving the gastrointestinal tract and central nervous system. It is more common among people of Asian and Mediterranean descent. An association exists between the risk of developing Behçet syndrome and the human leukocyte antigen HLA-B51. The most common clinical symptoms are recurrent mucocutaneous ulcers, however each patient may have a different pattern of symptoms which can make the diagnosis of Behçet syndrome challenging.

Case Presentation

A 21-year-old male of Hispanic background with past medical history of Erythema Multiforme presented to the emergency department with complaint of malaise, generalized rash and fever. The rash started on the genitals one week prior and spread to the upper and lower extremities. The patient also had lesions involving the left eye associated with purulent discharge. The patient had been diagnosed with Erythema Multiforme around one year ago, after presenting with similar rash like symptoms which worsened and required skin grafting. Skin biopsy results at the time, when coupled with the presence of positive HSV I and II IgG antibodies, lead to the diagnosis of Erythema Multiforme. Since then, the patient has had 3 episodes of similar symptoms. Given the recurrent nature of oral aphthous ulcerations, urogenital lesions involving the glans, cutaneous lesions involving the hands, arms, legs, knees, and ocular involvement, there is a high concern for Behçet syndrome. The pathergy test was performed by utilizing a 20-gauge needle and inserting the tip 5 mm under the skin of the right forearm and sites were

marked and observed for 48 hours. A positive pathergy test is the formation of a 2mm papule at the site. While this test may reinforce evidence supporting Behçet syndrome, it is not required for the diagnosis and the result for our patient was inconclusive. The patient received immunoglobulin and high dose prednisone with good response and clearing of all lesions.

Discussion

The diagnosis of Behçet syndrome is based on clinical features, and there are several criteria that have been developed. The International Study Group published criteria in 1990 that used the presence of recurrent oral aphthous ulcers, along with 2 of the following: recurrent genital ulceration, eye lesions, skin lesions, or positive pathergy test to diagnose. The International Criteria for Behçet's Disease developed new criteria in 2006 to improve sensitivity of the criteria. The newer system assigned points based on symptoms, and a total of 3 or more points was required for the diagnosis of Behçet syndrome. Utilizing either criteria, our patient would qualify for the diagnosis of Behçet syndrome. This disease is a difficult one to diagnose correctly as there is no one test yet available. A thorough physical exam, including ophthalmologic and dermatologic examination needs to be obtained in order to exclude other diseases that may be in the differential, and can sometimes require multiple visits prior to obtaining the correct diagnosis, as was seen in our patient.

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FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Gustavo A Rivera Alvarez, MD

Chilaiditi Sign: A misdiagnosis of pneumoperitoneum and other important diseases

Title

Chilaiditi Sign: A misdiagnosis of pneumoperitoneum and other important diseases

Authors

Gustavo Rivera Álvarez, M.D., Natalie Donn, D.O., Brian Ngyuen, D.O.

Introduction

We present a case of a rare radiologic finding revealing an abnormally located portion of the colon between the liver and the diaphragm, termed Chilaiditi sign, which can be misdiagnosed with a diaphragmatic hernia, pneumoperitoneum, or subphrenic abscesses.

Case Presentation

This is a 65-year-old Hispanic female with a past surgical history of partial hysterectomy who presented to the emergency department with right-sided abdominal pain, nausea, and vomiting that began one day prior. She describes abdominal pain as constant, worsening after oral intake. She endorses multiple episodes of non-bloody yellow emesis. The patient described a history of chronic constipation. She denies any fever, chills, chest pain, and urinary symptoms. On evaluation, the patient is afebrile, normotensive, non-tachycardic, and non-tachypneic. Abdominal exam revealed right upper quadrant and right lower quadrant tenderness to palpation. Murphy sign was positive. There were no peritoneal signs appreciated. Chest x-ray showed air underneath the right and left hemidiaphragm with mottled stool, favoring air-filled loops of colon abutting the hemidiaphragm. Laboratory workup was remarkable for a leukocytosis of 11.7 and sodium of 136. Liver enzymes and bilirubin were within normal limits. CT of the abdomen and pelvis with contrast reported air-filled loop of colon seen interposed between the liver and the right hemidiaphragm, suggestive of Chilaiditi sign. A distended gallbladder with pericholecystic fluid was also seen, which was later confirmed with an ultrasound. IV fluids and antibiotics were initiated upon admission and the patient was taken to the operating room for acute cholecystitis. During the operation, the hepatic flexure of the colon was seen draped over the liver and under the right hemidiaphragm. There were severe cholecystitis findings, which led to the surgeon’s decision for a partial cholecystectomy to avoid

injury to the common bile duct. The pathology report was significant for acute necrotizing cholecystitis and cholelithiasis.

Discussion

This case highlights a radiologic finding suggestive of air under the diaphragm in a patient presenting with abdominal pain. Ruling out other similar appearing etiologies is essential when there is a clinical mismatch in order to prevent unnecessary procedures. On many occasions, Chilaiditi's sign can be confused with pneumoperitoneum, diaphragmatic hernia, or a subphrenic abscess. Presentations can vary, ranging from concerning abdominal pain and respiratory distress to asymptomatic. The most commonly described symptoms are of gastrointestinal origin, but they can progress to respiratory distress and chest pain. With associated symptoms, the radiologic sign becomes a clinical syndrome termed "Chilaiditi's Syndrome." It has an estimated incidence of 0.25 to 0.28%. More complicated cases have been described with volvulus and perforation. Its etiology is thought to be due to anatomical variations of the suspensory ligaments of the transverse colon, falciform ligament, and congenital malposition. Treatment is based on the symptoms and many patients don't require therapy. In cases where treatment is needed, intervention can range from bowel decompression to bowel resection and hepatopexy.

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FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Alan Roberts

A Curious Case of a Cardiac Mass: Secondary Plasmacytoma in Setting of Multiple Myeloma

Title

A Curious Case of a Cardiac Mass: Secondary Plasmacytoma in Setting of Multiple Myeloma

Authors

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Introduction

Multiple myeloma is characterized by the neoplastic proliferation of plasma cells producing a monoclonal immunoglobulin. The disease often presents with bone and/or kidney pathology in older individuals, while less than 2% of cases occur in patients younger than 40. Extramedullary plasmacytomas in the setting of multiple myeloma involving solid organs are rarer still, and only around 50 cases of cardiac plasmacytoma have been reported since 1977. The development of this condition can lead to cardiac complications and presents challenges in both the diagnosis and management of these unique patients.

Case Presentation

A 33-year-old gentleman with no significant past medical history presented with a fracture of the right femoral neck after a ground level fall. Routine preoperative CT of the pelvis showed multiple blastic lesions scattered throughout the upper hips, pelvis, and lumbar spine. Initial physical exam was remarkable for a 3+ systolic murmur loudest along the left sternal boarder and large, palpable masses along the left hip and left lower back. Initial labs were remarkable for elevated globulin gap with a paraprotein peak, though interestingly normal calcium. Staging CT of the chest and abdomen showed a mass in the left ventricle, initially concerning for thrombus. Cardiac MRI and transthoracic echo (TTE) were done, which demonstrated a 4.7cm (L) by 3.9cm (W) bilobed and pedunculated vascular mass on the inferior wall of the left ventricle obstructing and prolapsing into the left ventricular outflow tract. Cytology of left iliac wing biopsy revealed plasmacytoma +CD 138, and cytology of bone marrow biopsy showed clonal plasmacytosis +CD 138 and CD38 confirming the diagnosis of multiple myeloma. The patient was started on pulse dose dexamethasone and underwent surgical fixation of the right

femoral neck. Induction chemotherapy was initiated two weeks post operatively using Daratumumab plus VRd (bortezomib, lenalidomide, and dexamethasone) protocol. Repeat cardiac imaging with TTE demonstrated marked reduction in cardiac mass to 3.2cm (L) by 2.5cm (W), no longer obstructing the left ventricular outflow tract. The rapid reduction in tumor size following initiation of chemotherapy was more supportive of a diagnosis of plasmacytoma rather than rhabdomyosarcoma or angiosarcoma. Definitive diagnosis in this case was deferred due to the patient being considered at too high of risk to undergo myocardial biopsy.

Discussion

The most common form of primary cardiac tumors is a cardiac myxoma. Malignant cardiac tumors are significantly rarer and are often sarcomas. Cardiac plasmacytoma is an extremely rare type of a malignant cardiac tumor which can present as a primary solitary plasma cell tumor or as part of a secondary malignant process typically being multiple myeloma. Cardiac plasmacytomas can lead to development of cardiac complications including pericardial effusions, outflow tract obstruction, and congestive heart failure. Multimodality imaging including cardiac echocardiography, MRI, and PET/CT should be utilized to localize and characterize extent of tumor involvement in surrounding cardiac structures. Definitive diagnosis can be made with myocardial biopsy. Management of these patients should involve a multispecialty approach, initiation of chemotherapy, and close follow up with repeat imaging.

FLORIDA POSTER FINALIST - CLINICAL VIGNETTE
Bharadwaj Sai Shanmukha Satyavolu, MD

The T wave twist: A complex presentation of subarachnoid hemorrhage

Title

The T wave twist: A complex presentation of subarachnoid hemorrhage

Authors

Bharadwaj Satyavolu, MD Tracey Topacio, DO Asim Syed, MD Max Egar, BS Anand Desai, MD Benjamin Ravaee, MD Charles E. Schmidt College of Medicine, Florida Atlantic University, Boca Raton, FL

Introduction

Deeply inverted and biphasic T waves are commonly referred as a specific marker for critical, proximal left anterior descending artery (LAD) stenosis [2] also known as Wellens syndrome. However, these electrocardiogram (EKG) findings have also been seen in cases of central nervous system (CNS) injury and are also known as “cerebral T waves” as demonstrated in prior case reports and retrospective studies [1,2],. Accurate identification of the etiology is crucial due to the array of pathologies associated with this phenomenon, which would therefore greatly affect appropriate management strategies. Here, we present a patient with a complex presentation of congestive heart failure (CHF) exacerbation and EKG findings of biphasic T waves who subsequently was found to have a subarachnoid hemorrhage (SAH).

Case Presentation

70 year old female with CHF with unknown ejection fraction and hypertension presented with progressive dyspnea on exertion, confusion, and mild headaches for 3 days. General examination demonstrated a somnolent, obese female, and oriented only to self. Lung exam with bilateral crackles up to her mid-thorax with minimal oxygen requirement, extremities with bilateral 2+ pitting edema, and neurological examination with no focal deficits. Laboratory results were significant for up-trending troponin levels of 1.64, 1.88, 2.07, and 2.30 and BNP of 1190. EKG was significant for diffuse biphasic T waves with high voltage criteria Left ventricular hypertrophy and prolonged QTc. A transthoracic echocardiogram (TTE) showed preserved EF of 50-55%, with no wall motion abnormalities. Patient was initiated on IV diuretics and was started on heparin drip and aspirin with a tentative plan to perform left heart catheterization. Overnight, she became agitated and complained of worsening headache. CT head without

contrast revealed a subarachnoid hemorrhage from a ruptured anterior communicating artery aneurysm, which was confirmed by subsequent CT angiography. Anticoagulation and anti-platelet therapy were stopped immediately. Repeat EKG showed deeper T waves. Telemetry continued to show inverted T-waves of increasing amplitude and she was transferred to the ICU for neurosurgical care and coil embolization. Subsequently, telemetry data displayed improvement of the inverted T waves. The patient demonstrated a full neurological recovery without further cardiovascular complications.

Discussion

Prior studies have demonstrated the temporal relationship of patients presenting with SAH and the subsequent EKG changes which include diffuse T wave inversions, biphasic T waves and QTc prolongation[3], with the first reported cases dating back in 1947 [4]. The pathogenesis includes adrenergic hyperactivity leading to a particular type of morphological lesion known as "coagulative myocytolysis" and possibly intra-myocardial hemorrhages [1,3]. Our patient's initial encephalopathy was thought to be secondary to her CHF exacerbation, however given the sequence of events it was theorized that she likely presented with SAH which was not initially diagnosed. This case outlines the importance of broadening the differential diagnosis when biphasic or inverted T waves are seen on EKG, as management of one diagnosis can catastrophically worsen the outcome of another. In addition this is a salient example of the importance of continuous telemetry monitoring in patients with SAH, as improvement in associated EKG patterns can be monitored with appropriate management.

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FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Yelenis Seijo De Armas, MD

An unusual cause of secondary hemophagocytic lymphohistiocytosis

Title

An unusual cause of secondary hemophagocytic lymphohistiocytosis

Authors

Yelenis M Seijo De Armas, MD; Amir Riaz, MD; Mileydis Alonso, DO; Rafael Miret, DO; Schella Derosier, MD; Andrea Calderon, MD; Amy Van, MD- Cleveland Clinic Florida

Introduction

Hemophagocytic lymphohistiocytosis (HLH) is an uncommon syndrome of excessive immune activation involving hyperactivation of CD8+ T-lymphocytes and macrophages. This leads to phagocytosis by macrophages and massive release of cytokines, resulting in high fevers, coagulopathies, and end-organ damage. Multi system organ dysfunction often leads to pancytopenia, transaminitis, hepatomegaly, splenomegaly, and encephalopathy. It usually presents in infants and young children, but it can infrequently affect adults. Primary HLH is associated with genetic mutations while secondary HLH is associated with malignancy, infections and autoimmune disorders. Treatment of secondary HLH usually involves treating the underlying cause. Acute lymphoblastic leukemia (ALL) involves malignant transformation of precursor lymphocytes in the bone marrow, which often leak into the blood and proliferate at extramedullary sites. It has a bimodal distribution, first peak occurring at 5 years of age and the second peak at 50 years of age. 80% of cases occur in children and the remaining 20% occur in adults.

Case Presentation

47 year old female with history of antiphospholipid syndrome, presented to the emergency department (ED) with recurrent fevers for 9 days, associated with fatigue, night sweats, and unintentional weight loss. In the ED, she was afebrile and tachycardic. Physical exam was notable for bilateral shotty cervical lymphadenopathy. CBC revealed pancytopenia. Reticulocyte count was 0.1. LDH was noted to be 694. LFTs revealed an AST of 840, ALT of 1845, and alkaline phosphatase of 295. Ferritin was 11, 494 and D-dimer was 9280. Ultrasound of the liver and spleen revealed no hepatomegaly or splenomegaly. She remained afebrile for 3 days but then began to spike fevers. Labs showed persistent pancytopenia, elevated LFTs, D-dimer, and

ferritin levels. She was found to have triglyceride levels of 118. Soluble interleukin 2 (IL-2) receptor was elevated at 1262. Flow cytometry revealed a normocytic anemia with occasional tear drop cells, leukopenia with left shift, and thrombocytopenia. There was no evidence of a lymphoproliferative disorder or acute leukemia. Bone marrow biopsy subsequently revealed B-cell acute lymphoblastic leukemia (B-ALL) with 83% blasts. On microscopic examination, numerous macrophages with intracytoplasmic red blood cells were observed (hemophagocytosis).

Discussion

Hemophagocytic lymphohistiocytosis is a hyperinflammatory syndrome that usually occurs in infants and younger children unlike our patient. It can occur secondary to malignancy as evident in our case. Secondary HLH due to malignancy most commonly occurs with T or NK-cell lymphoid neoplasms. Surprisingly, in our case, it occurred secondary to B-ALL. Such association of HLH with B-ALL in addition to the age of presentation in our patient, makes this an unusual case. It is important to remember that although HLH is more common in infants and children, it does occur in adults and it can be associated with B-ALL.

FLORIDA POSTER FINALIST - CLINICAL VIGNETTE Renuka Tolani

Non-Hodgkin's Lymphoma in a Patient with Chronic Hepatitis B

Title

Non-Hodgkin's Lymphoma in a Patient with Chronic Hepatitis B

Authors

Renuka Tolani Palmetto General Hospital Attending Dr. Cesar Bertolotti MD Palmetto General Hospital

Introduction

Meta-analysis and cohort studies have demonstrated an increased prevalence of Non-Hodgkin's Lymphoma (NHL) in patients with Hepatitis B Virus (HBV). A prospective cohort study in China followed participants who had a positive HBsAg rapid test, for association between HBV infection and risk of different cancer types. Participants who were HBsAg seropositive had a higher risk of multiple different malignancies. For lymphoma there was a hazard ratio of 2.10 (95% CI, 1.34-3.31), when compared with participants who were HBsAg seronegative. This study has suggested that chronic inflammation induced by HBV may play a role in the development of both hepatic and extrahepatic cancers, such as lymphoma. As demonstrated by our patient in this case presentation, when patients with history of HBV are found to have a mediastinal mass, there should be a high degree of suspicion for diagnosis of NHL.

Case Presentation

Patient is a 55 year old female with PMH of untreated Hepatitis B who presented to the ED with shortness of breath and chest tightness for the past 5 days. She had associated cough, swelling of face and eyelids, fatigue, body aches, and weight loss of 8 pounds in the past month. Patient was hemodynamically stable and saturating 100% on room air. Physical exam was significant for facial and neck edema. Auscultation of lungs revealed diffuse rhonchi. In the ED labs were significant for ALT 180 and AST 109 with a total and indirect bilirubin of 0.7. CT Chest with IV contrast showed a 11.0 cm mass involving the right mediastinum effacing the superior vena cava but non-obstructed. Mass effect against the aorta, pulmonary arteries, trachea, and right bronchus. Hepatitis panel revealed chronic Hepatitis B with a positive Hep B surface antigen, negative core IgM, positive HB total core (IgM +IgG), Hep Bs Ab negative, and negative HepBe antigen. Viral load was 951000 IU/mL. HIV testing, AFP, and CEA level were negative. Histology

and flow cytometry markers of biopsy were compatible with a primary mediastinal large B-cell lymphoma. Antiviral Entecavir was started one week prior to starting chemotherapy with R-CHOP regimen.

Discussion

A prospective study in the U.S. showed that patients with chronic HBV infection were 2.8 times more likely to develop NHL than matched comparison patients without HBV. Most studies are meta analysis or retrospective, and there is a need for more prospective studies establishing a causal relationship between HBV and NHL. A take away point from this patient with NHL who had serology supporting chronic HBV, is that HBV vaccination may be associated with prevention for NHL. It also brings up the point that screening for malignancies can be important in patients at risk who have had chronic HBV. It is also noted that patients who are going to receive immunosuppressive therapy should be tested for HBV. Since serology was positive and there was a detectable Hep B viral load in our patient, a decision was made for her to receive antiviral treatment prior to chemo and continued after completing immunosuppressive therapy until a therapeutic endpoint is reached.

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GEORGIA POSTER FINALIST - CLINICAL VIGNETTE Monazza Azam

Diffuse Alveolar Hemorrhage as the Primary Manifestation of Systemic Lupus Erythematosus

Title

Diffuse Alveolar Hemorrhage as the Primary Manifestation of Systemic Lupus Erythematosus

Authors

Dr. Monazza Azam, Dr. Amir Mohammed, Dr. Adeyinka Adeniyi, Dr. Adam Manly, Dr. Thomas Lall, Koosha Kermani, Josh Rahman

Introduction

Systemic lupus erythematosus (SLE) is a chronic autoimmune illness, presenting itself in a multitude of ways. Diffuse alveolar hemorrhage (DAH) is a rare and deadly pulmonary complication of SLE, occurring in only 2-5% of cases with a mortality rate of 50%. Due to its limited occurrence, this manifestation is not completely understood and can present with varying clinical features. Given the high mortality rate associated with DAH, rapid identification and targeted medical management plays a critical role in patient survival. We report a case of DAH as the primary manifestation of SLE, clinically challenging and distinct from previous presentations.

Case Presentation

A 84-year-old female with history of hypertension, dilated aortic root, supraventricular tachycardia, peripheral arterial disease, hypothyroidism and unspecified respiratory condition presented to the emergency department with hemoptysis two hours prior, associated with bilateral upper quadrant pain, mild shortness of breath, and cough. The patient denied any previous history of hemoptysis, fever, chills, chronic cough, recent weight loss, and appetite changes. Upon further questioning, she denied recent travel or sick contacts, use of blood thinners, recent tuberculosis exposure and history of blood clots. Past history was significant for cooking with firewood and second hand tobacco exposure. Upon admission to the emergency room, patient was hypertensive (193/89 mmHg), bradycardic (33 bpm), with an oxygen saturation of 93% on room air. Physical examination was remarkable for expiratory wheezing and trace lower extremity edema. Initial chest x-ray showed bilateral perihilar densities similar in presentation to previous imaging from 2015. computed tomography angiogram of the chest

was then ordered and showed chronic granulomatous disease, including adenopathy with narrowing lumens of the right and left upper lobe bronchi. Additionally, an autoimmune panel was ordered and returned back ANCA (negative), ANA titer (positive), Anti-dsDNA (10), and RNP (1.2) elevated. Following her imaging and blood work, the patient was advised that the best initial treatment for presumed DAH due to SLE was pulse dose steroids of 500-1000 mg IV daily for 3 days followed by tapered dosing. She initially declined to receive high dose steroids. However, due to un-resolving hemoptysis, she consented on day 4 of admission. Episodes of hemoptysis resolved on day 7 of admission. Prior to discharge, a bronchoscopy was scheduled that exhibited Bronchial Anthracofibrosis. Patient was discharged on hospital day 10 following complete resolution of hemoptysis and pulmonary workup.

Discussion

Diffuse alveolar hemorrhage related to systemic lupus erythematosus is a life threatening condition with the ability to manifest in a variety of ways, resulting in unique case presentations. In this case we observed unusual pulmonary findings from previous documented presentations of this condition. Our patients' significant lymphadenopathy and lack of ground-glass appearance on computed tomography angiogram was contrary to typical presentation. However, the positive findings on the autoimmune workup and the rapid clinical response to pulse dose steroids solidified our diagnosis and resulted in prompt resolution of the patient's condition.

GEORGIA POSTER FINALIST - CLINICAL VIGNETTE Lucie F Calderon, MD

Bones, Groans and a Shot of Patron: A Case of Hypercalcemic Crisis in the Setting of Alcoholic Cirrhosis

Title

Bones, Groans and a Shot of Patron: A Case of Hypercalcemic Crisis in the Setting of Alcoholic Cirrhosis

Authors

Lucie Calderon, MD, Pranav Santapuram, MD, Yoo Mee Shin, MD

Introduction

Hypercalcemia as a sequelae of chronic liver disease is a rare clinical entity that is uncommonly reported and occurs through unknown mechanisms. It remains a diagnosis of exclusion when more common causes, such as hyperparathyroidism, malignancy, and vitamin excess, are ruled out.

Case Presentation

Ms. A is a 55-year-old female with a history of decompensated alcoholic liver disease who presented with confusion, headaches, nausea, vomiting and abdominal pain. Her labs were consistent with hypercalcemia and her corrected calcium level was 15 mg/dL with an ionized calcium of 2.02 mmol/L. PTH level was

Discussion

The two most common causes of hypercalcemia are primary hyperparathyroidism and malignancy, which account for approximately 90% of cases. Hypercalcemia in patients with chronic liver disease, on the other hand, is rare and not yet well-studied. There is an increasing number of reports that identify chronic liver disease as the primary etiology of hypercalcemia in the absence of other known causes. There have been multiple theories as to why these patients develop elevated serum calcium levels, such as hyperbilirubinemia, immobility, or simply a chronic inflammatory state leading to bone resorption and resultant hypercalcemia. However, these hypotheses are not generalizable amongst the literature reviewed for this report and were not identified in our patient. Alternatively, while there is not a particular sero-marker

linking liver disease and hypercalcemia at this time, perhaps we must consider revising the current algorithm for workup to include chronic liver disease as an underlying cause. Despite unknown mechanisms of action, liver-disease-induced hypercalcemia is responsive to generalized treatment of elevated calcium levels and appears to be transient in nature. Unfortunately, more research is needed to better understand the underlying pathogenesis of calcium derangements in chronic liver disease and seems to be more of a diagnosis of exclusion as was in our case. Thus, it is still important to continue to work up patients with chronic liver disease for primary hyperparathyroidism and malignancy.

GEORGIA POSTER FINALIST - CLINICAL VIGNETTE Salome e Dadzie

A SEMINAL SIGN OF AUTOIMMUNE HEPATITIS IN MEN

Title

A SEMINAL SIGN OF AUTOIMMUNE HEPATITIS IN MEN

Authors

Salome Dadzie, MD. Krystal Mills, MD. Ngum Kikah, MD. and Judith Volcy, DO.

Introduction

Autoimmune hepatitis is a chronic, inflammatory disease of the liver that is classically seen in females and/or the elderly population.1-2 While the constellation of presenting symptoms may include yellowing of the eyes, mucus membranes and skin, yellowing of the semen is rarely described in literature. We report a case of a male patient who presented with yellow semen, later diagnosed with autoimmune hepatitis.

Case Presentation

A 30year old African American man with no medical history presented to clinic with one year history of bright yellow semen. The color change was of insidious onset. Episodes would spontaneously resolve after a few days then recur within weeks. He denied urinary frequency, dysuria or hematuria. He endorsed yellowing of his eyes and a 35-40pound unintentional weight loss over three months. He reported prior episodes of severe, cramping, generalized abdominal pain and 5-6 episodes of non-bloody, loose stools per day that were occasionally clay-colored. He used marijuana and alcohol (3-4 beers daily) but denied IV drug. He had been incarcerated for 7 years. Vitals on presentation: BP 116/58 Pulse 70 Temp 96.3 °F Resp 18. He was well appearing in no acute distress. He was alert and fully oriented. Eyes were remarkable for bilateral scleral icterus. He did not have jaundiced mucus membranes or skin. There were no telangiectasias. His abdomen was nondistended, no caput medusa, soft, no hepatomegaly on palpation. Bowel sounds were normoactive. Lower Extremity edema was absent. Initial laboratory testing showed Total bilirubin: 3.5 mg/dL, Direct bilirubin: 2.1 mg/dL, AST: 452 IU/L, Alt: 682 IU/L, alkaline phosphatase: 790 IU/L, hemoglobin: 12.9g/dL, LDH: 286 IU/L, PT: 13.9 sec, INR 1.2, Lipase: 112 U/L. Ultrasound of the abdomen was negative for biliary tract disease. Follow up CT abdomen and Pelvis reported normal liver with complex cystic lesion of the right superior pole and scattered pancreatic lymph nodes. There was no evidence of liver/biliary

disease Hepatitis A, B and C serologies, HIV, RPR, Quant gold and acetaminophen level were negative. ANA was obtained which was positive. A full autoimmune panel was drawn including but not limited to anti-Dsdna, anti-histone, RNP antibody units, scl-70, anti-centromere, anti Jo, Smith ab, SSA, SSB, Mitochondrial AB and Smooth Muscle AB. The positive AB titers were Antihistone 191 (0 - 120 AU/ML), DS-DNA 130 (0 - 120 IU/ML), Smooth Muscle 1:40 (

Discussion

The manifestations of autoimmune hepatitis are broad. However, the manifestation of yellow semen as the initial presenting complaint in a young male later found to have autoimmune hepatitis has not been described well in literature. This case highlights the importance of a patient centered, detailed, history and physical examination in determining the potential etiology of underlying medical conditions.

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GEORGIA POSTER FINALIST - CLINICAL VIGNETTE Jamis Barton Scot Gouge

Posterior Reversible Encephalopathy Syndrome after Red Blood Cell Transfusions for Severe Anemia

Title

Posterior Reversible Encephalopathy Syndrome after Red Blood Cell Transfusions for Severe Anemia

Authors

Jamis Gouge M.D., Samay Bhushan M.D., Sunny Dattani D.O., David E. Mathis, M.D., Ericka Li Fuentes M.D.

Introduction

Posterior reversible encephalopathy syndrome (PRES), also known as reversible posterior leukoencephalopathy (RPLS), is characterized by headache, seizures, encephalopathy, vision loss, and focal neurologic deficits, along with characteristic brain white matter findings on magnetic resonance imaging (MRI) due to subcortical vasogenic/cytotoxic brain edema. PRES is a potentially severe condition that is most often precipitated by hypertension, kidney failure, or infections. From our review of the literature, fewer than thirty cases of PRES have been reported after blood transfusion. We report a case of a patient who developed headache, encephalopathy, and status epilepticus after receiving red blood cell transfusions for severe anemia secondary to menometrorrhagia.

Case Presentation

A 44-year-old African American female initially presented to our institution with increasing fatigue, a serum hemoglobin level of 1.4 g/dl, and a serum ferritin level that was undetectable. She was hemodynamically stable. She received six units of packed red blood cells over forty-eight hours, clinically improved, and was discharged home with resolved symptoms. Two weeks later she presented to our emergency department with new onset seizures, confusion, and a posterior headache of one week's duration. Within twelve hours of admission, she developed status epilepticus and required a three day stay in our neurologic intensive care unit. Computed tomography (CT) of her brain revealed multifocal abnormal hypoattenuation predominantly within the subcortical white matter that was relatively symmetric and most prominent posteriorly, without significant associated intracranial mass effect. MRI of her brain

demonstrated extensive increased T2 signal intensity consistent with radiologic findings of PRES. Electroencephalogram (EEG) revealed no indications of epilepsy or ictal runs. During her seizure activity she had mildly elevated blood pressures, but had no other recorded history of hypertension. She was discharged eight days after admission with anti-epileptic medication. She is scheduled for a hysterectomy. Two months after discharge, she is asymptomatic and functioning at her baseline

Discussion

Posterior reversible encephalopathy syndrome (PRES) is a rare neurologic syndrome characterized by acute onset of headache, confusion, visual disturbances and seizures, as well as radiographic findings including vasogenic edema in the subcortical white matter that are predominantly localized to the posterior cerebral hemispheres. While the etiology of this disorder is not understood fully, it is hypothesized that it is related to impaired cerebral autoregulation and endothelial dysfunction. The most common conditions causing this syndrome are severe hypertension, pre-eclampsia, kidney failure, and severe infections. Rapid correction of anemia with blood transfusions is a rare cause of PRES, with less than thirty cases presented in the literature. It is important to recognize this potentially morbid condition, and to avoid rapid blood transfusions in hemodynamically stable patients.

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GEORGIA POSTER FINALIST - CLINICAL VIGNETTE Rabia Khan, MD

An atypical presentation of a rare disease: metastatic dermatofibrosarcoma protuberans presenting as exertional dyspnea

Title

An atypical presentation of a rare disease: metastatic dermatofibrosarcoma protuberans presenting as exertional dyspnea

Authors

Rabia Khan, Usha Anand, Louis Lovett, Michael Kremer, Sara Acree

Introduction

Dermatofibrosarcoma Protuberans (DFSP) is a rare cutaneous sarcoma that most commonly presents as an asymptomatic, slowly enlarging, indurated plaque on the trunk or extremities. DFSP has a high propensity for local recurrence and distant metastases are uncommon. The rate of metastases is reported to be as high as 5 percent; however, it is closer to 1 percent for typical, low-grade DFSP. In this case, our patient had developed a rare pulmonary metastasis without local recurrence of his low-grade DFSP, within a period of two years.

Case Presentation

A 48-year-old African American male smoker working as a landscaper presented with a two-week history of progressive exertional dyspnea. His dyspnea was slightly improved when laying on his right side and got worse when laying on the left side. He was in good health before admission. He denied allergies, fevers, weight loss, cough, congestion, chest pain, leg swelling, and had not traveled recently. Past medical history included DFSP treated with imatinib and surgical resection two years before admission. On presentation, the patient was short of breath. Vitals were stable. The lung exam showed trachea deviation to left, no tenderness to palpation, dullness to percussion, and absent breath sounds over the right lung field. Bilateral nail clubbing of upper extremities and a well-healed right inguinal scar from prior resection was also noted. Laboratory results were unremarkable. CXR showed a large right pleural effusion with compressive changes with a leftward shift of mediastinal structures. CT chest with IV contrast confirmed a right-sided lung mass measuring 20 x 16.7 x 13.2 cm with non-enhancing low-density areas which may represent necrosis. The pleural fluid analysis was consistent with an exudate and cell cytology was negative for malignancy. Finally, a lung biopsy confirmed low-

grade spindle cell neoplasm consistent with metastasis from previous DFSP. CT abdomen with IV contrast and a CT head without contrast both were unremarkable for any additional metastasis. Surgical resection was not an option because of the enormous size of the pulmonary lesion and the resulting compression of the mediastinal structures and main vessels. The patient was started on systemic therapy with imatinib. The patient experienced a subjective improvement in symptoms and was referred to a tertiary treatment facility for further care.

Discussion

DFSP tends to exhibit an indolent growth pattern, which left untreated becomes nodular and can attain massive dimensions like in our patient. Our case presented as the classic histological appearance: uniform fibroblasts arranged in a storiform pattern around a vasculature through a fine-needle biopsy of the mass, as a gold standard, since a pleural fluid analysis is not sensitive. This case shows that even a low-grade DFSP can metastasize distally without local recurrence. When it does metastasize, the mortality increases exponentially. Therefore, the patient needs to be followed more closely and should be referred to a center that specializes in sarcomas due to ever-evolving protocols. Our case is surprisingly one of just a handful of cases documented in the literature and deserves to be noted as it could lead to early detection and treatment.

GEORGIA POSTER FINALIST - CLINICAL VIGNETTE Sameena H Salcin, MD

Heat Stroke Induced Cerebellar Ataxia in a Young Adult

Title

Heat Stroke Induced Cerebellar Ataxia in a Young Adult

Authors

Sameena Salcin MD, John Frontera MD

Introduction

Heat stroke is defined as body temperature greater than 40ºC (or 104ºF) with neurologic dysfunction. Based on previous studies, elevated temperatures appear to primarily affect the Purkinje cells which originate in the cerebellum and control motor function. We report a case of a young healthy patient with severe global ataxia secondary to severe hyperthermia.

Case Presentation

A 22-year-old male with no significant past medical history presented to the emergency room via ambulance after being found unresponsive at a construction site. At time of arrival to the scene, emergency services found the patient vomiting and aspirating with bradypnea and intubated him in the field for airway protection. Upon arrival to the emergency room, the patient was found to be tachycardic and substantially hyperthermic with temperature of 106.5ºF. Initial electrocardiogram noted ST depression and supraventricular tachycardia with heart rate sustained between 195-200 beats per minute. Initial arterial blood gas noted pH 7.2, pCO2 51, pO2 65, and lactate 2.8. Laboratory studies were significant for sodium 127, potassium 6.1, CO2 16, creatinine 3.55, BUN 39, AST 94, ALT 66, WBC 12.7, troponin 2.94, creatinine kinase 3022, lipase 722, and procalcitonin 16.37. Imaging studies were significant only for a left lower lung infiltrate. Rapid passive cooling was initiated and core body temperature was reduced to a normal range within one hour of arrival. Adenosine was then used to convert the patient to sinus tachycardia. Calcium gluconate and sodium bicarbonate were administered for hyperkalemia. The patient was started on cooled intravenous fluids, antibiotics, bicarbonate infusion, and admitted to the intensive care unit for further management. The following day, the patient was noted to have several episodes of myoclonic jerking with increased heart rate and ventilator dyssynchrony. Stat magnetic resonance imaging (MRI) of the brain was performed and did not show any acute abnormalities. A stat

electroencephalogram was also obtained which showed generalized slowing consistent with generalized cerebral dysfunction. No evidence of seizure activity was noted. Over the next few days, the patient's overall clinical status began to improve with no further myoclonic movements noted. He was extubated and transferred to the medical floor. Further evaluation revealed severe ataxia, speech impairment, and mild cognitive impairment. Subsequently, the patient was discharged to inpatient rehabilitation. Despite completing three weeks of physical therapy, no improvement in ataxia was noted. A second MRI done at the end of rehabilitation again demonstrated no abnormalities. One month later, the patient was seen by the outpatient neurologist. He continued to report difficulty with speech and gait. Physical exam demonstrated continued severe ataxia with inability to walk unassisted.

Discussion

In this case, the patient's severe ataxia is likely a result of damage to Purkinje cells within the cerebellum. Given that irreversible cellular damage can occur at temperatures greater than 40ºC, rapid cooling interventions should be initiated in a timely fashion. The patient should be advised that any deficits may take months to years to improve or may be irreversible. Physical therapy should be continued in the outpatient setting to maximize recovery potential.

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GEORGIA POSTER FINALIST - CLINICAL VIGNETTE Sameena H Salcin, MD

Septic Shock and Subcutaneous Infection Secondary to Myroides species bacteria in an immunocompetent host

Title

Septic Shock and Subcutaneous Infection Secondary to Myroides species bacteria in an immunocompetent host

Authors

Sameena Salcin MD, Franklin Fontem MD

Introduction

Myroides species (sp.) bacteria are rare Gram-negative, rod-shaped, non-motile organisms found primarily in soil and water. Historically, Myroides sp. has been viewed as non-pathogenic by the scientific community. Current medical literature documents few cases of infection in immunocompetent human hosts. We report a case of septic shock and subcutaneous infection secondary to Myroides bacteremia in an immunocompetent host.

Case Presentation

An 84-year-old female with past medical history of pulmonary hypertension and atrial fibrillation presents to the emergency room for altered mental status and bilateral lower extremity pain and erythema. At time of initial presentation, the patient was hypotensive, tachycardic, and tachypneic. Laboratory studies noted WBC 15.9 with 13% lymphocytes and 30% bands, lactate 9.5, sodium 132, creatinine 1.85, and total bilirubin 1.9. The patient was noted to have multiple potential sources for sepsis given abnormal urinalysis, right lung infiltrate on CT, and possible superimposed cellulitis on lower extremities. The patient was started on intravenous fluids, vancomycin, and cefepime. Her mean arterial pressures remained persistently low and she was transferred to the Intensive Care Unit for initiation of vasopressor support. The following day, the patient had some hemodynamic improvement and was able to be transitioned off vasopressors. However, she began to complain of worsening lower extremity pain. Repeat physical exam revealed formation of large fluid-filled blisters primarily on the right lower extremity. Due to concern for possible necrotizing infection, CT imaging of the bilateral lower extremities was obtained. Fortunately, imaging studies were consistent with cellulitis and did not show any subcutaneous air or necrotizing infection. Later that day, blood

cultures taken at the time of admission speciated out highly resistant Myroides bacteria. The infectious disease service was consulted for further assistance with antibiotic management and recommended transitioning the patient to meropenem and clindamycin. Over the next few days, as the patient's mental and clinical status improved, further history was obtained. The team learned that the patient lives on a large, remote parcel of land serviced by well-water. Additionally, the patient had recently been scratched by her dog who roams freely throughout her property during the day. In this case, the likely source of transmission of Myroides sp. was either through contaminated well-water or the dog scratch.

Discussion

This case highlights the challenge that the scientific community faces surrounding new and emerging pathogens. Myroides bacteria is usually a rare cause of infection in immunocompromised individuals. However, in this case, it was able to cause significant sepsis and bullous skin infection in a relatively immunocompetent host. Given its multi-drug resistant nature and high variability of antibiotic susceptibility, treatment of Myroides bacteria in the clinical setting will need to be driven primarily by susceptibility testing. Clinicians should have a high suspicion for Myroides infection in patients with exposure to soil and water. A thorough history should be obtained to facilitate diagnosis and early consultation of the infectious disease service should be pursued to target antibiotic therapy.

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HAWAII POSTER FINALIST - CLINICAL VIGNETTE Joseph T Go

What lies within? Massive GI bleeding from distal ileal ulcers associated with Crohn's disease

Title

What lies within? Massive GI bleeding from distal ileal ulcers associated with Crohn's disease

Authors

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Introduction

Crohn's disease is a subtype of inflammatory bowel disease with a wide variety of presentations and affecting any segment of the gastrointestinal tract. Patients with Crohn's disease presenting with GI bleeding can quickly decompensate, and prompt recognition of possible areas of bleeding is crucial.

Case Presentation

A 40-year-old man with a unconfirmed history of Crohn's disease presented to the Emergency Department with large hematochezia. Over the preceding twenty years, the patient had several episodes of hematochezia, some requiring transfusion. Prior upper and lower endoscopy did not reveal a definitive cause, though Crohn's disease was suspected as a possible diagnosis due to finding of small ileocecal ulcer with mild adjacent cobblestone appearance. He had never been medically treated. Five days preceding this admission, he noticed epigastric pain, which continued until presentation when he also had hematochezia, dizziness, and palpitations. On intake, the patient was tachycardic but otherwise hemodynamically stable. Hemoglobin was 11.1g/dL. CTA abdomen revealed no active GI bleed. On the first night, his hemoglobin dropped significantly to 7.3g/dL with elevated lactic acid. He underwent colonoscopy and EGD the next morning, which revealed no active bleeding or obvious inflammation consistent with IBD, but blood was found in the ileum. Overnight, he continued to have a decrease in hemoglobin requiring further transfusion with large hematochezia again the following morning. Repeat CTA abdomen showed active extravasation of contrast concerning for arterial bleed in the terminal ileum. Interventional angiography was performed and a branch of the ileocolic artery was

embolized. Following further blood transfusion, he remained stable. Capsule endoscopy was unrevealing and he was discharged on the fifth hospital day. Unfortunately, the patient had another episode of hematochezia the day after discharge and returned to the ED. CTA abdomen was unrevealing. The following morning, the patient became hypotensive with obvious pallor and repeat CTA abdomen showed active hemorrhage, again, at the level of the ileum. He underwent exploratory laparotomy and intra-operative enteroscopy, revealing scarred mesentery, stricture, and four ulcers in the distal ileum including one with recent bleeding, which were resected. Post-operative course was uncomplicated with no further bleeding. Pathology of the ulcers revealed transmural inflammation consistent with Crohn's disease and outpatient initiation of DMARD therapy was planned following surgical recovery.

Discussion

This case illustrates the difficulty of diagnosing Crohn's disease. While atypical, massive bleeding with hemodynamic compromise may occur. Owing to the wide variety of presentations, it is important to maintain Crohn's disease in the differential for GI bleeding even if endoscopy is initially unrevealing.

HAWAII POSTER FINALIST - CLINICAL VIGNETTE Krixie Silangcruz, MD

A Hole in the Wall: A Complication of a Hepatic Arterial Infusion Pump Catheter

Title

A Hole in the Wall: A Complication of a Hepatic Arterial Infusion Pump Catheter

Authors

Silangcruz, K, Murakami, T, Wai, C.

Introduction

Hepatic Arterial Infusion (HAI) is a safe treatment option for patients with unresectable hepatic metastases from colorectal cancer. However, placement of these pumps requires technical expertise and close monitoring for complications. In this case, a 38-year-old male was found to have a HAI catheter protruding into the colon.

Case Presentation

A 38-year-old male with metastatic rectal adenocarcinoma presented for surveillance colonoscopy. His cancer was confirmed by biopsy following initial colonoscopy that showed a partially-obstructing, circumferential, 5-cm rectal mass. Despite systemic chemotherapy, hepatic metastases progressed. Thus, the decision was made to place a Codman 30 ml HAI pump in the right lower quadrant with the catheter inserted into the gastroduodenal artery (GDA) for chemotherapy. Despite treatment, the tumor and metastases continued to progress, requiring surgical intervention. Given the lack of response, the HAI pump was removed, the catheter was doubly ligated and allowed to retract into the abdominal cavity, and stereotactic body radiation therapy was started. However, upon surveillance colonoscopy 3 years after initial diagnosis, a foreign body was seen projecting through a hole in the wall of the transverse colon just proximal to the hepatic flexure. There was no evidence of mucosal erosion. Computed tomography scan confirmed the object coursed through the colon, in the mesenteric fat of the right mid abdomen, and terminated near the pancreatic head and gastric antrum. The object was thought to be the HAI catheter, but, as it seemed to penetrate through the colon, no attempt was made to remove it. The patient was stable and repeat imaging showed no interval change in position of the catheter.

Discussion

Technical complications of HAI pumps and catheters (i.e. related to catheter, port, or pump) are not uncommon. Upon review of literature, catheter dislodgement can occur before or during HAI therapy, and requires adjustment, removal, or replacement. However, this is the first case in the literature where the catheter was displaced and perforated the colon. Possible explanations for this complication are erosion of the catheter through the GDA into the peritoneum or formation of a fistula between the GDA and the colonic wall. It is important to be aware of this potential complication of HAI pumps so appropriate management with careful follow-up and early intervention can be initiated.

HAWAII POSTER FINALIST - CLINICAL VIGNETTE Krixie Silangcruz, MD

Oh My Grill! A Case of Ingestion of a Grill-Cleaning Wire Brush Bristle.

Title

Oh My Grill! A Case of Ingestion of a Grill-Cleaning Wire Brush Bristle.

Authors

Silangcruz, Krixie, MD Obeidat, Adham, MD Kuwada, Scott, MD

Introduction

Grilling is a common food preparation technique. However, while cleaning grills with a wire brush, bristles can be easily displaced, incorporated into the food, subsequently ingested, and lodged in the upper or lower aerodigestive tract. This is a case of a 64-year-old female who was found to have a wire brush bristle embedded in her esophagus.

Case Presentation

A 64-year-old female with hypertension and hyperlipidemia presented to the hospital for persistent and worsening epigastric pain. She started having epigastric pain four days prior to admission after eating grilled chicken barbeque from a local restaurant. Pain was characterized as sharp and spasm-like lasting for a few seconds and occurring frequently. She also reported melena described as mixed black and brown stool. Vital signs and physical examination were unremarkable. Her basic laboratory data were all within normal limits. Abdominal ultrasound was unremarkable. Computed tomography of the abdomen showed a 35 x 2 mm linear density in the distal esophagus just above the gastroesophageal junction with focal thickening of the distal esophagus. No esophageal dilation, pneumomediastinum, pneumoperitoneum, or free fluid was found. Esophagogastroduodenoscopy was done and showed a thin braided wire briefly exposed within the wall of the distal esophagus. Removal with a regular forceps was unsuccessful. The wire then retracted into the wall. Fluoroscopy was then used to localize the wire. It was embedded and parallel with the wall of the distal esophagus. A 15 mm ERCP balloon was used to push the wire but was unsuccessful. The patient was then taken to the operating room for a laparoscopic esophageal myotomy, intraoperative upper endoscopy, and fluoroscopy with removal of the foreign body. A 4-cm long wire brush bristle was retrieved. Notably, there were some adhesions and some fibrinous exudate in the left anterior portion of the esophagus which were likely from a perforation that had begun to heal. She tolerated the

procedure well and was discharged the next day on oral antibiotics due to suspicion for perforation.

Discussion

A grill-cleaning wire brush bristle is an infrequently identified foreign body in the esophagus. The grill's cooking surface is cleaned with a wire brush to remove debris. The wire bristles can get dislodged from the brush, adhere to the grill, get incorporated into the food, and be accidentally ingested. Most ingested foreign bodies pass spontaneously, and the complication rate is generally low. However, they can sometimes get impacted which may lead to potentially life-threatening complications requiring urgent surgical intervention. Physicians' awareness of this potential injury from grill cleaning brush bristles can lead to quick diagnoses and early intervention. Also, grillers must be made aware of this potential hazard and be encouraged to always carefully examine the barbecue grill surface for any debris.

ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Saba Akram

Unusual lung manifestations of MEN2B syndrome

Title

Unusual lung manifestations of MEN2B syndrome

Authors

Abdul Hasan Siddiqui M.D, Saba Akram M.B;B.S, Abdul Basit Nawaz M.B;B.S

Introduction

MEN2B is a rare genetic disorder characterized by early age endocrine tumors such as Medullary Thyroid Carcinoma, Pheochromocytoma and other extra-endocrine manifestations. Studies in past have documented lung function changes or cystic lung changes as metastatic manifestations of MEN2B. We are reporting an unusual case of lung parenchymal nodules in a patient of MEN2B.

Case Presentation

A 24-year-old female, known case of neurofibromatosis type-1, presented with the complaint of nonspecific bilateral chest pain for 6 months. Chest pain was a constant discomfort, non-radiating in nature without any known aggravating and relieving factors. Pain was not associated with cough, shortness of breath, nausea or vomiting. Chest examination showed good respiratory effort, normal vesicular breathing without any added sounds. She had a tachycardia but was normotensive and afebrile. Her oxygen saturation remained 98% during the visits. Evaluation for chest pain showed multiple upper lobe nodules in both lung fields in her CT Chest. 3 months ago, she presented with the complaint of multiple neck swellings. Fine Needle Aspiration Biopsy of thyroid nodules along-with high serum calcitonin was consistent with medullary carcinoma of the thyroid (MTC). The patient was also recently diagnosed having pheochromocytoma. She had recently been experiencing the symptoms of intractable headaches, palpitation, excessive sweating and abdominal symptoms for last 2 months. Adrenal mass on PET scan and chemical testing were consistent with pheochromocytoma. Urinary meta-nephrine level was 5590 mcg/24hr, urinary normetanephrine was 1935 mcg/24hr and total meta-nephrines were 7525 mcg/24hr. Based on having medullary thyroid carcinoma, pheochromocytoma and neurofibromatosis, she was labeled as a case of multiple endocrine

neoplasia 2B syndrome (MEN2B). This case describes a rare association of lung parenchymal nodules with MEN2B.

Discussion

Cystic lung changes consistent with the metastatic lung disease in MEN2B have been reported. There are a few if any reports about association of pulmonary parenchymal nodules with MEN2B in the past. These nodules may be a sequence of already undergoing pathological process of MEN2B, such as metastasis of medullary thyroid carcinoma or it may turn out to be an entirely new disease entity. Further research is required to know about the nature and pathogenesis of such atypical pulmonary manifestations of MEN2B.

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ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Saba Akram

An unusual case of liver enzyme derangement and fatty liver disease due to dupilumab

Title

An unusual case of liver enzyme derangement and fatty liver disease due to dupilumab

Authors

Saba Akram, MBBS, Abdul Basit Nawaz, MBBS, Manoj Kohli, MD, Danish Thameem, MD

Introduction

Dupilumab acts as a blocking agent in the pathway of biological actions of cytokines such as IL-4 and IL-13. This biologic agent has been associated with adverse events such as conjunctivitis, keratitis and injection site reactions. Studies reveal dupilumab to be liver safe. Due to this safety profile, dupilumab has been used in the treatment of allergic diseases in patients having concomitant liver disease. Here, we have come across a case of alteration of liver enzymes and development of fatty liver after administration of dupilumab.

Case Presentation

A 57-year old male, known case of longstanding persistent asthma, was started on Dupilumab for poorly control of asthma .The patient was intolerant to a variety of medications including esomeprazole, rabeprazole, morphine, metronidazole, oral steroids, Montelukast. He had no known history of chronic liver disease prior to this. He denied any history of smoking, alcohol intake or any recreational drug use. He denied any history of liver disease in his family. Dupilumab 300mg subcutaneous every 14 days was added to the treatment for long standing severe persistent asthma. After initiating dupilumab, he presented with complaint of epigastric discomfort occasionally radiating to left upper quadrant and associated nausea for a week after initiation of dupilumab. Physical examination was normal except mild epigastric discomfort. Prior to the administration of dupilumab his liver chemistry was insignificant except an elevated Alkaline phosphatase level (ALKP=140; n=38-126 U/L).His liver metabolic profile 3 months after commencement of dupilumab revealed normal aspartate aminotransferase (AST =32 ;n=14-50 U/L) and alanine aminotransferase (ALT=44 : n=0-50 U/L) but elevated gamma glutamyl transferase (GGT=108 ;n=12-43 U/L and alkaline phosphatase. Other important labs included: serum amylase= 81; (n=30-110 U/L), serum ferritin concentration was 332.1 ng/ml (n=21.8-

274ng/ml), serum iron- 124 µg/dl (n=35-175µg/dl), total iron binding capacity(TIBC)=290µg/dl (n=250-450 µg/dl). transferrin saturation= 43% (n=15-55%). His ultrasound scan for hepatobiliary anatomy revealed only fatty infiltration of liver but no stones in gall bladder or kidneys. HIDA scan was subsequently performed which revealed reduced (26%) ejection fraction of gall bladder. Upper gastrointestinal fluoroscopy exam showed no mucosal abnormality in esophagus, stomach or duodenum Next, dupilumab was held and his liver function tests were followed. After cessation of dupilumab he felt substantial improvement in epigastric discomfort and his gamma glutamyl transpeptidase (GGT) dropped 53 U/L after seven weeks of the first peak. Similarly, alkaline phosphate showed a declining trend with GGT.

Discussion

Dupilumab inhibits the biological response of both IL-4 and IL-13, making it an effective treatment for allergic conditions with pathogenesis involving these cytokines. Dupilumab has been found to be safe for treatment of atopic dermatitis in patients having concomitant liver diseases. In our case, investigations were performed to rule out other causes of liver enzyme elevation and fatty liver changes. Alpha subunit of IL-4 receptor is reported to be involved in regeneration of hepatocytes and reduction of liver fibrosis. Considering this relevance of interleukins to the hepatobiliary system, role of IL-4 and IL-13 in inducing liver enzyme alteration and fatty liver changes can be investigated further.

ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Abuzar Asif

Fulminant Pancreatitis Due to Disseminated Histoplasmosis: Case Report and Literature Review

Title

Fulminant Pancreatitis Due to Disseminated Histoplasmosis: Case Report and Literature Review

Authors

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Introduction

Necrotizing pancreatitis is a late complication of pancreatitis and is very rarely a manifestation of disseminated histoplasmosis. We present a rare case of necrotizing pancreatitis due to Histoplasma capsulatum, diagnosed on post-mortem autopsy.

Case Presentation

A 41 year old female with a history of recurrent acute pancreatitis due to hypertriglyceridemia, history of chronic steroid use for interstitial cystitis, presented with acute epigastric pain radiating to the back. Past medical history was significant for hypertriglyceridemia, interstitial cystitis on steroids, diabetes mellitus, hypothyroidism and CKD. She denied any travel outside the United States, any history of incarceration or sick contacts. She did not use any tobacco, alcohol or illicit drugs. She had been admitted multiple times in the past for acute pancreatitis secondary to hypertriglyceridemia (>5000 mg/dL). Physical exam revealed an afebrile, tachycardic (HR 118 bpm), normotensive, morbidly obese (BMI 41.20 kg/m^2) female, with a distended, diffusely tender abdomen with a negative Murphy's sign. Lab studies reported leukocytosis, anemia, mild transaminitis, calcium of 11.3 mg/dL, creatinine of 4.89 mg/dL, lipase of 700 U/L, triglycerides of 644 mg/dL, CRP of 36.96 mg/dL and ESR of 116 mm/h. A CT scan of the abdomen showed findings of pancreatitis with multiple low-density peripancreatic fluid

collections with the largest measuring 17 cm in greatest dimension. Blood cultures on admission were negative. Patient was started on intravenous fluid resuscitation and analgesics for treatment of acute pancreatitis. However, her renal function continued to worsen and she was eventually placed on hemodialysis. Her hospital course was further complicated by development of necrotizing pancreatitis further progressing to a pancreatic abscess and formation of a pancreatico-duodenal fistula, requiring management with intravenous meropenem, extensive debridement and necrosectomy. Despite all aggressive measures, the patient's functional status continued to decline and she passed away from suspected septic shock. A post-mortem autopsy report revealed acute tubular necrosis of kidneys, severe necrotizing pancreatitis, retroperitoneal abscess, acute necrotizing cholecystitis and necrotizing granulomatous inflammation with Histoplasma capsulatum involving the lungs, spleen, liver and mediastinal lymph nodes. These findings were consistent with a diagnosis of disseminated histoplasmosis.

Discussion

Most common causes of acute pancreatitis like alcohol, gallstones and hypertriglyceridemia were ruled out in our patient. Known risk factors for histoplasma infection include endemic regions and immunosupression. Chronic steroid use by our patient for interstitial cystitis likely contributed to immunosuppression and increased her risk to acquiring histoplasmosis. Our patient was from the Midwest region of USA and an early testing for disseminated histoplasmosis could have prevented poor outcome. As per our literature review using Pubmed and Google scholar, there have been other 5 reported cases of histoplasmosis involving the pancreas. Two of five case reports were of isolated involvement of the pancreas. Immunocompromised individuals are most commonly at risk but cases in immunocompetent patients have also been reported, and therefore should not be overlooked. Increasing utilization of PCR assays and next generation microbial cell-free DNA sequencing may help detect H. capsulatum earlier than traditional time-consuming techniques.

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ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Shasha Chen, DO

An Appropriate Explanation of Inappropriate Antidiuretic Hormone Secretion

Title

An Appropriate Explanation of Inappropriate Antidiuretic Hormone Secretion

Authors

Shasha Chen DO, Amy Trang MD, Caleb Chiang MD, Sara Zhukovsky, Richard Dwyer MD. Department of Medicine, Rush University Medical Center. Chicago, IL.

Introduction

Hyponatremia is a common medical condition that is defined as a serum sodium level of less than 135 mEq/L. To determine the etiology of hyponatremia, a patient's volume status is assessed along with their serum osmolality, urine osmolality and urinary sodium levels. An often-considered diagnosis of exclusion for the etiology of hyponatremia in the inpatient setting is Syndrome of Inappropriate Antidiuretic Hormone Secretion (SIADH). Causes of SIADH are broad and commonly include CNS disturbances, medications, ectopic production from a tumor, pulmonary disease, hypothyroidism, and infections such as HIV. Suspicion for this condition requires vigilant exploration for its cause.

Case Presentation

A 58-year-old African American gentleman with past medical history of acid reflux presented with one day of worsening nausea and leg cramping. Labs on admission were significant for serum sodium of 119, serum osmolality of 250, urine osmolality of 726, and urine sodium of 168. TSH and cortisol were within normal limits. He appeared euvolemic with an unremarkable physical exam. Given strong suspicion for SIADH, the patient underwent computed tomography of the head, chest, abdomen, and pelvis with the sole abnormal finding of a 2.5 cm pituitary macroadenoma encroaching on the optic chiasm. He was medically managed with a combination of furosemide, fluid restriction, and Tolvaptan until a trans-sphenoidal resection of the sellar mass was performed. After the surgery, the patient's sodium normalized without further intervention or treatment.

Discussion

The patient in this case presented with symptomatic hypotonic hyponatremia in the setting of a gonadotropin releasing pituitary macroadenoma. The patient experienced symptomatic improvement upon the normalization of his serum sodium, which was first achieved with medical management and then definitively corrected with tumor resection. The uniqueness of this case demonstrates the importance of considering uncommon causes of SIADH such as intracranial tumors; it is often more common to see SIADH in patients with CNS disturbances such as stroke, hemorrhage, infection or trauma. Thus, in the absence of these clinical findings, one should consider further imaging to elucidate the underlying etiology.

ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Norhan Elsayed, DO

A Sugarcoated Adverse Effect: A Unique Case of Atezolizumab-Induced Type 1 Diabetes Mellitus

Title

A Sugarcoated Adverse Effect: A Unique Case of Atezolizumab-Induced Type 1 Diabetes Mellitus

Authors

Norhan Elsayed DO, Dixita Patel DO, Scott Goodwin, MD St. James Franciscan Health, Olympia Fields, IL

Introduction

Immune checkpoint inhibitors (ICI) target the body's immune system to fight cancer cells. Atezolizumab is an immune checkpoint inhibitor that binds to programmed death ligand-1 (PD-L1) and downregulates anti-tumor activity. Atezolizumab is known to cause endocrinopathies, most commonly, thyroid dysfunction and hypophysitis. Type 1 diabetes mellitus is a rare but life-threatening endocrinopathy reported in approximately 0.2-0.9 percent of cases. These patients typically present with diabetic ketoacidosis or severe hyperglycemia.

Case Presentation

Our patient is a 77-year-old Caucasian female with stage IV lung cancer on Atezolizumab presented with diabetic ketoacidosis (DKA) at 130 weeks after Atezolizumab initiation. She was recently started on a steroid taper five days before presentation for a cough that she developed due to Atezolizumab. Initial labs were remarkable for blood glucose of 740, an anion gap of 21.4, bicarb of 15.6, and ketoacidosis. A1C was 7.7 % and C-peptide level was low at 0.55 ng/mL. Steroids were discontinued and she was treated for DKA. She was started on insulin therapy after discharge with stable blood glucose levels and regularly follows with an endocrinologist.

Discussion

In conclusion, clinicians need to be aware of ICI's side effects and be able to manage them appropriately. Insulin therapy can prevent recurrent episodes of DKA and the complications

associated with it. Patients should get frequent blood glucose and C-peptide level monitoring while being on immunotherapy for cancer treatment.

ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Thiago Gagliano

An unusual cause of failure of suppression of testosterone during androgen deprivation therapy for prostate cancer

Title

An unusual cause of failure of suppression of testosterone during androgen deprivation therapy for prostate cancer

Authors

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Introduction

Prostate cancer (PCa) is the most common cancer in men. Because the prostate is an androgen-dependent organ, suppression of endogenous testosterone into the castrate range (

Case Presentation

We present a case of a 57-year-old man with PCa in whom GnRH analogues did not suppress testosterone into the castrate range. He did not have any relevant past medical history. He was a former smoker of 30 pack years. His medications included aspirin, simvastatin and oxybutynin. His physical exam was unremarkable. Based on his PSA levels (3.7 ng/mL) and strong family history of PCa, he underwent prostate biopsy that confirmed PCa. He underwent radical prostatectomy that showed adenocarcinoma with capsular invasion (stage T3a, N0, M0). He was scheduled for ADT and radiation therapy. Before his first leuprolide injection, his baseline testosterone was 389 ng/dL. One month after the injection, it was 455 ng/dl, while PSA was 0.1. Suspecting leuprolide failure, he was switched to degarelix (GnRH antagonist). Four, 6 and 8 weeks later, his testosterone was 495, 429 and 234, respectively. His LH and FSH were undetectable and his PSA was 0.02. Testicular volume remained largely unchanged on exam (left testis was 25 mL; right was 20 mL). This raised suspicion of another factor stimulating

testicular testosterone secretion. hCG levels were checked and were elevated (12.6 IU/mL; normal 0-3). Repeat hCG a week later was 11.5. He underwent testicular ultrasound, which was normal. The patient subsequently experienced gross hematuria. A CT scan of the abdomen and pelvis showed 2 masses in the urinary bladder, the larger one measuring 2.6 cm. Cystoscopy with transurethral resection showed high-grade papillary urothelial carcinoma. Four days after surgery, his hCG was undetectable and serum testosterone had declined into the castrate range (10 ng/dL). Histopathological review of the papillary urothelial carcinoma showed scattered syncytiotrophoblast positive for hCG and inhibin. He successfully completed his planned ADT intervention.

Discussion

More than 95% of men with PCa who receive ADT achieve castrate levels of testosterone within one month (2). Therefore, failure to suppress testosterone should raise suspicion for exogenous administration of testosterone, testosterone-secreting tumors (e.g. adrenal), or hCG-secreting tumors. In this case, the lack of testicular atrophy suggested hCG-secreting tumors. hCG is structurally similar to LH and can stimulate the testosterone-secreting Leydig cells via direct stimulation of the LH receptor (3). Although germ cell tumors are usually the source of ectopic hCG, bladder carcinomas have been reported to express hCG (4,5). Clinicians must suspect another source of stimulation of the testes when ADT fails to suppress serum testosterone levels.

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ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Omar Jamil

Implicit Bias: dissecting through prejudice to maintain a broad differential

Title

Implicit Bias: dissecting through prejudice to maintain a broad differential

Authors

Omar Jamil M.D., Valerie Press M.D.

Introduction

Even in the absence of explicit prejudice, implicit bias, attitudes or stereotypes that affect our understanding, actions, and decisions in an unconscious manner, is a ubiquitous problem that insidiously affects healthcare outcomes and contributes to healthcare disparity.

Case Presentation

A 44 year African American old woman presented to the emergency department by emergency medical services after being found in her courtyard without clothes on, complaining that she could not feel her legs. A review of the chart shows prior admissions for hypertensive emergency secondary to poor medication adherence, an extensive history of drug abuse, and previous hospital admissions that ended with the patient leaving against medical advice. The patient's vitals on admission were: heart rate 96, respiratory rate 20, and blood pressure 200/140. Her physical exam was limited by movement, but demonstrated decreased strength in the lower extremities and intermittently poor sensation. Labs were notable for an acute kidney injury, stable troponins, and urine toxicology screen positive for cocaine and opiates. A chest x-ray demonstrated a widened mediastinum, though this was not read by radiology and unnoticed by the admitting providers. The patient continued to be agitated and her blood pressure poorly controlled and was admitted to the Cardiac ICU for hypertensive emergency believed to be secondary to poor medication adherence and exacerbated by recent drug use. After reaching the ICU the patient was intubated for hypoxia. An echocardiogram to assess her cardiac function found a Type A aortic dissection confirmed by CT Angiogram. The patient was immediately taken to the OR for emergency surgery. Approximately 42 hours had elapsed since the patient's initial presentation. Surgery was successful, the patient regained lower extremity pulses post-operatively and they were discharged to sub-acute rehab.

Discussion

While the patient successfully underwent aortic graft repair, the time to OR was delayed by a delay in the diagnosis. Many factors may have contributed to this delay, but the providers anchoring on a diagnosis of drug abuse or poor medication adherence due to implicit bias likely was a factor. Black patients are often victims of stereotypes that cast them as uncooperative and unreliable. Patients with a history of drug abuse may have their other health problems overlooked. Woman may be perceived as exaggerating their symptoms. Although this patient presented with objective data that included severely elevated blood pressure, acute kidney injury, and a widened mediastinum on chest x-ray, her presentation as a black woman with a history of drug abuse and prior admissions for poor medication adherence may have drowned out the objective data in the minds of providers. Providers should make an effort to be cognizant of their implicit bias when evaluating vulnerable populations and maintain a broad differential to achieve optimal outcomes.

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ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Na Hyun Kim, MBBS

Concurrent acute myeloid leukemia and untreated chronic lymphocytic leukemia: a case report and review

Title

Concurrent acute myeloid leukemia and untreated chronic lymphocytic leukemia: a case report and review

Authors

Na Hyun Kim, MD, Keun Young Kim, MD, Apurwa Prasad, MD, Syed Osama Ahmad, MD, Mahshid Mir, MD, Dhiran Verghese, MD, Kelley Kozma, DO

Introduction

Chronic lymphocytic leukemia (CLL) is the most common hematological malignancy in western countries, and is associated with increased risk of both solid and hematological malignancies (1). The occurrence of acute myeloid leukemia (AML) in patients with CLL is rare, and it is mostly associated with patients who had received cytotoxic chemotherapy regimen for treatment of CLL.

Case Presentation

A 75-year-old male with a past medical history of bipolar disorder, diabetes mellitus type 2, hyperlipidemia, hypertension initially presented with progressive lymphocytosis. He was diagnosed with chronic lymphocytic leukemia after a monoclonal lymphocyte population was confirmed on flow cytometry. He demonstrated favorable cytogenetics (13q deletion) and mutated IgVH status. Given the absence of B symptoms and significant cytopenia, the patient was monitored regularly at our clinic. One year following his diagnosis, the patient developed progressive pancytopenia (Hemoglobin 9.4 g/dL, Absolute Neutrophil Count 400/µL, platelet 23000/µL). Bone marrow was repeated, with flow cytometry demonstrating two distinct abnormal cell populations. Firstly, a CD19+, dim CD20+, CD5+, CD10-, CD23+, CD200+, FMC-7-, CD79b-, CD38- and ZAP70- lambda-restricted B-cell population consistent with the patient's known CLL was detected in approximately 5% of the bone marrow. Secondly, we noted a population of immature myelomonocytic precursors, promyelocytes, and immature monocytes with 30% CD34+ blasts. These findings are consistent with acute myeloid leukemia, not

otherwise specified. Chromosomal analysis revealed a normal male karyotype. The patient was started on decitabine and venetoclax with no significant complications to date.

Discussion

The concurrent diagnosis of CLL and AML in the same patient remains a rare and poorly understood phenomenon. Literature search for the coexistence of AML and CLL yielded 46 publications between 1973 to present, reporting 48 cases. Of these cases, 13 patients had received chemotherapy prior to developing AML. Of the remaining 35 patients with untreated CLL, 23 patients had a concurrent diagnosis of AML and CLL, and 12 patients were diagnosed with AML whilst under active surveillance for CLL. Unlike blastic transformation into acute lymphocytic leukemia (ALL), the etiology of a concurrent myeloid malignancy in CLL patients is debated. In our search, Kajtár and colleagues suggest that the AML and CLL are clonally related and expanded from a common progenitor (2), whereas Gottardi et al propose that the two leukemic cell populations are unrelated (3). AML cases affiliated with CLL have been associated with a poor prognosis (4). However, karyotyping and cytogenetic information is only provided in some of the reports and therefore it is unclear whether the existence of CLL carry an independent risk to unfavorable cytogenetics. Secondary hematological neoplasms have become an emerging importance in the survivorship of CLL. As the treatment of CLL moves away from leukemogenic agents and towards targeted therapies, we must start to consider concurrent AML in patients with untreated CLL who develop new symptoms, lymphocytosis, and cytopenias.

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ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE James Love

Lemmel Syndrome: An Unusual Presentation of a Rare Condition and a Novel Treatment

Title

Lemmel Syndrome: An Unusual Presentation of a Rare Condition and a Novel Treatment

Authors

James S. Love, MD; Fred A. Zar, MD

Introduction

Lemmel syndrome is an extremely rare clinical entity characterized by the presence of a periampullary duodenal diverticulum resulting in compression and dilatation of the pancreatic and common bile ducts, classically accompanied by obstructive jaundice. Gastric outlet obstruction is not a known complication of this syndrome and there are no standardized approaches to its treatment. We present the first documented case of Lemmel syndrome presenting as gastric outlet obstruction, and the first case of Lemmel syndrome successfully treated with endoscopic diverticular tap-water lavage.

Case Presentation

An 82-year-old woman was brought to our hospital for a 2-day history of progressively-worsening diffuse abdominal pain and emesis. She had a history of advanced dementia, diabetes, and hypertension. On admission, vital signs were normal. She was anicteric and oriented only to person. Hemoglobin 16.6, potassium 3.4, lactate 6.3, and urine ketones were 20. CBC, BMP, and liver panel were otherwise normal. A computed tomography scan of the abdomen and pelvis with contrast revealed what appeared to be a large 2.7 x 3.7 x 5.2 cm complex pancreatic head mass containing air and debris, contiguous with the duodenum at the junction of the second and third segments with moderate dilatation of the common bile duct (1.0 cm) and main pancreatic duct (0.6 cm), initially concerning for a neoplastic pancreatic lesion. CT also revealed a gastric outlet obstruction manifested as markedly distended stomach with distal gastric and proximal duodenal wall thickening and hyperenhancement. She was admitted, made NPO, given IV fluids, and underwent an esophagogastroduodenoscopy (EGD) with endoscopic ultrasonography (EUS) the following morning. There were no signs of significant endosonographic abnormalities within the pancreas; however, a large non-bleeding

periampullary diverticulum in the second portion of the duodenum containing a large amount of food debris was visualized and was found to be obstructing the common bile and main pancreatic ducts, causing ductal dilatation. Tap-water lavage of the diverticulum was performed endoscopically, with subsequent removal of food debris via retrieval catheter. In the following days, her diet was successfully escalated, she had complete resolution of her symptoms, and was discharged home the following afternoon. Repeat CT-abdomen 11 days post-procedure demonstrated resolution of gastric outlet obstruction with reduced biliary ductal dilation and diverticular size. At her 1-month follow-up appointment, she remained asymptomatic and was tolerating high-fiber diet without clinical signs of gastric outlet or biliary obstruction.

Discussion

Although rare, this case illustrates the importance of physicians recognizing Lemmel syndrome as a cause of gastric outlet obstruction, and demonstrates a cost-effective and novel treatment approach with rapid reversal of symptoms. CT abdomen/pelvis is the most appropriate initial diagnostic step; however, this should be followed by a more specific imaging modality such as MRCP, barium studies, or endoscopy to rule out pancreatic neoplasm. In patients with minimal or no symptoms, conservative management with high-fiber diet is the mainstay of therapy. Patients with obstructive complications warrant more aggressive therapy. Endoscopic diverticular lavage as a novel treatment of Lemmel syndrome provides sufficient symptomatic relief for patients who do not require, or could not otherwise tolerate, surgical intervention.

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ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Calvin Luu, DO

Hypothyroidism-induced Peroneal Neuropathy: Don't Let the Patient Foot the Bill

Title

Hypothyroidism-induced Peroneal Neuropathy: Don't Let the Patient Foot the Bill

Authors

Calvin Luu, D.O. Christopher Bruti, M.D.

Introduction

Hypothyroidism is an extremely common disease in the population with many systemic manifestations. Although neurological manifestations of hypothyroidism are common, it is often overlooked that peripheral neuropathies due to hypothyroidism can be a presenting symptom in some patients.

Case Presentation

A 52-year-old woman with multiple ER visits presented to the ER for back pain and right lower extremity weakness, numbness, and pain. She denied any injuries, saddle anesthesia, bowel or bladder incontinence. The patient stated the weakness and numbness were progressively worsening and she had difficulty ambulating due to her right foot drop. She also noted intermittent radicular pain radiating from her back and buttocks down her leg. At her first ED visit, she was given Flexeril and discharged with PCP follow-up. On her second ED visit one day later, lumbar spine MRI was obtained, Medrol dose pack given, and she was told to follow-up with her PCP. On her third ED visit one week later, thoracic spine and repeat lumbosacral MRIs were ordered and she was admitted for observation. Neurosurgery was consulted for her foot drop and radicular symptoms. Physical exam was significant for a non-antalgic gait with right foot drop. There was decreased sensation to light touch, vibration, and temperature along the dorsum of her right foot and lateral aspect of right leg below the knee. She also had 1/5 strength with ankle dorsiflexion, first toe extension, and right foot eversion. Rest of exam was non-contributory. Initial MRI lumbar spine without contrast during her second ED visit demonstrated a small left paracentral disc protrusion at L4-5 causing left lateral recess stenosis and effacement of traversing left L5 nerve root. It also revealed mild right and moderate to severe left foraminal stenosis. Repeat MRI lumbosacral spine during her admission was without

any significant interval change. Thoracic spine MRI was unremarkable. MRI brain and C-spine were ordered, however, additional history by the primary team revealed the patient had self-discontinued levothyroxine and had not been on medication for over a year. TSH and T4 were added on to her labs, which were remarkable for TSH 172.4 and total T4 < 3. MRI brain and C-spine were promptly canceled. She was restarted on levothyroxine inpatient with plans to titrate up every 4 weeks. Neurology referral for EMG resulted in evidence of severe right peroneal neuropathy at the knee with no evidence of a lumbosacral radiculopathy.

Discussion

This case illustrates the potential for cognitive bias and the importance of obtaining a full history. Despite a known history of hypothyroidism and no recent TSH value on record, this patient was seen three times without having a TSH checked. The physical exam was not consistent with a lumbar radiculopathy and was more consistent with a peripheral neuropathy. However, because of cognitive biases including recency and anchoring bias, three MRIs were ordered with the potential for two additional MRIs if they had not been canceled. Differentiating peripheral from central neuropathies and recognizing that peripheral neuropathies are relatively common in hypothyroidism will help to provide high value care.

ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE
Mohamad Minhem, MD

Acute Diarrhea: An Unusual Presentation of Tuberculosis

Title

Acute Diarrhea: An Unusual Presentation of Tuberculosis

Authors

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Introduction

Tuberculosis (TB) is an epidemic responsible for an estimated ten million incident cases of illness and one million deaths annually (1). The extrapulmonary manifestations of primary TB are concerning complications of this infection. Secondary gastrointestinal involvement occurs in approximately 1-3% of patients with prior TB infection (2). We describe a case of simultaneous pulmonary and intestinal tuberculosis in a patient with a chief complaint of acute diarrhea.

Case Presentation

A 56-year-old immigrant gentleman with no significant past medical history presented to the emergency department for chief complaint of watery diarrhea for the past ten days with 8 episodes in the last day. He had no abdominal pain, hematochezia, melena, nausea, or vomiting. A review of systems was significant for weight loss, cough, and hemoptysis within the last three months but no shortness of breath. Vital signs were within normal limits. On exam, patient was severely cachectic with muscle atrophy (BMI 14.3 kg/m2). Lungs were clear on auscultation, and abdomen was soft and non-tender. On initial presentation, labs were significant for hypoproliferative pancytopenia with white blood count of 2.9x10^9/L, hemoglobin of 9.2 g/dL, and platelet count of 47x10^9/L. Initial chest x-ray showed bilateral upper lobe opacities. Abdominal CT scan showed a thickened terminal ileum with mucosal hyper-enhancement and adjacent inflammatory changes within the cecum. At this point, patient had gastrointestinal symptoms and CT findings, which could have related to infectious, inflammatory, or malignant etiologies. However, the presence of respiratory symptoms in addition to imaging findings of upper lobes opacities mainly raised the concern for TB. Three

sputum AFBs taken on separate days were positive for acid-fast bacteria. HIV antigen and antibody were negative. Patient underwent upper endoscopy and colonoscopy showing mild gastritis, terminal ileum ulcer, and erythema of the right colon. Pathology of biopsied terminal ileum showed small bowel ulceration with granulomatous inflammation and caseating necrosis and mycobacterial bacilli on Ziehl-Neelsen stain. Patient was treated for TB with rifampicin, isoniazid, pyrazinamide, and ethambutol. Unfortunately, the patient's hospital course was complicated with septic shock and death.

Discussion

Our main diagnosis is pulmonary TB with gastrointestinal involvement, as confirmed by final sputum cultures and colon pathology specimens. Gastrointestinal TB is a complicated and potentially fatal manifestation of TB. The multi-system involvement and progressive nature of the disease make it more difficult to manage. Although gastrointestinal TB is uncommon in the United States, certain populations are still at risk, such as immigrants, immunocompromised patients, homeless, prisoners, and residents of long-term care facilities (3). Patients usually present with vague gastrointestinal symptoms such as nausea, vomiting, abdominal pain, change in bowel habits, and weight loss (4). There are several ways in which TB can spread to the gastrointestinal tract (4). One common pathway is through swallowing of infected sputum or ingestion of food particles. Other routes of dissemination are hematogenous or lymphatic spread. In most cases, the small bowel is involved, with the ileocecal region being the most frequently affected site (3,4). The diagnosis can be challenging as it has similar characteristics to other infectious, inflammatory, and malignant conditions.

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ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Aamir Mohiuddin

Devic's Disease: A Clinical Vignette

Title

Devic's Disease: A Clinical Vignette

Authors

Aamir Mohiuddin DO, Shil Punatar DO

Introduction

Devic's Disease (or neuromyelitis optica) (NMO) is a condition characterized by severe, immune mediated demyelination localized to the optic nerves and spinal cord that manifests as vision loss, paresthesias, and weakness. With similarities in radiological and clinical findings, multiple sclerosis has served as a common mimicker for NMO. Furthermore, in the setting of alternative comorbidities, these symptoms may be overshadowed by other common etiologies amidst the aforementioned constellation of symptoms. Here we present a new diagnosis of NMO in the setting of family history and comorbid conditions veiling the true diagnosis.

Case Presentation

A 35-year-old female with a past medical history of uncontrolled diabetes mellitus type II presented to our facility with complaints of intermittent worsening left upper extremity paresthesias for 1 week. Associated symptoms were blurred vision, left shoulder hyperalgesia, dizziness, and bilateral lower extremity weakness. MRI of the brain was obtained, demonstrating no acute intracranial findings. MRI of the Cervical Spine was obtained which demonstrated: long segment signal abnormality within the spinal cord, with focal incomplete ring enhancement, additional patchy signal abnormality within the medulla and medullary pontine junction; In addition to this, the classic "Owl-Eye," was also present. These MRI findings combined with current symptomatology allow this patient to meet criteria for Devic's Disease despite the absence of a positive aquaporin-4-IgG. Adjunctive to the radiological diagnosis, aquaporin-4-IgG, lumbar puncture, CSF analysis were also ordered, as labs sent to an alternate facility for processing. Our patient was immediately initiated on Solumedrol 500 mg q12 hours with reassuring results. The patient reported improvement in both the blurred vision and left sided paresthesias within 1 day, but continued to require additional Gabapentin for adequate pain management. A Visual Evoked Potential Test was also performed demonstrating evidence

for retro-bulbar dysfunction of the left eye. During hospitalization, the patient received 6 doses of Solumedrol 500 mg with almost complete resolution of symptoms. Other competing differentials were also of attention; patient noted to have Hgb A1c of 11.9 which may have contributed to this patient's chief complaint of paresthesias. In addition to this, the patient was also noted to have serum B12 levels that were in the low-normal range, which may have also contributed to this patient's weakness and paresthesias. Furthermore, consideration was given to the patient's existing family history of multiple sclerosis in a maternal aunt. With this marked improvement, the patient was discharged from our facility in a hemodynamically stable state, with a proven diagnosis, and with plans for neurology follow-up.

Discussion

Here, we demonstrate the insidious nature of Devic's Disease. The symptoms are relatively nonspecific towards this disease and can be easily misplaced under other more common etiologies of paresthesias, weakness, or blurred vision. Despite its rarity, identification and early initiation of immunomodulatory medications is key in preventing progression to complete vision loss. With our case, we hope to add to the body of literature the common confounding diagnoses, radiological findings and treatment, and the notion to add NMO to the differential diagnosis with the presented chief complaint.

ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Michael Salim, MD

Adrenal Insufficiency masquerading as Primary Hypothyroidism Following Immune Checkpoint Inhibitors Treatment

Title

Adrenal Insufficiency masquerading as Primary Hypothyroidism Following Immune Checkpoint Inhibitors Treatment

Authors

Michael Salim[1], Wafa Dawahir[2], Andriy Havrylyan[1]

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Introduction

Immune checkpoint inhibitors (ICIs) are novel immunotherapy agents that have been used to treat multiple advanced cancer. Even though they confer potential clinical advantages by regulating immune reactions, they have been linked with serious immune-mediated adverse events. These adverse events can develop in any organ system and are challenging to diagnose and treat. Reported immune-related endocrine disorders are hypophysitis, thyroid disorder, adrenalitis, and type 1 diabetes mellitus. Here we present a case of a patient who was treated with ICIs, Nivolumab (programmed death-1 inhibitor) and Ipilimumab (cytotoxic T lymphocyte antigen-4 inhibitor), and subsequently developed two concurrent immune-related endocrine disorders.

Case Presentation

83-year-old man with advanced renal cell carcinoma presented with generalized weakness. The patient had finished four cycles of immunotherapy with Nivolumab and Ipilimumab, and Ipilimumab was discontinued afterwards. Two days after the fifth cycle of immunotherapy with Nivolumab, the patient developed worsening fatigue, nausea, and anorexia. The patient appeared mildly volume depleted with borderline hypotensive (104/63 mmHg). The rest of the physical exam was unremarkable. Initial tests showed elevated level of thyroid-stimulating hormone (TSH) (13.15 uIU/mL, ref 0.45-5.33 uIU/L), reduced level of free T4 (

Discussion

This case report highlights the common pitfall of managing immune-related endocrine disorders of ICIs. Initial symptoms from adrenal insufficiency, due to primary impairment from adrenalitis or to secondary impairment from hypophysitis, may present with a broad range of symptoms. Many of these symptoms are nonspecific and could be attributed to hypothyroidism, underlying illness, or medications. Although a rare adverse effect, it is prudent to recognize adrenal insufficiency superimposed on primary hypothyroidism. Introducing thyroxine before replacing glucocorticoid can lead to an adrenal crisis.

ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Sanjivani Sathe

Nivolumab induced Wernicke's encephalopathy

Title

Nivolumab induced Wernicke's encephalopathy

Authors

Sanjivani Sathe MD, Srijan Valasapalli MD, Isaac Abu Zaanona MD, Daniel Barnett MD Carle Foundation Hospital

Introduction

Wernicke's encephalopathy (WE) is a neuropsychiatric disorder caused by thiamine (vitamin B1) deficiency. Possible known etiologies for thiamine deficiency are chronic alcoholism, failure to thrive, malnutrition, gastrointestinal disorder, systemic malignancy and infections. The least known etiology is secondary to immune check point inhibitors. It is an extremely rare entity and there are only few published case reports and studies that describe this rare and serious complication. We, hereby present a case of Wernicke's encephalopathy in a patient treated with nivolumab.

Case Presentation

A 57-year-old female with history of renal cell carcinoma with lung and brain metastasis on nivolumab presented to the hospital with generalized weakness, loss of appetite, confusion, gait abnormalities resulting in falls and intractable nausea and vomiting for more than a week. Physical examination was remarkable for disorientation, slow speech and gait ataxia. Initial lab work up with complete blood count and complete metabolic panel was unremarkable. TSH (Thyroid stimulating hormone) has been elevated but free T4 was normal. Brain imaging with MRI showed stable brain metastasis and mildly increased T2/FLAIR signal in dorsal medial thalami, tectal plate, round 3rd ventricle, and periaqueductal area, suggestive of Wernicke's encephalopathy. Electroencephalogram was unremarkable. Wernicke’s encephalopathy was suspected based on the clinical presentation and MRI findings, diagnosis was confirmed with low thiamine levels of

Discussion

Nivolumab is one of the anti-PD-1 (programmed cell death) immune check point inhibitor that is used as an antineoplastic agent either alone or in combination with other antineoplastic agents for treatment of cancers as renal cell carcinoma. The most common adverse reactions are immune-mediated as enterocolitis, hepatitis, dermatitis, neuropathy and endocrinopathy. Neurotoxicity associated with checkpoint inhibitor immunotherapy are reported as often as 14% of patients. Headache and peripheral neuropathy are the most common reported symptoms. Wernicke's encephalopathy (WE) is one of the least known complication. The association between nivolumab and thiamine deficiency is not yet understood. Treatment involves prompt administration of thiamine and discontinuation of the offending agent. This case demonstrates the importance of recognizing WE as one of the side effects of this medication, as early diagnosis and treatment can reverse neurological insult.

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ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Artem Sharko

A rare case of Adult with Small Bowel Obstruction with consumption of Sunflower Seeds

Title

A rare case of Adult with Small Bowel Obstruction with consumption of Sunflower Seeds

Authors

Artem Sharko, MD(1); Shirly Samuel, MD(1); Jishna Shrestha, MD(1); Robin Sherchan, MD(1); Shaji Baig, MD(1) (1) Northwestern Medicine McHenry Hospital, Rosalind Franklin University of Medicine and Science, McHenry, IL.

Introduction

Seed bezoars are formed due to consumption of sunflower or pumpkin seeds with their shells, kernels or fruits with seeds. Most reported cases involved pediatric population with rectal bezoars causing fecal impaction. [1] It is rare for seed bezoars to present in adults, and to cause obstruction of the small intestine. [3] These present with constipation, obstruction, and ulcers as a result of intestinal mucosa damage. [2] We present a case of small bowel obstruction in an adult secondary to consumption of a large amount of sunflower seeds.

Case Presentation

A 72-year male with history of essential hypertension and no surgical history presented to the emergency department with severe abdominal pain. Pain was constant, sharp, periumbilical, and started several hours prior to presentation, it did not radiate and was associated with decreased appetite. He had similar but mild pain the day prior which had subsided on its own. He had not passed any flatus since onset of symptoms. He denied any fever, chills, diarrhea, nausea or vomiting. Abdominal exam revealed decreased bowel sounds, mild tenderness in the periumbilical and right lower quadrant of the abdomen. All labs were within normal limits. Computed Tomography of the abdomen was pertinent for transition zone in the terminal ileum showing small bowel obstruction secondary to possible distal ileitis. Patient was managed conservatively with intravenous fluids and kept nil per os. On further questioning, he admitted to eating a large amount of unshelled sunflower seeds the day before his presentation. In the hospital, he had two episodes of watery bowel movements after which his abdominal pain significantly improved. Colonoscopy was performed and showed nonspecific ulceration

proximal to the ileocecal valve, suggestive of trauma from ingestion of a large number of sunflower seeds. Differential also included mild early Crohn's disease. Pathology report showed florid lymphoplasmacytic, neutrophilic, and erythematous villi filled with inflammation with focal surface epithelial erosion and granulation tissue, no granulomas, and the morphological features favored pill/traumatic ulceration. Crohn’s disease was ruled out with pathology report and absence of granuloma.

Discussion

Sunflower seeds are a popular dietary item for many people. Although there are several reported cases of children with small and large intestinal obstruction by phytobezoars containing either rhubarb, raisins or unshelled sunflower seeds, such cases of complete/partial small bowel obstruction in adults due to consumption of unshelled sunflower seeds are extremely rare.[1] Our patient had partial small bowel obstruction with surgical pathology reporting traumatic ulceration which resolved with conservative management. This case demonstrates the importance of obtaining dietary history especially if suspicion for bowel obstruction is high. Furthermore, educating patients about limitation of consumption of indigestible foods is essential as a prophylactic measure against such conditions.

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ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Sharjeel Syed, MD

Mental Health and Disparities in Lung Cancer Outcomes

Title

Mental Health and Disparities in Lung Cancer Outcomes

Authors

Sharjeel Syed, M.D.

Introduction

A 59-year-old female with a history of bipolar disorder presented to our hospital with left hip pain. She provided that she was cleaning and suddenly felt her “hip break.” She refused to elaborate further. Chart review revealed she had been seen at an outside hospital and discharged with orthopedic follow up. She denied any medical history and endorsed she was compliant with her Haldol. Review of systems was noncontributory.

Case Presentation

On psychiatric exam patient remained minimally conversant and had flat affect. The rest of her exam was only positive for 4/5 strength on left hip flexion and some crackles in the right middle/lower lobes. Labs were also minimally revealing with a slight leukocytosis (12.1) and elevated alkaline phosphatase (162). A pelvic x-ray identified “permeative osteolysis…reflect[ive] of infection or malignancy involving the left hemipelvis and sacrum, with possible fracture of the acetabulum.” CT abdomen/pelvis was pursued, which showed a “large left iliac mass with associated osseous destruction compatible with neoplasm” along with several metastases in her right sacrum, liver, and right middle & left lower lung. The pelvic mass was biopsied due to ease of access and patient was discharged with scheduled follow-up. The biopsy came back positive for metastatic lung adenocarcinoma. On subsequent follow-up, patient has remained adamant about refusing chemotherapy and intervention on her lungs but is willing to undergo palliative radiation to her pelvic mass. Her family was contacted who provided that patient is homeless and not taking her bipolar medication.

Discussion

It is well documented that cancer patients with pre-existing mental health disorders (MHD) have worse all-around outcomes. Our patient exemplified many of the barriers to care that these populations face including a late and atypical presentation, late diagnosis (evident by lack of imaging done at outside hospital), and a question of an acute MHD episode preventing the reporting of symptoms as well as refusal to accept treatment. A review of literature on these disparities identified few studies such as that by Arffman et al. who showed that patients with a variety of MHD and lung cancer (regardless of type) have higher mortality even after controlling for stage at presentation and access to treatment. On the other hand, Lin et al. showed that in the U.S. Military Health System, where they hypothesized (and successfully showed) no disparities in these two factors should be present, there was still increased mortality in patients with MHD. However, in subgroup analysis for patients with mood disorders, like our patient, where disparities in these two factors did not exist, mortality differences were also not observed. This highlights that the evidence remains conflicting within and across studies, and further research is needed in order to help successfully treat cancer patients with pre-existing mental health disease.

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ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Sharjeel Syed, MD

Hemolytic Crisis of Wilson's Disease and the Role of Plasma Exchange and Hemodialysis

Title

Hemolytic Crisis of Wilson's Disease and the Role of Plasma Exchange and Hemodialysis

Authors

Sharjeel Syed, M.D.

Introduction

A 61-year-old female with a history of Wilson's disease and cervical dystonia status post fusion surgery complicated by subsequent dysphagia necessitating G-tube presented from an outside hospital for decompensated cirrhosis and evaluation for transplant evaluation. She had worsening jaundice, fatigue, and gait over several weeks before presentation. At the outside hospital she was noted to have remarkably elevated bilirubin (9.4), INR (2.9), and MELD score of 29. A right upper quadrant (RUQ) ultrasound showed evidence of cholecystitis and she was transferred to our center for acute management and transplant evaluation.

Case Presentation

Patient was noted to have significant jaundice and cachexia as well as RUQ tenderness. Her labs were significant for worsened bilirubin (33.4), low albumin (2.3), increased INR (3.1), and leukocytosis (25.8). She underwent percutaneous biliary drainage and liver biopsy (confirming liver failure secondary to Wilson's). Subsequently she continued to have a rise in her bilirubin (50) and also developed a sudden drop in her hemoglobin from 10 to 6 accompanied by hypotension and lactic acidosis requiring transfer to MICU. Workup, including imaging, was negative for a bleed but was positive for an undetectable haptoglobin and LDH of 659 supporting subsequent diagnosis of Wilsonian hemolytic crisis in the setting of increased copper (2.26). She underwent plasma exchange and continuous veno-venous hemodialysis (CVVHD) over the next few days while being worked up for liver transplant. Unfortunately, during this time, she became somnolent and lost her mental status, went into shock (likely distributive from acute liver failure), and per family discussions, was transitioned to comfort care until she passed.

Discussion

Wilson's disease is an inherited disorder in which pathways responsible for copper clearance are defective. The buildup of copper predominantly affects the liver and brain, and while these processes are often chronic and can be relatively controlled with treatment such as chelation therapy, patients can still experience acute crises like fulminant liver failure and widespread hemolysis. Sudden hemolysis of Wilson's is thought to be caused by copper buildup in red blood cells imparting oxidative damage. The prognosis for such a Wilsonian crisis is grim and nearly all patients need an emergent liver transplant; a temporizing measure intended to bridge patients to transplant or recovery is plasma exchange. Although evidence for its efficacy is limited to case reports, the 2019 American Society for Apheresis guidelines have listed fulminant Wilson's disease as a Category I indication (Padmanabhan et al. 2019). Recently, evidence has also supported the use of various modes of dialysis in fulminant Wilson's to remove toxins like copper. However, the number of case reports on this subject are quite sparse currently and even more so on the combination of CVVHD with plasma apheresis. Although unfortunately for our patient these treatments did not prevent her progression or death, some of these reports have shown therapeutic benefit both in terms of recovery as well as to transplant (Reynolds et al. 2014). Nonetheless, there exists a need for more robust trials on these modalities in patients experiencing Wilsonian crises in order to establish a standard of care.

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ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE James M Troyer

A Rare Cause of Leukopenia

Title

A Rare Cause of Leukopenia

Authors

James Troyer, Baloch, Affinati, Gentile

Introduction

Splenomegaly and leukopenia are alarm features that raise concern when both occur together. We present a patient who presented with nausea ultimately diagnosed with a rare leukemia.

Case Presentation

65-year-old male presented to the emergency department with acute onset of dizziness, dyspnea, nausea/vomiting and one-episode hemoptysis. He was seen by his primary care provider the week prior due to new nausea for 7 days. PMH included chronic back pain, hypertension, coronary artery disease and Factor V Leiden on chronic anticoagulation. PSH was significant for CABG and multiple back surgeries. SH significant former smoker but quit in 2008. FH was negative for cancer. Initial labs demonstrated a new leukopenia with WBC of 1.8 with Plt count of 97. Hemoglobin was unremarkable at 15.7 gm/dL. Chest x-ray showed a new left lower lobe infiltrate. Abdominal x-ray showed nonobstructive bowel gas pattern. Next, CT of the abdomen and pelvis showed an extensive pneumonia in left lower lobe, splenomegaly and inflammatory changes suggesting acute pancreatitis. Patient was started on piperacillin-tazobactam and levofloxacin. Due to the persistent leukopenia with splenomegaly patient underwent a bone marrow biopsy demonstrating B-cell lymphoma infiltrates extensively into the marrow spaces, accounting for approximately 80% of marrow cellularity. Immunohistochemical stains with adequate control shows the lesional cells staining positive with CD20, while negative for CD10, CD5, cyclin D1. The flow cytometric analysis shows bright expression of CD19, CD20, CD200, and co-expression of CD11c/CD22 and CD103. Patient was diagnosed with hairy cell leukemia. Patient completed treatment for his pneumonia and recovered. Repeat CT Chest was done to confirm no residual pneumonia prior to starting the Cladribine treatment. Cladribine was started about two months after initial emergency room visit. Two months later cell counts normalized with WBC count of 9.7 and platelet count of 240.

Patient was followed closely with monitoring of CBC, CMP and LDH which have remained within normal limits.

Discussion

Hairy cell leukemia is an uncommon neoplasm of mature B cells representing only 1% of lymphoid neoplasms. It commonly affects men and individuals age 50-55. Patients present with anemia, thrombocytopenia, neutropenia and hemorrhagic complications. Roughly a quarter of individuals remain asymptomatic and are diagnosed incidentally by splenomegaly or cytopenias. Some patients can have vasculitius or autoimmune manifestations. Treatment options are variable, some patients can be observed for months to years after diagnosis. Therapy is often reserved for those with symptomatic disease, while asymptomatic patients will do well without therapy. Treatment with purine analogs like Cladribine or Penostatin are the preferred initial treatments for symptomatic patients. With proper treatment, survival rates are slightly lower than general public but those that do not pursue treatment, the median survival rate is roughly 4 years.

ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Srijan Valasapalli

Ataxia: “Who has the Clue?”

Title

Ataxia: “Who has the Clue?”

Authors

Srijan Valasapalli MD, Sanjivani Sathe MD, Vamsi K Vasireddy DO, Kenneth S Aronson MD Carle Foundation Hospital Urbana IL

Introduction

The causes of ataxia are mainly categorized under pathology in the sensory system, dorsal column, and cerebellum. A physical exam is pivotal in the determination of the categorization. While there are many causes for cerebellar ataxia, paraneoplastic causes are important to be considered in the differentials. Paraneoplastic neurological syndromes (PNS) are caused by ectopic expression of “onco-neuronal antigens” and the immunologic response against nervous system antigens. PNS most often precedes the diagnosis of underlying malignancy. Detection of paraneoplastic antibodies helps diagnose an otherwise unexplained and often rapidly progressive neurological syndrome as paraneoplastic.

Case Presentation

An 81-year-old female with a past medical history of lumbar radiculitis was evaluated for a six-month history of rapidly progressive ataxia and imbalance, requiring a walker. She denied bowel/bladder incontinence, focal weakness, and fasciculations. For presumed lumbar radiculitis, physical therapy and epidural steroid injections were given, which had not helped. On exam, she had dysmetria, and gait was wide-based and unsteady. She had hypoactive reflexes; plantar reflexes were equivocal. MRI of the lumbar spine demonstrated moderate stenosis at L4-L5 but only mild bilateral foraminal narrowing at that level. Electromyography ruled out myopathy, polyneuropathy, and lower extremity denervation. Consultation with neurosurgery services concluded that she was not a surgical candidate because of the absence of apparent anatomic pathology. She evaluated persistent symptoms, including comprehensive imaging, screening for metabolic abnormalities, vitamin deficiencies, celiac disease, autoimmune workup, and paraneoplastic syndrome. The workup was negative, except for anti-Hu antibodies, which were elevated. Given that these antibodies are strongly associated with

paraneoplastic syndrome, she underwent a thorough cancer workup that included computed tomography of chest, abdomen & pelvis, showing sub-centimeter supraclavicular lymphadenopathy and subcarinal lymphadenopathy, also seen as the highest uptake on Positron Emission Tomography Computed Tomography. Endobronchial ultrasound-guided biopsy of the lymph node revealed small cell carcinoma. A diagnosis of cerebellar ataxia attributed to paraneoplastic neurological syndrome (PNS) was made. Chemotherapy with carboplatin and etoposide and radiotherapy was started to treat cancer and improve her paraneoplastic symptoms. Subsequently, the level of anti-Hu antibodies decreased in half, and her neurological symptoms improved.

Discussion

A paraneoplastic syndrome is a group of disorders triggered by an abnormal immune response to a neoplasm. Paraneoplastic syndrome associated with small cell lung cancer is subdivided under the following categories: endocrine (Cushing, SIADH, hypercalcemia), skeletal (hypertrophic osteoarthropathy), neurologic (Eaton-Lambert, peripheral neuropathy, cerebellar degeneration, encephalomyelitis), cutaneous (acanthosis nigricans, dermatomyositis) and hematologic (hypercoagulable state, DIC & marantic endocarditis). PNS is a rare disorder that frequently precedes the detection of malignancy, as in our patient. Small cell cancer associated with PNS with the presence of anti-Hu antibodies has been termed “anti-Hu syndrome.” Anti-Hu PNS is an immune disorder mediated by cell-mediated and humoral mechanisms. Apart from PNS, anti-Hu antibodies are also associated with encephalitis, sensory neuropathy, autonomic dysfunction, and opsoclonus-myoclonus. Treatment is two types: 1. Treating cancer to remove the antigen source and 2. Suppression of immune response. It is crucial to consider paraneoplastic as a potential culprit in evaluating unexplained, rapidly progressive neurological symptoms.

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ILLINOIS POSTER FINALIST - CLINICAL VIGNETTE Dhiran Verghese, MD

Brain on Fire

Title

Brain on Fire

Authors

Dhiran Verghese, Hifza Butt, Mahrukh Siddiqui, Humaed Mohammed, Na Hyun Kim, Mubashir Ayaz, Mahshid Mir

Introduction

Encephalitis is a serious inflammatory condition of the brain with several etiologies. Autoimmune encephalitis is a recently identified etiology, first described in 2005 and constitutes an amalgam of entities with overlapping clinical features secondary to antibodies directed against neuronal proteins.

Case Presentation

A 22-year-old female presented to the Emergency department (ED) with complaints of fatigue, upper respiratory symptoms, urinary frequency, poor concentration, and auditory musical hallucinations twice in a span of 5 days. She was treated for sinusitis and later a UTI. Two days later, she was brought to the ED by her friends who found her naked and confused in her dorm room. They reported auditory hallucinations of 1-week duration, followed by insomnia and bizarre behavior. She was confused, agitated and aggressive. CT head, MRI brain, CTA head and neck were within normal limits. Work up for infectious, autoimmune and nutritional etiologies were unremarkable. Lumbar puncture with CSF analysis was negative for oligoclonal bands and infectious etiologies. CSF autoimmune panel was sent out to Mayo clinic and results were pending. Her symptoms evolved to include thought blocking, negativism, mutism, drooling, agitation-alternating with catatonia, fluctuating levels of consciousness and intermittent episodes of sinus tachycardia. She was admitted to the psychiatric unit with a working diagnosis of acute psychosis vs catatonic schizophrenia and started on olanzapine, haloperidol and lorazepam. By day 15, her heart rate was consistently in the 150-160's and the patient was transferred to the medical floor. Lab studies revealed a creatinine kinase of 2,797 and raised the suspicion for neuroleptic malignant syndrome which was later ruled out. The patient was scheduled for electro convulsive therapy due to lack of improvement form the antipsychotic

medications. The same day, the results of the serum antibodies, and later the CSF antibodies to N-Methyl D-Aspartate receptors (NMDAR) were reported positive from Mayo clinic. She was started on a 4-day course of IVIG and a 7-day course of solumedrol-1g/day. CT-abdomen/pelvis did not demonstrate any intra-abdominal mass or tumor. Only a partial response was noted and she was started on rituximab-375mg/m2 weekly. She was noted to have seizure like activities and was transferred to the ICU. Continuous EEG monitoring demonstrated no epileptiform activity. She received 6 sessions of plasma-exchange treatment. She began to respond by the third plasma-exchange session and was able to answer questions and follow commands. She significantly improved over the course of the hospitalization, however her functional status was far from her very high baseline as an economic student. She continues to follow up with neurology and is demonstrating significant neurological and functional improvement at each monthly visit.

Discussion

The estimated incidence of NMDA encephalitis is 1.5 per million. The diagnosis is often missed due to predominant psychiatric symptoms in the initial weeks. Patients soon begin to have dyskinesia, speech deficits and catatonia and are intolerant to antipsychotic medications. Treatment focuses on immunotherapy and removal of the immunological trigger. Clinicians need to have a higher degree of suspicion and initiate treatment early. Although clinical improvement is slow, 81% show a good response to treatment.

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INDIA - POSTER FINALIST - CLINICAL VIGNETTE Farha Ahmed Payyanil Karlath, MBBS

Hyperpigmentation-An uncommon diagnosis of a common disorder

Title

Hyperpigmentation-An uncommon diagnosis of a common disorder

Authors

Farha Ahmed Payyanil Karlath,Junior resident,Department of Internal Medicine,Government Medical College,Kannur,Kerala

Introduction

Autoimmune Polyendocrine Syndrome type 2 , also called Schmidt's syndrome ,is a rare autoimmune endocrine disease in which the patient suffers from primary adrenal insufficiency and primary hypothyroidism,along with type 1 diabetes melitus and hypogonadism. It is more common in females and has a complex inheritance pattern when familial (50%). The infrequency with which it is encountered makes it a formidable diagnostic challenge.Moreover,prompt diagnosis and treatment can prevent serious complications.

Case Presentation

A 37 year-old male with a known history of hypothyroidism and on regular medications presented with excessive fatigue and weight loss for the past one year.He had consulted multiple dermatologic outpatient clinics for excessive pigmentation of extremities and was treated with various emollients. A physical examination revealed postural hypotension, generalised hyperpigmentation mainly over face,palm,soles and oral mucosa and,small and flabby right testes. Laboratory investigations showed elevated TSH,elevated ACTH,decreased testosterone, decreased cortisol,hyponatremia,hyperkalemia.suspected.Features of hypothyroidism, hypoadrenalism with addisonian type hyperpigmentation and hypogonadism suggesting multiple endocrine involvement pointed to a diagnosis of Schmidt's syndrome.As major causes for adrenal involvement in India are TB and infection, workup for the same were done and were negative.He was started on appropriate hormone replacement therapy. The patient improved and is on a regular follow up.

Discussion

I report a unique case as my patient is a young male, who rarely present with Schmidt’s syndrome. Moreover,Autoimmune Polyglandular Syndrome type II is often inherited in an autosomal dominant pattern, while in our patient,there was no family history of the same.Since adrenal insufficiency can be masked by primary hypothyroidism by prolonging the half life of cortisol,replacement therapy with thyroid hormone can precipitate adrenal crisis in an undiagnosed individual.Many patients like ours are not being evaluated for an underlying adrenal pathology even in the presence of clinical clues like hyperpigmentation, before thyroid replacement therapy and could be lethal,illustrating the need for screening for adrenal insufficiency in all patients with hypothyroidism and hyperpigmentation. To conclude, a high index of suspicion is needed for an early diagnosis and appropriate hormonal replacement therapy of Schmidt's syndrome, which is a rare disease, but is a life threatening condition if not diagnosed and treated early.

INDIANA POSTER FINALIST - CLINICAL VIGNETTE Nicholas Beaudrie

Lemierre's Syndrome Disguised as COVID

Title

Lemierre's Syndrome Disguised as COVID

Authors

Nicholas Beaudrie, Brandon Pearce, Emily Cochard

Introduction

In December of 2019, the Novel Coronavirus (COVID-19) was discovered; by July 2020, it had infected sixteen million people and led to 600,000 deaths worldwide. Given the gravity of this disease, most patients who presented with dyspnea, cough, or fever were suspected COVID. Additionally, the tests for Coronavirus were not sensitive; thus patients who tested negative for COVID, were still under suspicion until subsequent tests resulted negative. Unfortunately, this led to other diagnoses being overlooked or delayed. We present a case of Lemierre Syndrome that masqueraded as COVID during the peak of the pandemic.

Case Presentation

A 19 year old male without previous medical history presented to the emergency department with 1 week history of sore throat, sudden onset fever and acute encephalopathy. He was brought in by his parents, health care workers with known COVID exposure. His mentation improved but the next day he developed severe dyspnea with new bilateral infiltrates on chest x-ray. He decompensated quickly requiring intubation and transferred to our facility for ECMO evaluation. Initial labs showed CRP > 27, D-dimer > 35, Procalcitonin 41 and blood cultures positive for non-speciated gram negative rods. CT of his neck, chest, abdomen and pelvis with contrast were performed showing 1.3 cm right palatine tonsil loculated fluid collection, right greater than left pulmonary infiltrates and gallbladder distention. COVID testing was sent but resulted negative, twice. Additional tests including right upper quadrant ultrasound, HIV, rapid streptococcus, legionella and streptococcus pneumonia were negative. Given his clinical picture and unclear etiology he was treated with acute respiratory distress syndrome protocol and broad spectrum antibiotics. On day 3, blood cultures grew Fusobacterium Necrophorum, which is classically associated with Lemierre’s syndrome. Neck ultrasound was performed demonstrating a thrombus in the mid-right internal jugular vein and facial vein. Repeat CT

showed bilateral nodular opacities throughout the lungs measuring as large as 2 cm that was felt to represent septic emboli. He was extubated after 9 days on mechanical ventilation and was discharged with a 4 week course of daily ceftriaxone.

Discussion

Lemierre's syndrome can be a life-threatening sequelae of a Fusobacterium necrophorum infection. The syndrome is the result of a Fusobacterium necrophorum head and neck infection, leading to thrombophlebitis of the jugular vein. As demonstrated above, it can, and frequently does, present with pharyngitis and can mimic other disease processes such as infectious mononucleosis or strep pharyngitis. Early diagnosis is imperative as a delayed diagnosis can lead to mortality rates as high at 5%. Throughout the COVID-19 worldwide pandemic, it was easy to assume a patient with fever, cough, or dyspnea was infected with COVID-19. However, as demonstrated by the case above, as providers, our differential diagnosis must remain broad; otherwise, we risk missing life-threatening yet treatable pathologies.

INDIANA POSTER FINALIST - CLINICAL VIGNETTE Shalini Koppisetty, MD

When rectal pain spirochetes out of control: a case of Syphilis proctitis

Title

When rectal pain spirochetes out of control: a case of Syphilis proctitis

Authors

Shalini Koppisetty, MD; Jennifer Mundell, MD; Gehring Leah, DO.

Introduction

Syphilis is well described in a wide variety of organs, but syphilis proctitis is a rare manifestation and may present as a mimicker for inflammatory bowel disease, bacterial proctitis, chancroid, viral anorectal ulcers, lymphomas, lymphogranuloma venereum, and neoplasm. It lacks specific pathogenic signs which can lead to a delay in diagnosis and treatment or inappropriate treatment. We present a case of a 27-year-old gentleman who presented with anorectal pain and hematochezia concerning for new IBD but was subsequently diagnosed with syphilitic proctitis.

Case Presentation

27-year-old immunocompetent gentleman presented with one-week history of anorectal pain, tenesmus, and intermittent episodes of rectal bleeding. He denied a history of rashes, oral or genital ulcers, or participation in high-risk sexual behaviors. Interestingly, laboratory analysis revealed normal complete blood count, serum chemistry, and liver function testing. The computed tomography (CT) of the abdomen and pelvis with contrast though demonstrated mesenteric stranding and several mesenteric lymph nodes measuring surrounding the rectum. Given the overall normal lab work along with the pelvic lymphadenopathy and rectal inflammation seen on CT, sexually transmitted infections, including syphilis, were evaluated. The RPR quantitative test was 1:128, VDRL quantitative test was 1:64 and the FTA-ABS IgM and IgG test was positive. Additional viral workup including HIV, HSV, CMV, and Hepatitis B and C were negative. The colonoscopy demonstrated localized moderate inflammation characterized by erythema, friability and granularity involving the rectum secondary to proctitis. The rest of the bowel was normal. Histological evaluation of rectal biopsy demonstrated acutely inflamed eroded colonic mucosa. Warthin-Starry (WS) showed bacteria but no definite spirochetes.

Infectious disease was consulted, and the patient was treated with intramuscular penicillin G. Post-treatment, RPR quantitative titer after two months was 1: 8.

Discussion

Chlamydia, gonorrhea, herpes simplex virus, and syphilis are among the most common causes of sexually transmitted proctitis. A retrospective review of clinical proctitis affecting men who have sex with men revealed that syphilis was found in 2% of cases. The most common symptoms of syphilitic proctitis are hematochezia, tenesmus, and mucous discharge. Systemic symptoms such as fever and lymphadenopathy may also occur. Endoscopic findings are not specific and rectal mucosal biopsies often show nonspecific chronic inflammation. Silver stains and immuno-histochemical stains have been uses to highlight spirochetes. A negative test on biopsy though does not rule out syphilis and most of the authors have postulated serological testing sufficient for diagnosis. The cornerstone of treatment is still administration of intramuscular benzathine penicillin.

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INDIANA POSTER FINALIST - CLINICAL VIGNETTE Shalini Koppisetty, MD

Pregnancy-associated spontaneous coronary artery dissection presenting after in-vitro fertilization treatment

Title

Pregnancy-associated spontaneous coronary artery dissection presenting after in-vitro fertilization treatment

Authors

Shalini Koppisetty, MD; Sowmya Bekkam, MBBS; Brian Cothern, MD; Ashwin Ravichandran, MD, MPH, FACC.

Introduction

Spontaneous coronary artery dissection (SCAD) is an uncommon and often under-recognized cause of acute coronary syndrome (ACS), caused by intimal disruption leading to acute coronary syndrome. This entity is more common in younger patients and women, often without conventional risk factors for coronary artery disease. Potential predisposing factors include fibromuscular dysplasia, postpartum status, multiparity (=4 births), connective tissue disorders, systemic inflammatory conditions, and hormonal therapy. Although pregnancy-associated spontaneous coronary artery dissection (PSCAD) encompasses a relatively small proportion of SCAD cases (

Case Presentation

A 35-year-old female 8 months postpartum after delivery of twins assisted with IVF treatment presented with out of hospital cardiac arrest. She awoke her husband complaining of chest pain prior to losing consciousness, and upon EMS arrival, was found to be in VF and underwent successful cardioversion. She was taken for immediate cardiac catheterization, which demonstrated a 75% left anterior descending artery (LAD) obstructive lesion consistent with SCAD, with echocardiogram showing an initial EF of 30% with LAD hypokinesis. The troponin peaked at only 0.1 and medical therapy was attempted and her EF improved to 50%, but the patient had another episode of VF despite IV amiodarone loading and a continuous drip. Given recurrent VF, she was taken back to the cath lab and underwent successful PCI without further propagation of the dissection. She had no further arrhythmias and continues to remain asymptomatic 3 months after hospital discharge.

Discussion

PSCAD events are most common near the time of delivery, though have been reported as early as 5 weeks of gestation and up to a year or more postpartum. Hormonal and autoimmune changes along with hemodynamic stress have been implicated in the pathogenesis of PSCAD. The clinical presentation varies from ACS, congestive heart failure, cardiogenic shock, ventricular arrhythmia, and cardiac arrest. Treatment is challenging as the rate of successful PCI in PSCAD is limited as coronary manipulations can worsen or extend dissections. This often leads to urgent surgery, extensive PCI, or even death. These patients are also young and generally otherwise healthy, making CABG and sternotomy a less appealing option. We are pleased to report that we were able to successfully treat life-threatening PSCAD with PCI and avoid more aggressive interventions.

INDIANA POSTER FINALIST - CLINICAL VIGNETTE Adrian Lugo

Hunter Accidentally Stumbles Upon Leprosy in West Florida

Title

Hunter Accidentally Stumbles Upon Leprosy in West Florida

Authors

Adrian Lugo, M.D., Taylor Studsrud, M.D., Yulie Lugo, B.S., Margaret Beliveau-Ficalora, M.D., James DeMaio, M.D.

Introduction

Leprosy is caused by acid-fast bacilli of the M. leprae complex, which includes M. leprae and M. lepromatosis. Transmission in the U.S. is rare, but has been documented in hunters who handle wild nine-banded armadillo. The origins of M. leprae infection among armadillos, the geographic range of the infected animals, and the potential risks infected armadillos present to people have been topics of concern. The infection originated amongst armadillos decades before they were ever used in leprosy research, and numerous surveys have confirmed that armadillos in the southern United States are a large natural reservoir for M. leprae; its prevalence exceeds 20% in some locales. In this case report, we highlight a rare case of leprosy and the importance of keeping leprosy in the differential diagnosis of a pruritic, urticarial rash.

Case Presentation

A 54-year-old male with no significant past medical history or foreign travel history presented to the clinic with a diffuse, pruritic rash. Patient is a wild boar hunter who handled fresh armadillo carcasses without the use of gloves. Patient was born in Pennsylvania and moved to Florida at 6 months of age, no history of overseas travel or recent travel outside of Florida. PCR was positive for M. leprae and negative for M. lepromatosis. A skin biopsy was positive for borderline lepromatous leprosy with an early type 2 erythema nodosum leprosum reaction. This case report demonstrates how a rare zoonotic infection was inadvertently acquired by a human host in West Florida by handling nine-banded armadillos without proper equipment.

Discussion

Most of the leprosy cases reported in the U.S. came primarily from Southern states, but 93% of the cases reported in the Americas came from Brazil. In the U.S., approximately 200 cases of leprosy are reported each year, and about 175 of those cases are diagnosed for the first time. Florida contributes a small number of these, but recent data is showing an increasing incidence. Studies from other southern U.S. states demonstrate infection with the same strain of Mycobacterium leprae, thus confirming the nine-banded armadillo as the main risk factor. Because of this bacteria's rarity in the region and the nonspecific symptoms that manifest in a new host, this case report highlights the importance of including leprosy in the differential diagnosis in patients with a high exposure to wildlife in Florida.

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INDIANA POSTER FINALIST - CLINICAL VIGNETTE Brandon Pearce

Fusobacterium Finds an Unexpected Home: A Rare Case of IVC Thrombus Induced Cavitary Lung Lesions

Title

Fusobacterium Finds an Unexpected Home: A Rare Case of IVC Thrombus Induced Cavitary Lung Lesions

Authors

Brandon Pearce, DO; Nathaniel Leonardi, DO; Ethan Steele, MD; Whitney Fraiz, MD

Introduction

Fusobacterium spp. is a commonly found anaerobic bacterium of the oral cavity. Originally thought to be part of the normal oropharyngeal flora, current expert opinion is to treat it as a pathogen. This is partly due to the fact that Fusobacterium is the cause of Lemierre's syndrome. In short, this syndrome is an infectious thrombophlebitis of the internal jugular vein which can subsequently result in septic thromboemboli. We describe a case of infectious thrombophlebitis which uniquely developed in the inferior vena cava which resulted in multiple cavitary lung lesions and bilateral pneumothoraces.

Case Presentation

A 34-year-old female presented to the hospital with severe dyspnea for three weeks. The patient reported associated fevers, chills, and myalgia. Past medical history was significant for recent cesarean section four months prior to presentation and an inferior vena cava thrombosis with extension into the iliac vein diagnosed approximately three months prior to presentation. Social history was significant in that the patient had immigrated from India four years prior. Additionally, she received the Bacille Calmette-Guérin vaccine and booster. On presentation, she was found to be tachycardic and significantly hypoxic. She required urgent bilateral chest tubes after computerized tomography (CT) scan of the chest demonstrated bilateral pneumothoraces. Additionally, CT chest demonstrated multiple cavitary lung lesions containing air and fluid which were thought to be septic and developing into multiple lung abscesses. Extensive infectious and autoimmune evaluation including tuberculosis and COVID-19 were negative. Approximately two weeks into the patient's hospital course, she began developing

worsening fevers, dyspnea, and tachycardia. COVID-19 PCR was positive. After 1 month in the hospital universal PCR was positive for Fusobacterium. She was discharged home on room air.

Discussion

Cavitary lung lesions are a well-documented consequence of Fusobacterium infection. Literature suggests that cavitary lesions are a result of septic thromboemboli from an infectious thrombophlebitis of the internal jugular vein. However, septic thromboemboli do not necessarily have to stem from a thrombus of the internal jugular vein. As demonstrated by the case above, thrombosis of the inferior vena cava can also result in cavitary lung lesions and pneumothoraces. Treatment with intravenous antibiotics is curative and therefore it is of the utmost importance that Fusobacterium infection be diagnosed early. However, early diagnosis can be difficult as the differential diagnosis of cavitary lung lesions is vast. In a patient who had immigrated from India, it would be easy to anchor on tuberculosis as a diagnosis. However, in a patient presenting with cavitary lesions and a known thrombus, fusobacterium infection must be considered.

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INDIANA POSTER FINALIST - CLINICAL VIGNETTE
Alexander Slaten

What's in your basement: murine transmitted Pasteurella

Title

What's in your basement: murine transmitted Pasteurella

Authors

Alex Slaten, DO; Leah Gehring, DO; Jennifer Mundell, MD

Introduction

Pasteurella multocida is a gram negative organism colonizing the oropharynx of animals, primarily cats and dogs. Most commonly, an animal bite or scratch leads to soft tissue infection. P. Multocida rarely leads to severe systemic infection without a skin or soft tissue source. There is an association with bacteremia, immune-incompetent states, need for ICU management, and increased mortality in those with P. Multocida infection not related to an animal bite. We present an interesting case of Pasteurella multocida pneumonia with bacteremia from an unlikely murine source.

Case Presentation

An 83 year old lady with history of complete heart block status-post pacemaker placement, coronary artery disease, hypothyroidism, hypertension, type 2 diabetes, and obstructive sleep apnea presented after being found down and altered by her husband. One day prior she had been experiencing worsening cough, fever, and confusion. Vital signs were significant for hypoxia, and exam demonstrated confusion and crackles in bilateral lung bases. Basic labs were unremarkable. Lactic acid was elevated. Urinalysis was negative. Head CT revealed no acute findings. CT chest demonstrated bilateral lower lobe infiltrates. Respiratory viral panel, urine legionella, and urine strep antigen were negative. Blood cultures returned positive for Pasteurella Multocida. Echocardiogram showed no evidence of endocarditis. Infectious disease was consulted and confirmed the pneumonia was most likely due to the P. Multocida. Thorough physical exam did not reveal any skin wounds, animal bites, or scratches. The patient denied any contact with cats or dogs, however admitted to her basement being heavily infested with mice. Prior to her onset of symptoms she was cleaning mouse urine and feces, but had no direct contact with mice. She quickly recovered with ceftriaxone and was discharged to complete 2 weeks of intravenous antibiotics.

Discussion

Pasteurella Multocida is a zoonotic organism that can cause infection in humans. Soft tissue infection following animal bites from cats or dogs is most common. Immunocompromised individuals are at greatest risk for severe infection from P. Multocida. To our knowledge, few cases exist of Pasteurella Multocida pneumonia and bacteremia in an immunocompetent individual without cat or dog exposure. Additionally, very few documented cases exist with a murine source of exposure. Per literature review, first line therapy for P. Multocida pneumonia is with ampicillin-sulbactam and amoxicillin-clavulanic acid, though our patient responded appropriately to ceftriaxone. When determining an infectious etiology for illness, it is important for clinicians to consider a broad differential and obtain a more thorough history including environmental and zoonotic exposures, as well as perform an extensive physical examination. Early recognition of infection and rapid initiation of antibiotics is critical to reduce mortality.

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INDIANA POSTER FINALIST - CLINICAL VIGNETTE Rina Yadav

Malignant Paraganglioma: a Rare Malignancy with Genetic Therapy Possibilities

Title

Malignant Paraganglioma: a Rare Malignancy with Genetic Therapy Possibilities

Authors

Rina Yadav, Nick Beaudrie, Jennifer Mundell, and Namrata Shah

Introduction

Paragangliomas are exceptionally rare neuroendocrine tumors that arise from the extra-adrenal autonomic paraganglia and secrete catecholamines. Paragangliomas are found in 2-8 people per 1 million a year. Of these, 150 cases have been malignant paragangliomas. There is a paucity of research on diagnostic and treatment modalities. In the few cases available, presentations have included local recrudescence after “complete” resection, excessive catecholamine release, hypercalcemia, and neurologic manifestations. Isolated vertebral or boney metastasis are remarkably uncommon presentations of malignant paraganglioma. The one known risk factor that increases incidence of malignancy is the SDHB gene mutation (found in 50% of malignant paraganglioma patients). We present a case of a 51-year-old male with intractable left hip pain who was diagnosed with metastatic paraganglioma.

Case Presentation

A healthy 51-year-old male presented with progressive left hip and leg pain over a year, and new onset neck pain radiating to bilateral shoulders. Labs showed hypercalcemia, hypokalemia, and hyperphosphatemia. LDH and Uric acid were within normal limits. CT chest, abdomen, pelvis, and spine revealed an iliac mass, rib fractures, necrotic abdominal lymph nodes, cervical and lumbar pathologic fractures. MRI demonstrated cervical cord compression. Neurosurgery performed a corpectomy resulting in shoulder pain resolution. The cervical and iliac masses were biopsied and pathology demonstrated malignant paraganglioma with synaptophysin, GATA3, and S100 positivity. Metanephrines were within normal limits and Chromogranin A was elevated at 6457ng/mL (reference: 25-140ng/mL). Genetic testing was performed on the biopsy specimen revealing SDHB and HOXB13 heterozygosity. PET scan showed diffuse metastatic bony disease. Ten weeks of palliative radiation therapy allowed for improvement in patient’s

performance status. He was scheduled for outpatient chemotherapy with Vincristine, Cyclophosphamide, and Dacarbazine.

Discussion

Metastatic paragangliomas are extremely rare forms of neuroendocrine tumors that have little data to guide diagnosis and treatment. Biopsy of multiple sites and different staining techniques allowed for increased probability of diagnosis. The evolution of genetic testing and sequencing allows for targeted treatments and understanding of who has increased risk of acquiring metastatic paragangliomas. The SDHB gene, as seen in our patient, is a tumor suppressor that prevents unregulated rapid cell growth and division. Patient's with SDHB gene mutations have an 80% risk of having a malignant paraganglioma. Mutation identification of SDHB through genetic testing has guided treatment and management of this patient. Furthermore, the HOXB13 mutation increases risk of prostate cancer by 50%. The patient will undergo regular prostate exams and PSAs to monitor. It is unclear how this mutation plays into his known malignancy. Conclusion: The future of oncology is through therapies against one's genomic tumor profile. If the patient does not respond to the conventional therapies listed above, the next step is to initiate a PARP-inhibitor with temozolomide, targeted therapy against the SDHB.

KENTUCKY POSTER FINALIST - CLINICAL VIGNETTE Nhi Vu

When a Clot Should Not be a Second Thought

Title

When a Clot Should Not be a Second Thought

Authors

Nhi N. Vu, MD, Daniel Weaver, MD, Anne Sayers, MD; Department of Medicine, University of Kentucky College of Medicine, Lexington, Kentucky

Introduction

When a patient with malignancy presents with dyspnea and hypoxemia, the first inclination is to suspect venous thromboembolism, but what happens when imaging is unremarkable? It is important to recognize that any material of a certain size can cause an embolism, even tumors. This case will explore the recognition and diagnosis of tumor emboli syndrome (TES), a rare but important diagnosis for an internist to identify.

Case Presentation

A 48-year-old woman with invasive ductal adenocarcinoma of the breast presented with three weeks of progressive dyspnea on exertion and a non-productive cough. She was tachycardic and tachypneic but otherwise hemodynamically stable. Physical exam was only notable for labored breathing and obesity. Basic lab work was unremarkable. Arterial blood gas showed respiratory alkalosis with pH 7.48, pCO2 33, pO2 97. During the hospitalization, she remained tachycardic, tachypneic, and intermittently hypoxic, requiring supplemental oxygen. EKG showed sinus tachycardia and troponins were negative. Chest X-ray was negative for focal consolidations, effusions, edema, and pneumothorax. CT scans of her chest showed some mediastinal and left axillary lymphadenopathy and a 3.8 cm left breast mass, but no thromboembolus, and vascular duplex was negative for DVTs. Echocardiogram was notable for an elevated RVSP of 40-50 mmHg. High-resolution CT did not show significant findings and a ventilation/perfusion scan showed symmetrical lung ventilation and perfusion. Given unremarkable workup except for an elevated RVSP, TES was considered. A right heart catheterization was performed, which showed mild pulmonary hypertension and a sample of blood from the pulmonary vasculature was positive for malignant cells consistent with adenocarcinoma. The patient was discharged on supplemental oxygen with plans to continue chemotherapy.

Discussion

Patients with TES typically present indistinguishable from other emboli syndromes: dyspnea, pleuritic chest pain, tachycardia, and acute hypoxia. Although venous thromboembolism is more common, it is important to recognize that any material larger than 10 microns can target the lungs, including air, amniotic fluid, fat, injected foreign material, and tumor. TES is the existence of tumor cells in the pulmonary vascular system and rarely involves invasion into surrounding parenchyma. Renal cell carcinoma, hepatocellular carcinoma, and adenocarcinomas are common causes of TES. Tumor can access the vessels via direct invasion, diaphragmatic translocation, or circulation into the vessels. Once the tumor cells reach the pulmonary circulation, the emboli can cause direct obstruction or activate the coagulation cascade, causing concentric medial hypertrophy and intimal fibrosis, leading to obliterative arteries. Unlike thromboemboli, tumor emboli can progress to irreversible obstruction of pulmonary vessels. In diagnosing TES, imaging and chemistry tests are not sensitive or specific, especially in the early phases of disease. The diagnosis of TES requires histological evidence; however, due to diagnostic delay, the diagnosis is usually made postmortem, which is estimated to be as high as 26 %. Transbronchial or surgical lung biopsy can be performed. Less invasively, a right heart catheterization for aspiration of the pulmonary artery can be performed. Treatment for TES is targeted at treating the primary tumor, but TES is an indicator of a poor prognosis.

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LOUISIANA POSTER FINALIST - CLINICAL VIGNETTE
Michael Adamek

Osmotic Demyelinating Syndrome after treatment of Hypovolemic Hyponatremia

Title

Osmotic Demyelinating Syndrome after treatment of Hypovolemic Hyponatremia

Authors

Clay Adamek MD, Carl Giffin MD, Matthew Foy MD, Tiffany Ardoin MD

Introduction

Osmotic Demyelination Syndrome (ODS) is a rare complication of aggressive treatment of hypovolemic hyponatremia. The neurologic manifestations range from lethargy and confusion to dysphagia or dysarthria and can progress to locked-in syndrome, coma or death. Since ODS was first identified, guidelines regarding correction rates of hyponatremia have become more and more conservative. Currently, recommendations range from 4-6 mmol/L/d to 10-12 mmol/L/d. Current guidelines place emphasis on serum sodium correction rate targets that are often difficult to meet in hypovolemic patients without overcorrection. We present a case of ODS that occurred several days after a sodium correction of 10 mmol/L, which initially did not respond to desmopressin and free water.

Case Presentation

A 59-year-old woman with a past medical history of diastolic heart failure, hypertension and an underlying psychiatric disorder presented to the emergency department disoriented and confused, with generalized weakness and slurred speech. Presenting labs were significant for serum sodium of 111 mmol/L, chloride

Discussion

This case illustrates that the clinical manifestations of sodium overcorrection are often delayed. Furthermore, it represents a classic case of CPM secondary to sodium overcorrection, which was refractory to desmopressin and free water. In retrospect, her initial potassium correction, though minor, likely represented a functional osmole. Overall, close monitoring and correction goals are imperative in primary prevention of this devastating outcome; however, this report

illustrates the need for every physician to understand a conservative approach to sodium correction rates in the setting of hypovolemic hyponatremia.

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LOUISIANA POSTER FINALIST - CLINICAL VIGNETTE Javaria Ahmad, MD

When in doubt think Lupus: A rare case of acute Pneumonitis as initial presentation of SLE

Title

When in doubt think Lupus: A rare case of acute Pneumonitis as initial presentation of SLE

Authors

Javaria Ahmad, MD, Danish Bawa, MD, Aakash Sheth, MD, Hajra Channa, MD, Shahzeem Bhayani, MD

Introduction

Systemic Lupus Erythematosus (SLE) is a multisystem connective tissue autoimmune disorder that can potentially affect any organ in the body, thus has a wide array of clinical presentation. Around 50% of patients have pulmonary involvement at least once during their illness but initial presentation of lupus with pulmonary symptoms is not as conventional as renal, hematological and cutaneous presentations [1]. Diagnosis can be challenging in such cases. We present a case of lupus with acute lupus pneumonitis as initial manifestation of the illness.?

Case Presentation

A 42-year-old female with no significant prior medical history presented to the emergency room with intractable nausea, vomiting and abdominal pain. Initial GI work-up was unremarkable. Patient was treated as a simple case of acute viral gastroenteritis and her abdominal symptoms resolved with symptomatic management. However, she developed fever with acutely worsening respiratory distress. Chest X-ray revealed new bilateral pulmonary infiltrates suggestive of acute infectious process. Blood and respiratory cultures were sent, and patient was started on appropriate antibiotics for healthcare associated pneumonia. Despite broad spectrum antibiotic coverage, patient's respiratory status continued to worsen requiring non-invasive ventilation and ICU management. Cultures and Procalcitonin remained negative suggesting low likelihood of infectious process. CT (Computed Tomography) scan of the chest showed new onset bilateral pulmonary airspace infiltrates, bilateral axillary and mediastinal lymphadenopathy, and small bilateral pleural effusions. Later, she developed pancytopenia and rapid decline in renal function, hence SLE work-up was sent. Her ANA titers turned out positive (1:12560), along with elevated dsDNA and hypocomplementemia, underwent a kidney biopsy

that was consistent with class III lupus nephritis. Patient was started on methylprednisolone and hydroxychloroquine with marked improvement in symptoms. She was eventually discharged in a stable condition with rheumatology follow up.

Discussion

Lung involvement in lupus can manifest as pleuritis, pulmonary hypertension, shrinking lung syndrome and lupus pneumonitis (acute and chronic). Acute lupus pneumonitis is a rare presentation of SLE (reported incidence varies from 0.9% to 11%. [2,3]. It most commonly presents with severe dyspnea, tachypnea, fevers, and hypoxemia [2,4]. This case is unique in its presentation as the patient had sudden onset respiratory symptoms, which evolved within a few days. Despite being one of the most studied diseases, lupus continues to be a diagnostic challenge in its early presentation. A high index of suspicion is warranted for early recognition and timely treatment.

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LOUISIANA POSTER FINALIST - CLINICAL VIGNETTE Suma Sri Chennapragada, MBBS

Peri-splenic Clostridium difficile abscess -A rare presentation of a common pathogen !

Title

Peri-splenic Clostridium difficile abscess -A rare presentation of a common pathogen !

Authors

Suma Chennapragada, Supriya Gupta , Patrick Harriss Louisiana State University of Health Sciences Center , Shreveport, LA

Introduction

Clostridium difficile is a colonic pathogen known to cause antibiotic induced diarrhea and pseudomembranous colitis. Extracolonic infection with this organism, particularly visceral abscesses are rare (0.6-1.7%)with only a few reported cases in literature (1),(2). We report here a rare and unusual case of Clostridium difficile peri-splenic abscess in a patient with liver cirrhosis after a splenic artery embolization. This case recognizes the importance of this atypical presentation and explores the possible mechanisms behind such infections .

Case Presentation

A 54-year-old patient presented to us for the care of Liver Cirrhosis. secondary to Hepatitis C virus (HCV) infection(previously treated with incomplete response) and alcohol abuse. Once she established care, she was noted to have elevated liver enzymes and a high HCV viral load. .She underwent a Computerized Tomography scan (CT) triple phase of the liver to screen for hepato-cellular carcinoma which was consistent with liver cirrhosis with portal hypertension. It also detected a thrombus in the portal vein and a 2 cm splenic artery aneurysm. A consultation with an Interventional Radiologist was sought due to presence of the splenic artery aneurysm who recommended embolization. The patient underwent the splenic artery aneurysmal embolization along with partial splenic embolization and retrograde trans-venous obliteration of gastric varices. She tolerated the procedure well without any immediate complications and was discharged on Amoxicillin/Clavulanic acid for five days . A month after her procedure, the patient presented with complaints of left sided abdominal pain. A CT abdomen was performed which showed a left sided cystic mass arising from the perisplenic region measuring 16 x 14 x 18 cm which was concerning for a perisplenic abscess versus a hematoma. Patient’s laboratory

values were within normal limits. Interventional Radiology performed an aspiration of the fluid cavity and a peritoneal drain was left in place . Fluid cultures grew Clostridium difficile. Blood cultures remained negative. The patient did not have any diarrhea or fevers prior to this admission, and her white blood cell (WBC) count remained normal. She was started on intravenous (IV) Metronidazole for two weeks. The peritoneal drain was exchanged subsequently and later removed when drainage stopped.

Discussion

Extra-colonic manifestations of Clostridium difficile can include small bowel involvement, bacteremia, visceral abscess formation, infection of implanted prosthetic devices, encephalopathy, reactive arthritis, brain empyema and osteomyelitis. (3). Splenic abscesses in particular can result from current or previous C .diff bacteremia ,trauma or abdominal surgery (4) . Most cases of reported C.diff abscesses were seen as part of a poly-microbial flora .Our patient had no documented colonic C .diff infection or bacteremia prior to this hospitalization and no other organisms were isolated on the culture. Implantation of C.diff spores from patient's own colonic flora or through iatrogenic means is proposed to be the cause of such presentations . Treatment options include surgical drainage and IV metronidazole and have shown a good response in such cases . Extraintestinal complications of C.diff have been associated with a higher mortality rate (5)and hence it is all the more important to recognize and treat these conditions promptly .

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LOUISIANA POSTER FINALIST - CLINICAL VIGNETTE
Mohammad H Khan, MBBS MD

Congestive heart failure masquerading as hemorrhagic ascites

Title

Congestive heart failure masquerading as hemorrhagic ascites

Authors

Mohammad Hassaan Khan - Louisiana State University Health Science Center Shreveport Aqsa Khalid - Louisiana State University Health Science Center Shreveport Rahul Regi Abraham - Louisiana State University Health Science Center Shreveport Ioannis Papayannis - Louisiana State University Health Science Center Shreveport Kenneth Abreo - Louisiana State University Health Science Center Shreveport

Introduction

Ascitic fluid build up is multifactorial. Low SAAG (< 1.1 g/dL) ascites is seen with tuberculosis, peritoneal malignancy, pancreatic ascites, nephrotic syndrome or protein-losing enteropathy. In contrast, a high SAAG (= 1.1 g/dL) often suggests ascites secondary to portal hypertension due to liver cirrhosis, heart failure or Budd-Chiari syndrome. Liver cirrhosis has been implicated as a cause of hemorrhagic ascites in < 5% cases [1]. A case report attributed hemorrhagic ascites to biventricular congestive heart failure [2]. Ascitic fluid in heart failure is typically clear in appearance and characterized by high SAAG and TPAF. A prior case reported CHF causing hemorrhagic ascites with a SAAG > 1.1 g/dl as expected [2]. We present a unique case of hemorrhagic ascites caused by heart failure, where the patient's SAAG was < 1.1 g/dl.

Case Presentation

A 62-year-old African American male presented with complaints of worsening shortness of breath, abdominal distension, fatigue and scrotal swelling for 6 months. His medical history included severe pulmonary hypertension, congestive heart failure and end stage renal disease on hemodialysis. Workup revealed a normal liver profile and negative hepatitis serology. Chest x-ray confirmed the presence of a right pleural effusion and transthoracic echocardiogram (TTE) showed normal ejection fraction, severe pulmonary hypertension and right ventricle volume overload, similar to TTE in 2017. Abdominal ultrasound showed ascites and coarse echogenicity of liver. He was dialyzed with fluid removal for three consecutive days with no symptomatic improvement. Paracentesis obtained hemorrhagic fluid, at three different sites. Analysis of

ascitic fluid showed a red and bloody appearance, albumin 2.9 g/dL, amylase 68 U/dL, lactate dehydrogenase (LDH) 117 U/dL, protein 4.6 g/dL, adenosine deaminase (ADA) 3.1 U/L (0.00-7.3 U/L). Fluid analysis was significant for SAAG 0.9 g/dl. Repeat paracentesis performed was consistent with hemorrhagic ascites. Cytology on two separate samples reported no malignant cells. Computed tomography (CT) abdomen and pelvis obtained after the procedure showed an enlarged liver (21 cm) with nodular margins, without any obvious masses. Patient's hemoglobin stayed stable at 11.2 g/dL post procedure (11.4 pre procedure). Symptoms significantly improved after fluid removal and he was discharged in stable condition.

Discussion

Hemorrhagic ascites in the absence of an identifiable cause often presents as a clinical and therapeutic dilemma. Paracentesis, especially large volume, have a complication risk of 1%, including hemorrhage into ascites [3]. We ruled out a traumatic tap as our patient produced homogenous red fluid throughout in his fluid samples without clearance of the red color. CT findings ruled out intra-peritoneal bleed, intra-abdominal masses and pancreatitis. In addition, cytology of the ascitic fluid was negative for any malignant cells in two separate samples, with a sensitivity of 62% [4-5]. The ascitic fluid ADA was 3.1 IU/L, ruling out peritoneal tuberculosis with 100% sensitivity and 97.2% specificity [6]. The high ascitic protein LDH of 117 U/dL was consistent with the results of Runyon et al who showed that heart failure patients had a higher ascitic LDH compared to patients with liver cirrhosis (110 +/- 54 vs 54 +/- 95, $p < 0.02$). Similarly, TPAF was typically > 2.5 g/dL in heart failure patients and < 2.5 mg/dL in liver cirrhosis [7], consistent with our findings. Urunagga et al showed that patients with hemorrhagic ascites due to liver cirrhosis had significantly higher bilirubin >3, INR>1.5 and albumin 1.1 g/dL, however our patient's ascites had a SAAG of 0.9. This is a unique case of hemorrhagic ascites due to congestive cardiac failure with a SAAG < 1.1 g/dL.

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MARYLAND POSTER FINALIST - CLINICAL VIGNETTE Hanan A Alharthy, MBBS

Piperacillin/Tazobactam-Induced Immune Hemolytic Anemia

Title

Piperacillin/Tazobactam-Induced Immune Hemolytic Anemia

Authors

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Introduction

Piperacillin/Tazobactam is a broad-spectrum semisynthetic beta-lactam/beta-lactamase inhibitor used in treating wide range of infections. The most common adverse reactions of Piperacillin/Tazobactam include gastrointestinal symptoms and skin reactions. Rarely, use of Piperacillin/Tazobactam can lead to serious hematologic complications, including hemolytic anemia, thrombocytopenia, and neutropenia.

Case Presentation

A 29-year-old man with a history of a motor vehicle accident in 2011 complicated by multiple chest wall and abdominal surgeries, on total parenteral nutrition for failure to thrive, with multiple past hospitalizations for infections, was admitted to the hospital with sepsis secondary to possible rib hardware infection. He was febrile to 39.4C with blood pressure of 90/53mmHg, heart rate 99bpm, and stable respiratory status. Physical examination was remarkable for exposed chest wall hardware without clinical evidence of bleeding. Initial laboratory investigation was notable for hemoglobin 6.8g/dL (baseline 9-10g/dL), with normal white blood cell (WBC), platelet counts and total bilirubin. Imaging was negative for bleeding, and septic workup was unrevealing. He was transfused with packed red blood cells (RBCs) and started empirically on broad-spectrum antibiotics (Vancomycin and Piperacillin/Tazobactam). Four days

later, he developed massive hemolysis evidenced by abdominal pain and dark-colored urine with hemoglobin drop to 4.4g/dL from 9.2g/dL with WBC of 25.4K/mcL and normal platelet count and coagulation studies. Reticulocytes were 4.57% with indirect bilirubin of 3.6mg/dL, haptoglobin

Massachusetts Poster Finalist - Vaibhav Satija, MD

Yamaguchi syndrome - The heart's ace of spades

Title

Yamaguchi syndrome - The heart's ace of spades

Authors

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Introduction

Yamaguchi syndrome is a rare variant of hypertrophic obstructive cardiomyopathy (HOCM). First described in Japan, it constitutes 15-25% of all cases of hypertrophic cardiomyopathies there. In the US, its incidence is 1-3%, and the clinical course is usually more benign. We present a case of this rare disease.

Case Presentation

A 58-year-old Caucasian male with a history of hypertension presented with chest pain and new onset shortness of breath two days prior to admission. His chest pain was typical angina that would relieve with rest. He also complained of occasional palpitations on exertion. Examination was unremarkable except for a loud S4 gallop. An electrocardiogram (EKG) showed normal sinus rhythm and marked deep T-wave inversions in the anterior and lateral leads. Troponins were mildly elevated at 0.18. A coronary angiogram showed no evidence of coronary artery disease. However, the ventriculogram and transthoracic echocardiogram had the striking appearance of a spade-like left ventricular cavity, suggestive of left ventricular apical hypertrophy. This was consistent with the variant of hypertrophic cardiomyopathy known as “Yamaguchi syndrome.” The patient had an episode of non-sustained ventricular tachycardia on telemetry following cardiac catheterization, suggesting the reason for his episodic palpitations. As the indication for an implantable cardioverter-defibrillator (ICD) is controversial in such cases, no ICD was implanted. He was discharged home on a cardio selective beta blocker. A 30-day event monitor after discharge was unremarkable, and he remained asymptomatic after discharge.

Discussion

Yamaguchi syndrome, also called as apical variant of HOCM, or "Japanese heart disease" is a rare diagnosis in the US. It was first reported in Japan in 1979, given its relatively high prevalence there. It is now being recognized among many other ethnicities such as, African Americans, Hispanics, and Caucasians. Incidence of the disease among Caucasians is estimated to be about 1-3% of all cardiomyopathies. Incidence in Japan is estimated to be about 15-25% of all cardiomyopathies. Because of its clinical presentation, it can often be confused with acute coronary syndrome, myo-pericarditis, or other cardiomyopathies. However, it is essential to differentiate this disease from the others because of its favorable prognosis. This case highlights the classical presentation and the challenging diagnostic criteria of this variant of HOCM. Patients typically present with angina or anginal equivalents and may have an S4 gallop due to ventricular hypertrophy. Giant T wave inversions are usually appreciated in the anterolateral EKG leads. Diagnostic criteria on imaging include a left ventricular (LV) wall thickness >15mm or an apical-to-basal LV wall thickness ratio of 1.3-1.5. While ventriculography and echocardiography are useful, cardiac MRI is the gold standard investigation. Given increasing number of cases with apical hypertrophic cardiomyopathy reported among Caucasians, physicians need to consider this diagnosis in the evaluation of typical chest pain. Catching an S4 gallop and understanding unique EKG features with giant T wave inversions may provide initial clues to making the diagnosis. Prognosis is good, and an ICD is generally not indicated.

MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE
Amirreza Abdolmaleki, MD

Spontaneous coronary artery dissection in acute coronary syndrome: a diagnosis not to be missed!

Title

Spontaneous coronary artery dissection in acute coronary syndrome: a diagnosis not to be missed!

Authors

Lama Al Jebbawi- Henry Ford Allegiance Health Amirreza Abdolmaleki- Henry Ford Allegiance Health

Introduction

Spontaneous coronary artery dissection (SCAD) is an emerging cause of acute coronary syndrome (ACS), especially in young individuals with no major risk factors. It is often misdiagnosed, placing patients at an increased risk of unnecessary and potentially harmful interventions.

Case Presentation

A 38 years old lady with a recent C-section, and no other risk factors presented with sudden-onset, burning substernal chest pain with left arm numbness of 10 minutes. Vital signs and physical exam were normal. Initial electrocardiogram (ECG) showed nonspecific lateral ST segments changes. Lab work revealed blood count and electrolytes within normal limits. Initial high sensitivity troponin was less than 18 nanogram per liter (ng/l), which increased to 247 ng/l and reached a plateau of 526 ng/l on repeat. ECG trend showed no new changes. The patient was started on Heparin infusion, in addition to dual anti platelets (DAPT) and high dose statin for clinical diagnosis of non ST elevation myocardial infarction. Echocardiogram showed normal ejection fraction with no wall motion abnormalities. Left cardiac catheterization showed mid left anterior descending artery (LAD) 50% stenosis with angiographic appearance consistent with SCAD. Stent placement was avoided, and the patient was started on medical therapy with Aspirin alone.

Discussion

SCAD consists of an intramural hematoma (IMH) that occurs either secondary to spontaneous hemorrhage in the vasa vasorum or due to an intimal tear followed by blood accumulation in a false lumen. As opposed to atherosclerotic plaque rupture, the IMH leads to coronary obstruction and subsequent ischemia . SCAD accounts for 0.2 to 2% of all ACS cases. Many experts believe the exact prevalence is unknown, as SCAD is often misdiagnosed. Diagnosis requires cardiac catheterization. There are three classifications depending on angiographic findings. Type 1, has classic radiolucent lumens within the artery wall. Type 2, consists of diffuse stenosis within the artery of more than 20 millimeters. Type 3, consists of tubular or focal stenosis of less than 20 millimeters. Our patient had type 2. The accurate diagnosis of SCAD is of paramount importance as it dictates management. While percutaneous intervention (PCI) in plaque rupture - ACS is life saving, PCI in SCAD is associated with increased complications and poor outcomes. It can cause extensive extension of dissection. In addition, IMH resorbs with time, leading to stent malposition and in stent thrombosis. Instead, medical therapy with anti-platelet is recommended. Many experts and societies reached a consensus of DAPT for 1-3 months (some recommend up to one year) followed by lifelong aspirin. Anticoagulation, statin, beta blockers, angiotensin converting enzyme inhibitors, and angiotensin receptors blockers have not been shown to add any mortality benefit. SCAD patients should be monitored in hospital for the first 7-10 days, given high risks of early complications. In case of hemodynamic instability or shock, PCI versus coronary artery bypass is still recommended. In conclusion, internists should have a high index of suspicion for SCAD especially in young healthy patients presenting with typical ACS symptoms and lab work. Accurate diagnosis dictates proper management, as in spontaneous coronary dissection, less is actually more.

MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE
Amirreza Abdolmaleki, MD

Right atrial thrombus: its not always about the left heart

Title

Right atrial thrombus: its not always about the left heart

Authors

Amirreza Abdolmaleki- Henry Ford Allegiance Lama Al Jebbawi- Henry Ford Allegiance

Introduction

Right atrial thrombi are more common than many clinicians realize. Although transthoracic echocardiography remains the cornerstone of noninvasive cardiac imaging, transesophageal echocardiography has a superior diagnostic yield for the detection of intracardiac masses. Diagnosis requires a high index of suspicion as early detection has important prognostic implications.

Case Presentation

A 58-year-old male with a history of coronary artery disease and heart failure with reduced ejection fraction presented with heart failure exacerbation. He reported a weeklong history of worsening dyspnea on exertion, abdominal distention and lower extremity swelling. Vital signs and physical exam were normal except for tachycardia. Initial electrocardiogram (ECG) showed new onset atrial fibrillation. Initial high sensitivity troponin was 111 nanogram per liter (ng/l), which increased to 117 ng/l and then decreased to 98 ng/l. Workup including blood work and radiographs were notable only for mild pulmonary edema. Transthoracic echocardiogram (TTE) reported a severely reduced left ventricle (LV) ejection fraction with a severely enlarged right ventricle (RV) and severely reduced global RV systolic function. The patient was started on adequate diuresis, heart failure guideline directed medical therapy and Heparin infusion. In the setting of new onset atrial fibrillation with heart failure, rhythm control strategy was recommended. The patient declined direct current cardioversion (DCCV) and opted for pharmacological cardioversion. Two days later, he opted for electrical cardioversion. Transesophageal echocardiogram (TEE) was performed to rule out thrombus prior to cardioversion. It reported multiple, mobile echodensities visualized within the right atrial appendage and the right atrial cavity consistent with thrombus. Cardioversion was aborted and

the patient was discharged on oral anticoagulation. He is planned for a 3 month follow up for a repeat TEE and DCCV once the thrombus has dissipated.

Discussion

Left atrial appendage (LAA) thrombi are common in patients with atrial fibrillation or atrial flutter. On the other hand, the exact incidence of right atrial appendage (RAA) thrombi is unknown. However, it is rare when compared to LAA thrombi. In fact, many experts believe RAA thrombi are underdiagnosed. In a study of 102 patients with atrial fibrillation who underwent TEE, six patients were found to have RAA thrombi versus 11 with LAA thrombi. RAA thrombi are associated with increased mortality and pulmonary thromboembolism (PTE), accounting for 10% of PTE cases. RAA thrombi are either diagnosed by TTE or TEE. However, there is suspicion for ignoring RAA during scanning in routine practice. This can lead to catastrophic complications. In this presented case, whether RAA scanning was missed during the first TTE or not remains uncertain. Nevertheless, RAA thrombi were only detected on the TEE a few days later. This case highlights the need for more accurate scanning and RAA as well as LAA screening in the setting of atrial fibrillation or atrial flutter. Clinicians should always check for RAA before deciding on cardioversion. We aimed to underline the importance of this rare but potentially dangerous complication of AF.

MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE Sukaina Alali, MD

Keytruda-induced Myocarditis: A Complication of a Case of Metastatic Lung Adenocarcinoma

Title

Keytruda-induced Myocarditis: A Complication of a Case of Metastatic Lung Adenocarcinoma

Authors

Sukaina Ali Alali, Asami Takagi, Manthanbhai Patel

Introduction

Immune checkpoint inhibitors (ICIs), such as pembrolizumab (Keytruda), are utilized as antitumor treatment which target immune-evading cancer cells. These drugs are more tolerated than traditional chemotherapeutic drugs, but their mechanism of action leads to a variety of immune-mediated adverse reactions in various organ systems. The cardiotoxicity of these drugs is especially under light due to its variable presentation and potentially fatal outcome.

Case Presentation

Here we report a case of a 72-year-old male with a history of atrial fibrillation and adenocarcinoma of the lungs with metastasis of the right lateral cerebellar hemisphere who underwent Cyberknife treatments, after which he received one dose of Keytruda. Since the Keytruda, he started to feel light-headed and weak which led to a reported fall at home. He was found to be in atrial fibrillation with rapid ventricular response and failed three cardioversion attempts. After careful exclusion of other causes, a concern of Keytruda myositis was raised and cardiac MRI findings suggested possible myocardial inflammatory process and extensive epicardial adipose tissue and lipomatous hypertrophy of interatrial septum. The patient received 20 mg prednisone daily, and a repeat cardiac MRI performed two weeks later showed no signs of myocarditis and resolution of the inflammatory process, indicating improvement of myocarditis.

Discussion

In this case report, we highlight the significant consequences of Keytruda therapy with a special emphasis on cardiotoxicity, the differences in presentations and findings among patients reported in the literature, and the recommended management approaches. Thus, careful consideration of the appropriate candidate for ICIs therapy and prompt recognition and correct management is necessary to improve outcome.

MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE
Farahnaz Anwar, MD

Renal Cell Crisis: Initial presentation of Scleroderma

Title

Renal Cell Crisis: Initial presentation of Scleroderma

Authors

First Author: Farah Anwar, MD Second Author: Nadine El-Ayache, MD Attending: Dr. Shailendra Sharma

Introduction

Scleroderma renal crisis (SRC) is a life-threatening complication which presents with acute onset severe hypertension accompanied by rapidly worsening renal function. SRC is noted to occur most frequently with diffuse scleroderma and commonly presents within the first four years of clinical diagnosis.

Case Presentation

A 53 year old female with past medical history of Diabetes, hypertension, morbid obesity, diastolic CHF and CKD stage III was brought to the ED due to worsening shortness of breath for the past 3-4 days. Vitals on presentation were BP 253/122 and RR of 24. BIPAP was placed by EMS at the patient's home upon initial evaluation for hypoxia. Labs were significant for BNP 429, Na 134, K 5.6, Cr 3.32, BUN 52, Hgb 6.9 and WBC 13. Nitroglycerine drip was started but later switched to Cleviprex due to persistently elevated blood pressures. Patient was admitted to the ICU for acute mixed respiratory failure and acute on chronic renal failure in the setting of hypertensive emergency as well as acute on chronic diastolic congestive heart failure with pulmonary edema. Home BP medications were resumed on the first day of admission with some adjustments which included: Carvedilol 25mg, Clonidine 0.2, Imdur 30mg, Hydralazine 100mg, Nifedipine 90mg, and Furosemide 40mg. A Clonidine 0.2mg patch was also ordered. Throughout the admission, the patient was somewhat adamant regarding medication compliance and admitted to having missed only one day of medications, however, physicians who spoke with the patient's family reported that was simply not the case. Per family, patient was consistently medication non-compliant. Thus, Clonidine rebound hypertension was one of the leading differential diagnosis. The patient remained asymptomatic and denied headaches, dizziness, or lightheadedness throughout the course of the admission. Nephrology was

consulted for assistance with AKI on CKD likely secondary to accelerated HTN. Due to concern for thrombotic microangiopathic process based on the acute decrease in patient's platelets from presentation to day 2 of admission (292 -->177), serologic and hemolytic workup was ordered. Hemolytic workup consisted of peripheral smear, bilirubin, LDH and haptoglobin, all of which were largely unremarkable. However, the serologic workup was positive for ANA antibodies with titers showing 1:640 with a homogenous pattern. The Anti-Scl 70 antibodies resulted positive soon after and therefore additional testing was ordered. Additional tests included: Immunoglobulins A/G/M, Complements C3/C4 and the following antibodies: RNA Polymerase III; Cyclic Citrullinated Peptide; Myeloperoxidase; Anti-Centromere; and Proteinase 3. Captopril was started once the ANA and Anti-Scl 70 results were obtained and the dose was increased within the two days.

Discussion

This case illustrates the most common presenting symptoms associated with SRC, however was not initially suspected due to lack of Scleroderma diagnosis. Activation of the RAAS is believed to be very important in SRC therefore, it is crucial to start an ACEIs immediately. A short acting ACEI is initially started which is replaced by a long acting once the patient's blood pressure is stabilized. Following SRC, renal recovery could potentially take up to 24 months, however, appropriate management has shown to decrease 1-year mortality from 85 to 24%.

MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE Maha Bayya, MD

Aorto-right atrial fistula complicating Aortic Root Abscess in the Setting of Bicuspid Aortic Valve and Congenital Coronary Anomaly: Diagnostic and Therapeutic Challenge

Title

Aorto-right atrial fistula complicating Aortic Root Abscess in the Setting of Bicuspid Aortic Valve and Congenital Coronary Anomaly: Diagnostic and Therapeutic Challenge

Authors

Maha Bayya ahmed Altibi

Introduction

Background: Occurrence of aorto-right atrial fistula (AAF) is an uncommon complication of endocarditis with mortality rate exceeding 40%. Case: A 47-year-old male patient presented with left-parietal hemorrhagic stroke found to have MRSA endocarditis of bicuspid aortic valve (AV). This was complicated by aortic root abscess formation with subsequent rupture into the right atrium, leading to AAF and ventricular septal defect (VSD). Further workup revealed a congenital anomalous origin of the left circumflex from the ostium of the right coronary artery.

Case Presentation

Decision-making: Extensive cardiac imaging showed peri-annular abscess rupture, AAF formation, and VSD extension to the annulus. Patient was initially hemodynamically labile requiring aggressive medical management and IV antibiotics; fistula closure was deferred until further stabilization. However, in lieu of his severe and persistent cardiogenic shock, urgent surgical repair of the AAF, VSD closure, and AV replacement were performed – surgery was successful.

Discussion

Conclusion: AAF should be suspected when endocarditis is complicated by abscess formation. Diagnosis requires high-index of suspicion and multimodality imaging. Cardiogenic shock is a feared complication of AAF. Timely surgical repair of the fistula can be life-saving.

MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE Maha Bayya, MD

Idiopathic Biliary Pericardial Effusion with Tamponade: Case Report & Literature Review

Title

Idiopathic Biliary Pericardial Effusion with Tamponade: Case Report & Literature Review

Authors

Maha Bayya ahmed altibi.

Introduction

Backgrund: Biliary pericardial tamponade (BPT) is a rare and life-threatening form of pericardial tamponade, characterized by a yellowish-greenish pericardial fluid upon pericardiocentesis. Historically, BPT had been reported to occur in the setting of an associated pericardio-biliary fistula. However, BPT in the absence of a detectable fistula is extremely rare and was not previously reported in the literature.

Case Presentation

Case Presentation: The case was a 75-year-old Hispanic male presenting with dyspnea and shortness of breath and diagnosed with cardiac tamponade. Subsequent pericardiocentesis revealed biliary pericardial fluid with bilirubin of 7.6 mg/dl. Patient underwent extensive workup with various imaging modalities looking for a fistula between the hepatobiliary system and the pericardial space, which was non-revealing. The mechanism of bile entry into the pericardial space remains to be unidentified. Literature Review: A literature search was performed for reports on the association between cardiac tamponade and presence of biliary fluid in the pericardial space. A total of six published cases were identified: all were males, mean age of 53.3 years,with the age ranging between 31 – 73 years. etiology for pericardial tamponade varied across the cases: incidental pericardio-biliary fistula, traumatic pericardial injury, and presence of associated malignancy.

Discussion

Conclusion: Biliary pericardial tamponade is a rare form of tamponade that warrants a prompt workup (MRCP or HIDA scan) for an iatrogenic vs. traumatic pericardio-biliary fistula and age-

appropriate screening for malignancy. As a first case in the literature, our case exhibits a biliary tamponade in the absence of an identifiable fistula or any of the previously reported risk factors for fistula formation

MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE Aatrey Dixit

Which is worse, The disease or its treatment? - Bleeding due to acquired factor VIII inhibitor and treatment related agranulocytosis.

Title

Which is worse, The disease or its treatment? - Bleeding due to acquired factor VIII inhibitor and treatment related agranulocytosis.

Authors

Aatrey Dixit, MD , Jasmeet Kaur, MD, Vanessa Ogundipe, MD, Ambreen Malik, MD Sandeep Garg, MD, Geetha Krishnamoorthy, MD, FACP

Introduction

Acquired Factor VIII inhibitor occurs in older individuals as an isolated autoimmune phenomenon, or in association with a connective tissue disease or malignancy. Most cases present with spontaneous hematomas or severe mucosal bleeding. We present a case of acquired factor VIII inhibitor in association with rheumatoid arthritis (RA), with subsequent treatment-related agranulocytosis.

Case Presentation

A 76-year-old woman with RA presented with pain and swelling of left upper and lower extremities. Physical examination: Swollen left forearm and thigh with ecchymoses. Imaging revealed large left forearm and thigh hematoma. Hemoglobin: 5.8 g/dL, PTT: 161.9 sec, mixing study: no PTT correction, Factor VIII activity: ?1%, Factor VIII inhibitor: positive in high titer. Blood transfusion and prothrombin complex concentrate were given; methylprednisolone and cyclophosphamide started. Hematomas continued to expand with decreasing hemoglobin. She was transferred to a tertiary care center, and was treated with recombinant porcine Factor VIII, Factor VII, cyclophosphamide and prednisone. She stabilized and was discharged on prednisone/cyclophosphamide. A month later, she presented with weakness. WBC: 1200/µL, absolute neutrophil count: 0 and hemoglobin: 5.7 g/dL. Anemia and agranulocytosis secondary to cyclophosphamide was diagnosed. Blood transfusion and granulocyte colony-stimulating factor were administered. She was discharged on prednisone with normal blood counts.

Discussion

Internists should suspect acquired factor VIII inhibitor when an older person presents with significant ecchymoses or hematomas in the absence of a known bleeding disorder. Presence of autoimmune diseases such as RA, Sjogren's Syndrome and SLE should point clinical suspicion in this direction. Other patient populations include 2 to 3 months postpartum women, those with solid organ malignancies, and a small percentage of population treated with Penicillins, Phenytoin and immunomodulators. For treatment, bleeding should first be controlled. When caused by drugs, cessation of the offending agent suffices as treatment. For others, achieving immunosuppression to eliminate the inhibitor is required. Prednisone with cyclophosphamide has the best results, but is associated with toxicities, especially in older persons. The possibility of these treatment-related toxicities is something that internists must also be aware of, and a high clinical vigilance should be maintained to recognize and treat them.

MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE Anh Do

A Case of Early Cardiac Tamponade Caused by Severe Postoperative Hypothyroidism Two Years After Thyroidectomy

Title

A Case of Early Cardiac Tamponade Caused by Severe Postoperative Hypothyroidism Two Years After Thyroidectomy

Authors

Anh Do D.O, Micheal Holbrook M.D, Henry Ford Hospital

Introduction

Hypothyroidism (HT) is a disease with many clinical presentations. Among those, pericardial effusion (PEff) is a rare presenting finding and commonly detected in patients with severe HT. It is typically mild but rarely can cause cardiac tamponade. This case will highlight that severe HT can manifest as myxedema with heart failure symptoms and PEff.

Case Presentation

A 49 years old female with a history of asthma, hypertension, HT from total thyroidectomy for enlarged goiter two years prior, presented to the hospital with a chief complaint of shortness of breath, dyspnea on exertion, orthopnea and weakness. Her home medications included two antihypertensives and levothyroxine. However, the patient has ran out of medications for several months. She was found to be hypoxic requiring 4L oxygen via nasal canula and hypertensive to 210/109. Physical exam only showed expiratory wheezes, bilateral lower extremity non-pitting edema. Initial labs were significant for mild AKI. TSH was 260 uIU/mL and free T4 < 0.25ng/dL. BNP and troponin, however, were unremarkable (17 pg/mL and < 18 ng/L respectively). CXR showed marked enlargement of the cardiac silhouette which were confirmed to be moderate PEff with findings of early tamponade on transthoracic echocardiogram (TTE). This was determined to be due to severe HT. In the setting of possible myxedema and gut edema, patient was started on IV levothyroxine which was transitioned to oral medication before discharge. During hospitalization, serial TTE showed stable effusion without evidence of tamponade. She was also treated with albuterol, antihypertensives and gentle diuresis with resolution of respiratory symptoms. She was discharged without O2 to follow up with cardiology and had repeat echo in the next month.

Discussion

Etiology of non-traumatic PEff is most commonly due to infarction, pericarditis, malignancy, infection or uremia. Rarely, we see severe HT represented itself as moderate size PEff as demonstrated in this case. The initial echo showed early signs of cardiac tamponade which can be a detrimental complication if it continues to worsen. When cardiac tamponade occurs, urgent TTE with pericardiocentesis or creation of a pericardial window along with IV thyroxine therapy is the treatment of choice. The IV administration of both T3 and T4 is important as gut absorption might be impaired in this patient population. If tamponade has not occurred, conservative treatment with thyroid supplementation and follow-up TTE to monitor for resolution of the effusion is often enough. Even though uncommon, PEff in the setting of severe HT is a potential cause of tamponade if it went undiagnosed. Prompt TTE to determine the severity of the effusion and IV thyroxine is the remained the most crucial steps in management.

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MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE Eiman Elhouderi

DOAC failure to prevent ischemic stroke in atrial fibrillation patient with mitral valve stenosis

Title

DOAC failure to prevent ischemic stroke in atrial fibrillation patient with mitral valve stenosis

Authors

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Introduction

Direct oral anticoagulants (DOAC) are used as first line treatment in patients with atrial fibrillation due to their safety and efficacy compared to warfarin. However, it has not been proven if they are as effective in patients with moderate to severe mitral stenosis, as this population is usually excluded from the clinical trials.

Case Presentation

A 67 year old man with a history of type II DM, hypertension, moderate mitral stenosis and persistent atrial fibrillation on apixaban presented to the emergency department with sudden onset altered mental status. Physical exam findings included left lower extremity motor weakness and hyperreflexia. Laboratory investigations were significant for INR of 2.1, a troponin level of 33 ng/ml, a creatinine increase to 2 mg/dL from baseline of 1.16 mg/dl, and a hemoglobin decrease to 9 g/dL from baseline of 14.3 g/dL over a ten day period with no blood transfusions required. Fecal occult blood test was positive. CT head showed no acute intracranial hemorrhage. CTA neck showed 50% stenosis of internal carotid arteries bilaterally. MRI brain revealed multifocal ischemic stroke. EKG demonstrated atrial fibrillation with controlled heart rate. Diagnosis was determined to be ischemic stroke, non-ST-elevation myocardial infarction (NSTEMI), ischemic colitis, and acute kidney injury from multifocal embolic showering. The patient was managed with dual antiplatelet and statin therapy for acute ischemic stroke. The patient was also started on heparin infusion for NSTEMI. Further workup included a transesophageal echocardiography that showed moderate mitral valve

stenosis and no mural thrombus. Subsequently, cardiac catheterization was performed and revealed severe mitral valve stenosis with mitral valve area of 1.10 mm and severe multivessel disease. Percutaneous coronary intervention was done and drug eluting stents were placed in the left anterior descending artery and the right coronary artery. The ischemic colitis and acute kidney injury were managed conservatively. Apixaban was switched to Warfarin and the patient was discharged in a stable clinical condition.

Discussion

This case demonstrated the importance of medical optimization in patients with atrial fibrillation and moderate to severe mitral stenosis. In practice, DOAC is recommended for use as anticoagulation in patients with atrial fibrillation except in those with moderate to severe mitral stenosis where there is limited data on their use as primary therapy. This case illustrated the inadequacy of DOAC in certain patients with mitral stenosis. Recognition of this therapeutic failure is crucial for the initiation of alternative therapy such as warfarin to prevent multifocal thrombi showering.

MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE
Meghan Gwinn

COVID-19 Associated Immunosuppression and the Rise of Pneumocystis Jirovecii Pneumonia

Title

COVID-19 Associated Immunosuppression and the Rise of Pneumocystis Jirovecii Pneumonia

Authors

Meghan Gwinn MD, Faisal Nimri MD, Lea Monday MD, PHARMD, John Buckley MD

Introduction

Pneumocystis jirovecii pneumonia (PJP) is an opportunistic fungal infection that is historically associated with HIV[1]. However, it has an increased prevalence in non-HIV population due to the growth in the use of immunosuppressant medications[1]. COVID-19 infection is known to cause immunosuppression due to lymphopenia and T-cell dysfunction[2]. Additionally, the use of steroids in the treatment of COVID-19 increases the risk of PJP co-infection[3], as well as the risk of future colonization with P. Jirovecii[4]. We present a case of a middle-aged male with multiple co-morbidities who was treated for COVID-19 with high dose steroids and re-presented to the hospital 31-days-post-COVID-19 diagnosis with acute hypoxic respiratory failure secondary to PJP.

Case Presentation

A 55-year-old male with a history significant for coronary artery disease, mild chronic obstructive pulmonary disease, anxiety, and substance use presented to the hospital with a seven-day history of shortness of breath.

In the emergency department, he was found to be positive for COVID-19 virus. He was admitted for acute hypoxic respiratory failure and was treated with dexamethasone (6mg IV B.I.D for 18 days), Remdesivir (for five days), and convalescent plasma. Patient's maximum oxygen requirement was high flow nasal cannula, 95% FiO2 and 45 L/min. On the day of discharge, the patient was feeling well and was saturating at 91% with exertion on 5 liters of oxygen. He was discharged with a three-day course of oral dexamethasone 4mg B.I.D.

Nine days post-discharge, he developed shortness of breath, dry cough, and was desaturating to 56% on supplemental oxygen. Upon returning to the emergency department, he was persistently hypoxic, though not tachypnic, febrile, or hypotensive. He was admitted for acute-on-chronic hypoxic respiratory failure which was managed with high flow nasal cannula. Laboratory workup demonstrated a leukocytosis to 16.8(3.8 - 10.6 K/uL), absolute lymphocyte 0.70 K/uL(1.1-4.0 K/uL) and persistently elevated inflammatory markers. Blood cultures, procalcitonin, legionella antigen, and aspergillus galactomannan were negative. CT-PE showed worsening of diffuse patchy infiltrates and negative for pulmonary embolism. He was treated for pneumonia with vancomycin and cefepime. Sputum PJP PCR returned positive. Beta-D-glucan was not obtained and HIV was negative. He was started on intravenous trimethoprim/sulfamethoxazole and oral prednisone. The patient's maximum oxygen requirement was 90 FiO2 and 50 liters on high flow nasal cannula. With treatment, he was weaned down to 4 liters nasal cannula and was discharged to complete a 21-day course of oral trimethoprim/sulfamethoxazole with a prolonged steroid taper.

Discussion

Due to COVID-19 immunological dysfunction and steroid burden, it is important to consider P. jirovecii in patients with worsening respiratory status. An observational cohort study found 9.3% rate of co-infection via RTqPCR in HIV-negative COVID-19 patients with PJP[1]. It is unclear if these are all co-infections or a proportion is colonization[1]. P. Jirovecii is typically diagnosed through various stains. A newer more sensitive method is PCR, though its role is uncertain[5]. Beta-D-glucan can also be used to rule out PJP due to the high negative predictive value[1]. Treatment with TMP/SMX should be initiated when symptomology and diagnostic evidence lean toward P. jirovecii with no alternative cause.

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MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE
Stephanie Hang

Not Lupus Nephritis BUT A Rare Case of Drug Induced Pauci-Immune Glomerulonephritis

Title

Not Lupus Nephritis BUT A Rare Case of Drug Induced Pauci-Immune Glomerulonephritis

Authors

Stephanie Hang, MD; Amar Lal, MD; Priyadarshini Dixit, MD; Christopher Webster, DO

Introduction

Hydralazine induced Anti-neutrophil cytoplasmic antibody (ANCA) associated vasculitis or Pauci-immune glomerulonephritis (PIGN) is a rare cause of glomerulonephritis. It is classified as rapidly progressive and life-threatening. Drug induced PIGN is associated with dual ANCA positivity and sometimes associated with anti-nuclear (ANA) or anti-dsDNA antibodies. Common causes of drug induced vasculitis include hydralazine, disease modifying anti-rheumatological drugs, allopurinol, and phenytoin. Most cases are found to be asymptomatic and has been confused with lupus nephritis. PIGN shows no or minimal evidence of immunofluorescence on renal biopsy, as in ANCA-associated glomerulopathies. This case highlights the importance of prompt recognition of the disease and the need for immediate withdrawal of hydralazine to preserve renal function.

Case Presentation

An 80-year-old woman with a history of hypertension, diabetes mellitus type 2 and hypothyroidism presented with generalized weakness and weight loss. She was on hydralazine for blood pressure for months and stated that she had lost 30-40 lbs. She did not use tobacco, alcohol, or illicit drugs. Physical exam was remarkable for alopecia and non-pitting edema. Laboratory evaluation showed an elevated blood urea nitrogen (BUN 36 mg/dL), creatinine (2.21 mg/dL) and bicytopenia (WBC 2,200/mcL and Hemoglobin 7.4 g/dL). Hematuria with proteinuria was found on urinalysis. Due to the progression of non-oliguric acute kidney injury with BUN 86 mg/dL and Creatinine 6.73 mg/dL, further serologic workup was initiated. Work-up showed positivity for ANA, proteinase 3 ANCA, myeloperoxidase ANCA, low complements and anti-dsDNA. Hepatitis B surface antibody was reactive consistent with immunity. The patient was diagnosed with drug induced ANCA vasculitis. This etiology was confirmed with pauci-

immune glomerulonephritis seen on biopsy. This is not lupus nephritis, which was the initial thought by the primary team. Patient was treated with RAVE protocol of rituximab and pulse steroids with discontinuing hydralazine. Ultimately, she was discharged on hemodialysis, maintenances steroids and asked to follow up with nephrology as outpatient.

Discussion

It is important to not have a linear approach to treatment. Drug induced PIGNs are rare, but it's necessary to have a high level of suspicion, especially in patients with multiple comorbidities and varying symptoms. It can be easily missed or even confused with other diseases such as lupus. Also, in PIGNs with few or no immune deposits is not seen in lupus nephritis but drug-induced vasculitis. It has a similar serologic profile to lupus, which ANCA-associated glomerulonephritis can have positive ANA or other positive lupus serology. This can result in inappropriate treatment with continuation of the offending drug. Almost equally important as the immunosuppressive treatment, is to identify and discontinue the offending drug in a timely manner to prevent rapid organ failure. The causative agent, hydralazine, may have otherwise gone unnoticed without the prompt and dedicated work of medical team as the patient had multiple distractors present.

MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE Abel J Ignatius, MD

Nonocclusive Mesenteric Ischemia after Transcatheter Aortic Valve Replacement

Title

Nonocclusive Mesenteric Ischemia after Transcatheter Aortic Valve Replacement

Authors

Abel Ignatius, MD - Internal Medicine, Henry Ford Hospital John Birchak, MD - Cardiology, Henry Ford Hospital Pedro Villablanca, MD - Cardiology/Interventional Cardiology, Henry Ford Hospital

Introduction

Nonocclusive mesenteric ischemia (NOMI) is a rare, life-threatening postoperative complication traditionally associated with cardiac surgery using cardiopulmonary bypass. Development of NOMI after transcatheter aortic valve replacement (TAVR) is very rare, but the diagnosis and management of this condition is time-sensitive and requires a high index of clinical suspicion.

Case Presentation

An 81-year-old woman with coronary artery disease (CAD), non-occlusive peripheral arterial disease (PAD), hyperlipidemia, hypertension, mixed moderate aortic stenosis with severe aortic insufficiency causing NYHA class III symptoms was referred for transcatheter aortic valve replacement (TAVR) after discussion by a multi-disciplinary heart team. The TAVR procedure was completed without any notable complications and she was sent to a telemetry floor afterward for monitoring. Ten hours after the procedure, she developed crampy mid-abdominal pain responsive to opioid medication. Over hours, this pain worsened, becoming sharp in quality and associated with non-bloody, non-bilious emesis. Her physical examination showed a soft and non-distended abdomen, significantly tender to deep palpation in the periumbilical region without peritoneal signs. Her vital signs were remarkable only for sinus tachycardia to 120, the others being in normal range. Laboratory studies were significant for an elevated serum lactate to 4.4 mmol/L and worsening creatinine to 1.3 mg/dL from a baseline of 0.8 mg/dL. A stat CT scan of the abdomen with contrast was performed which showed atherosclerosis of the mesenteric arteries without clear evidence of mesenteric ischemia. There were wedge-shaped hypoenhancing lesions on the kidney suspicious for an embolic process. As clinical suspicion for mesenteric ischemia remained high, the patient was sent emergently to

the catheterization lab for aortic, mesenteric and celiac artery angiography which revealed diffuse emboli involving the distal superior mesenteric vessels. Intra-arterial nicardipine and nitroglycerin were infused with some improvement in flow. Despite this intervention, the patient's pain worsened and peritoneal signs developed. Her lactic acid level continued to uptrend, and she developed altered mental status and hypotension. General surgery was emergently consulted for consideration of exploratory laparotomy. However, her clinical course declined acutely and she required intubation, vasopressors, and eventually went into PEA arrest from presumed hypoxemia and acidosis. She was stabilized with rapid cannulation of V-V ECMO for refractory hypoxemia and went for exploratory laparotomy which showed diffuse bowel ischemia. Given her poor prognosis, discussions were held with the patient's family to pursue palliative measures.

Discussion

This case illustrates a very rare but devastating complication of a TAVR procedure. NOMI has been described as a complication of cardiac surgery, but very rarely as a complication of TAVR. Rapid diagnosis is critical so emergent treatment can be initiated. Physicians who perform catheter-based cardiac procedures as well as those who care for these patients in the post-procedural setting should maintain a high index of suspicion for this entity, especially if a patient develops abdominal pain after the procedure.

MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE Ahmed E Kazem

Histoplasmosis-Induced Hemophagocytic Lymphohistiocytosis in a Patient With Ankylosing Spondylitis

Title

Histoplasmosis-Induced Hemophagocytic Lymphohistiocytosis in a Patient With Ankylosing Spondylitis

Authors

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Introduction

Hemophagocytic lymphohistiocytosisis (HLH) is a rare and often fatal condition characterized by an overactive but ineffective response of the immune system. There have been several documented causes, which include genetic predisposition, malignancy, infection, autoimmune disease, and chronic immunosuppressive therapy. Due to its non-specific presentation, HLH is often under-recognized, severely aggressive, and associated with high mortality rates. We present a case of an immunosuppressed patient who developed HLH from an underlying histoplasmosis infection.

Case Presentation

A 42 year-old woman with a two year history of ankylosing spondylitis, who was recently initiated on Infliximab, presented with abdominal pain, fevers, and jaundice. She was found to be febrile to 104F and have a leukocytosis. She was suspected to have acute cholangitis and was initially treated with antibiotics, however, several imaging studies, including ultrasound, HIDA, and MRCP did not appreciate intra or extra hepatic duct dilatation, bile duct wall thickening, or cholelithiasis/choledocholithiasis. She remained febrile and had persistent elevation of her liver enzymes and bilirubin. Her clinical condition worsened, progressing to renal failure, cerebral edema and new onset seizures. Liver biopsy was obtained and demonstrated acute granulomatous hepatitis secondary to fungal organisms, morphologically consistent with Histoplasma. Interestingly, further history from the patient revealed that she had been maintaining a chicken coop in her backyard for the past several years. Due to her persistent fevers, cytopenia and a ferritin level of 20,308, the suspicion for HLH continued to

grow. Bone marrow biopsy was performed which noted hemophagocytic cells, as well as fungal yeast forms, as seen with the use of GMS stain. In fact, she met six of the eight diagnostic criteria for HLH based on the Histiocyte Society's Guidelines (HLH-2004) - [Fever, bi-cytopenia, hypertriglyceridemia, elevated ferritin, elevated soluble IL-2 receptor, and hemophagocytosis on bone marrow biopsy]. It was believed that her HLH was secondary to disseminated histoplasmosis. She was started on liposomal Amphotericin B for treatment of disseminated histoplasmosis, as well as Etoposide and Dexamethasone for treatment of HLH. Her clinical condition improved, and within 3 weeks of initial diagnosis of HLH, she was ultimately discharged with continued treatment with Itraconazole, as well as a four week taper of Dexamethasone.

Discussion

This case illustrates a patient, who after initiation of treatment with an anti-TNF agent for ankylosing spondylitis, developed HLH due to disseminated infection with Histoplasma capsulatum, likely contracted from maintaining a chicken coop at her home. If left undiagnosed, HLH is rapidly progressive and potentially fatal. Prompt recognition and diagnosis of this disease is crucial to ensure timely treatment, however due to its rarity, and non-specific clinical presentation, this may be of great obstacle.

MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE
Mahrukh Khalid

The unresolved forearm cellulitis and abscess despite drainage and antibiotics

Title

The unresolved forearm cellulitis and abscess despite drainage and antibiotics

Authors

1. Mahrukh Khalid, MD 2. Stephanie Hang, MD 3. Geetha Krishnamoorthy, MD 4. Rula Mahayni, MD

Introduction

Actinomycosis is uncommon infection caused by actinomyces species, an anerobic gram positive bacteria usually colonizing oral cavity, colon, and vagina. Three classic clinical presentations that should prompt consideration of actinomycosis includes mass-like features, chronicity, and development of mucosal tracts. Most if not all actinomycotic infections are polymicrobial. Actinomycosis is characterized by contiguous spread without respect to tissue planes. Men have a 3-fold higher incidence than women. The common presentations are cervicofacial, thoracic or abdominal actinomycoses, with pelvic actinomycosis occurring in women with long standing intra uterine devices. We report a case of Actinomycosis forearm abscess in an intravenous drug user.

Case Presentation

A 36-year-old man presented to the Emergency Department with worsening right forearm pain and swelling, which started with a small bump that progressively increased. He initially sought treatment 2 weeks prior and was treated with incision and drainage and empiric clindamycin. Upon follow up in surgery outpatient clinic, he had a sharp excisional debridement and was discharged home on doxycycline. Due to return of pain on the open wound with drainage, he came back to the hospital. The patient admitted to injecting brown heroin mixed with tap water. Patient was afebrile with normal vital signs. On physical examination there was a 2cm x 4cm open wound on the right forearm with erythematous and edematous edges, with drainage. There was tenderness in the surrounding area with an area of fluctuance proximal to the antecubital fossa. Laboratory tests were significant for a c-reactive protein of 14.2 mg/L, with anemia of chronic disease and mild thrombocytopenia without leucocytosis. The wound culture from his second debridement showed Actinomyces and Beta hemolytic Streptococcus.

CT scan showed a 1cm retained needle fragment in the left forearm with cellulitis and abscess. Patient was started on intravenous vancomycin and ampicillin/sulbactam. After another incision and drainage, patient was discharged on oral amoxicillin/clavulanate for 2 weeks. Patient was seen in our continuity clinic after a week of discharge and was found to be improving significantly.

Discussion

Actinomycosis is not common in the forearm. In this patient, the retained foreign body and licking of needle probably contributed to actinomycosis of forearm. There are case reports of polymicrobial soft tissue abscess and endocarditis due to actinomyces in injection drug users. A case series of soft tissue abscess in injection drug users reports Actinomyces odontolyticus in 15% of the patients. Actinomyces usually have companion bacteria (in our case streptococcus) which are co-pathogens that enhance the invasiveness and earlier manifestations of actinomyces. When abscess does not resolve despite adequate surgical debridement and antibiotics, especially in injection drug users, polymicrobial infection with actinomyces should be considered so that appropriate culture and antibiotic can be given. Penicillin is the usual treatment of actinomycosis, and this patient's treatment failure is probably due to empiric clindamycin and doxycycline targeting staphylococcus

MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE
Danekka Loganathan, MBBS

Disorder of the heart caused by the brain!

Title

Disorder of the heart caused by the brain!

Authors

Danekka Loganathan, Punitha Vijayakumar. St Mary Mercy Hospital, Livonia, Michigan.

Introduction

Cardiac asystole following a seizure is a rare life-threatening event typically associated with temporal lobe epilepsy and is a risk factor for sudden unexpected death in epilepsy (SUDEP). This involves activation of cortical autonomic centers that increase vagal tone through activation of brainstem reflex centers, thereby causing cardiopulmonary failure.

Case Presentation

A 62-year-old male with hypertension, COPD, stroke presented with altered mental status During the admission he had a 49 second period of asystole which resolved spontaneously. He was agitated and combative following the event and was triaged to ICU. While in the ICU a generalized tonic-clonic seizure precipitated bradycardia and subsequent asystole, for which he received CPR. ROSC was achieved after 2 minutes. His electrolytes were normal, EKG was unremarkable, with normal QTc. EEG showed encephalopathy without active seizures. CT head was unremarkable for acute findings. Echocardiography was unremarkable. He got a dual chamber pacemaker and was discharged to follow-up with neurology for further evaluation of new onset seizures.

Discussion

Ictal asystole is a rare event, and commonly treated with a pacemaker. It is crucial to identify ictal causes of asystole without misdiagnosing it for seizure following hypoperfusion due to cardiac arrest. Early diagnosis of this is crucial to prevent SUDEP. As insertion of pacemaker has been proven to be lifesaving.

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MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE Heba Osman

Vitamin B12 Deficiency Presenting As Thrombotic Thrombocytopenic Purpura: A Fragmented Diagnosis

Title

Vitamin B12 Deficiency Presenting As Thrombotic Thrombocytopenic Purpura: A Fragmented Diagnosis

Authors

1. Heba Osman, DO, Internal Medicine/Pediatrics, Wayne State University/Detroit Medical Center 2. Maher Musleh, DO, Internal Medicine, Henry Ford Hospital

Introduction

Vitamin B12 deficiency is usually associated with megaloblastic anemia. However, it can rarely present as pseudo-thrombotic microangiopathy (TMA). Pseudo-TMA is a distinct clinical entity that describes TMA secondary to vitamin B12 deficiency and can present with thrombocytopenia, hemolytic anemia, and fragmented RBCs. This can lead to misdiagnosis as thrombotic thrombocytopenic purpura (TTP) and the initiation of incorrect management.

Case Presentation

A 77-year-old female with a history of hypertension and osteoporosis presented to the emergency department with dizziness, fatigue, decreased oral intake, and weakness for a few weeks. She also reported blurry vision and paresthesias in her lower extremities. Physical examination including a neurological examination was normal. Laboratory tests revealed a severe macrocytic anemia and thrombocytopenia. Hemoglobin was 6.4 gm/dL (reference range 11.5 - 15.1 gm/dL), mean corpuscular volume was 124.7 FL (reference range 82 - 97 FL), and platelets were 102,000/CUMM (reference range 150,000 - 450,000 /CUMM). Further work-up was remarkable for a low vitamin B12 of 107 pg/ml (reference range 180 - 914 pg/mL) and ongoing non-immune hemolysis. Total bilirubin was increased at 1.74 mg/dL (reference range < 1.50 mg/dL), indirect bilirubin was increased at 1.31 mg/dL (reference range 0 - 0.8 mg/dL), LDH was also increased at 1,433 unit/L (reference range 140 - 271 unit/L), haptoglobin was low at

Discussion

Pseudo-TMA secondary to B12 deficiency is an uncommon presentation that can mimic TMA present in TTP. Our patient presenting with thrombocytopenia, hemolytic anemia, and schistocytes raises concern for TTP however reticulocytopenia was consistent with the diagnosis of B12 deficiency. Further antibody testing then confirmed pernicious anemia. Advanced pernicious anemia can lead to ineffective erythropoiesis which results in the production of poorly formed red blood cells that are more prone to lysis. This is known as intramedullary hemolysis and results in a severe anemia, thrombocytopenia, and fragile red blood cells that are easily sheared resulting in the production of schistocytes. Thus, reticulocytopenia in the setting of hemolysis should alert physicians to consider other diagnoses such as B12 deficiency.

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MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE Rohan M Prasad, DO

High-Grade Atrioventricular Block and Takotsubo Cardiomyopathy

Title

High-Grade Atrioventricular Block and Takotsubo Cardiomyopathy

Authors

Rohan Prasad, Muhammad Fahad Salam, Shaurya Srivastava, Reema Sheth, FNU Samreen, Matthew Wilcox, Zulfiqar Qutrio Baloch

Introduction

We present a case of an abrupt onset of 2:1 atrioventricular block (AVB) and Takotsubo's cardiomyopathy (TTC).

Case Presentation

A 71-year-old female with a history of ischemic stroke and chronic lymphocytic leukemia in remission presented after a syncopal episode. The patient stated before passing out, she had walked about 10 feet and was nauseous, lightheaded, dizzy, and short of breath. The patient denies preceding chest pain and palpitations, as well as recent emotional stress or possible triggers. She is not taking any anti-platelets, anti-coagulation, anti-arrhythmic, or beta blockers. In the emergency department, blood pressure was 230/120 mmHg and pulse 38 bpm, but otherwise stable and now asymptomatic. Moreover, the physical exam, laboratory investigations, and pan-imaging were unremarkable. However, an electrocardiogram showed a new onset 2:1 AVB, bi-fascicular block, and prolonged PR (293 ms) and QTc (514 ms) intervals. An echocardiogram revealed an ejection fraction of 30-35%, hypokinesis of apex, mid-infero-septum, mid-anterolateral, apical to mid-inferior, and apical to mid-anterior walls, and hyperkinesis of basal segments. The cardiac catheterization illustrated normal coronary arteries without significant stenosis. Therefore, the patient was diagnosed with 2:1 AVB and TTC. Subsequently, she was started on lisinopril. Later that day, the patient underwent a dual chamber pacemaker implantation. The patient was discharged home on daily lisinopril and recommendation for follow-up echocardiogram in six weeks showed improvement of ejection fraction 50%, mid to apical hypokinetic segments, and device lead in the right heart chambers.

Discussion

Two reports have reported the rare prevalence of AVB amongst TTC patients at 2.9% (24/816) and 2.2% (4/178). The trigger of TTC, or broken heart syndrome, is strongly linked with emotional or physical stress triggers. The difficult task in these patients is determining the initial pathophysiology. It has been suggested that diffuse coronary spasm can cause TTC through transient and reversible ST segment elevation and ejection fraction reduction, such as in our patient. While ventricular arrhythmias with TTC resolve rather quickly, brady-arrhythmias are usually present long term. The current evidence suggests that since both diseases do not resolve at the same rate, TTC is unlikely to be the precipitating factor. A possible mechanism for AVB inducing TTC is increased catecholamine secretion producing a vagal response. Moreover, brady-arrhythmias often require pacemaker implantation, even if the patient becomes asymptomatic. However, it should be made on a case-by-case basis. In our patient, we determined it was beneficial. In conclusion, patients can present with both AVB and TTC, although rare. Further studies are required to determine the order of pathogenesis, so that treatment can be specialized.

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MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE
Priyanjali Pulipati, MBBS

Breaking the dry ice- a case of accidental carbon dioxide poisoning

Title

Breaking the dry ice- a case of accidental carbon dioxide poisoning

Authors

1. Priyanjali Pulipati, MD 2. Priyadarshini Dixit, MD 3. Mahrukh Khalid, MD 4. Cecilia Cosma, MD 5. Geetha Krishnamoorthy, MD, FACP

Introduction

Carbon dioxide (CO_2) inhalation acts both as an asphyxiant and a toxin. Dry ice is a solid form of CO_2 which is commonly used as an industrial coolant. Solid dry ice undergoes sublimation to gaseous CO_2 at room temperature. When inhaled, symptoms may include headache, dizziness, unconsciousness, seizures, coma, and even death based on concentrations of CO_2.

Case Presentation

A 35-year-old man with a significant past medical history of depression and tobacco use was brought into the Emergency Department (ED) on a warm summer night after he was found unconscious in a walk-in freezer at the fast-food restaurant where he worked. His co-workers found him and called Emergency Medical Services (EMS). The patient regained consciousness in about 5-6 minutes while on the ambulance. In the ED, on further history, he said he had been working in the freezer for 20-30 minutes when he developed a headache, felt dizzy, fatigued, went into a “dream-like state” and lost consciousness. We contacted his co-workers who reported that the walk-in freezer had been out of order and they had packed it with dry ice. On presentation, the patient was tachycardic (Heart Rate 128/ min), tachypneic (Respiration Rate 24/ min) and the oxygen saturation was 89% on ambient air. He was started on 6L oxygen by nasal cannula. On physical examination, he was in visible respiratory distress. Laboratory tests were significant for low bicarbonate (17 meq/L), high lactic acid (13.1 mg/dL), and mildly elevated liver enzymes, Aspartate Aminotransferase (82 U/L), Alanine Aminotransferase (73 U/L). Carboxyhemoglobin level was elevated at 5.3% (normal range in smokers 3–5%). The patient was given crystalloid fluid boluses and was transitioned to a non-rebreather mask at 15L oxygen. Arterial blood gases at this time showed an acute hypoxic respiratory failure with metabolic acidosis pH 7.38, PO_2 54, PCO_2 33.8, Hco3 20.2. Repeat ABG in 2 hours showed pH

7.43, PO2 53, PCO2 36.7, HCO3 24.1, and a lactate of 1.1 mg/dL. He improved significantly in the next 24 hours and we were able to wean off oxygen, saturating at 96% on room air.

Discussion

Warmer temperatures increase CO2 production from dry ice and confined spaces increase toxicity. There are clear safety guidelines about the use and transport of dry ice by the Occupational Safety and Health Administration (OSHA). According to a study by OSHA in 2015, 90 deaths were attributed to “confined space hypoxic syndrome” in the United States which is described as accidents in pits, mines, underground storage bins, and so forth resulting in oxygen-deficient atmospheres. Our case illustrates that accurate and detailed history taking can help recognize a potentially fatal medical emergency and ensure early intervention. Removal of toxic environment and oxygen delivery are mainstays of treatment.

MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE James P Purtell

Amyloid Got Your Tongue? A Case of Multiple Myeloma Presenting with Dysphagia

Title

Amyloid Got Your Tongue? A Case of Multiple Myeloma Presenting with Dysphagia

Authors

James P. Purtell, MD. Zarina Alam, MD

Introduction

Multiple myeloma is a well-known malignancy characterized by plasma cell proliferation producing monoclonal immunoglobulin. Typical symptoms of MM at presentation include bone pain from lytic lesions, hypercalcemia or renal dysfunction secondary to amyloid deposition. Deposition also occurs in other organs with organ-specific findings such as heart failure and hepatomegaly. Amyloid deposition causing dysphagia is a poorly described sequela of MM, especially in the absence of other typical MM symptoms. Here we present a case of multiple myeloma presenting as progressive dysphagia in a patient without other symptoms of MM.

Case Presentation

A 71 year old male with history of stage 3 chronic kidney disease attributed to hypertension and diabetes presented to an outpatient swallow study due to a multi-month history of dysphagia that progressed to significant difficulty tolerating any oral intake. The study revealed severe pharyngeal dysphagia resulting in aspiration of all consistencies and severe residue. He was admitted directly from clinic due to malnourishment, dehydration, and for further workup. Examination showed cachexia and pooled oral secretions without visible obstruction or lesion. No lymphadenopathy, pain or neurologic deficit was elicited. Admission laboratory studies were notable for unremarkable complete blood count and creatinine 1.5, consistent with patient's known baseline. A barium esophagram revealed presbyesophagus without other abnormalities. Laryngoscopy showed laryngeal edema without visible mass or obstruction. EGD with biopsies of the esophagus was unremarkable. CT head and neck showed irregular soft tissue edema of the larynx without masses or lymphadenopathy. Laboratory studies for paraneoplastic and neuromuscular disorders were negative. An MRI soft tissue neck revealed non-specific, hypointense lesions near the tongue; biopsy revealed amyloid deposition. Protein

electrophoresis was suggestive of multiple myeloma, and the diagnosis was confirmed by bone marrow biopsy. Skeletal survey was negative for bone lesions. The patient received a PEG tube and was started on chemotherapy. Hospital course was complicated by refeeding syndrome, multiple aspiration events and eventual tracheostomy placement.

Discussion

Multiple Myeloma is a malignancy with a pattern of "classic" symptoms, such as bone pain, kidney dysfunction and hypercalcemia. Dysphagia as the primary presenting symptom of MM is exceedingly rare; cases of MM-induced amyloid deposition causing dysphagia have been reported, but in the context of late-stage disease with systemic signs, bone lesions and lab abnormalities (1). Amyloid deposition typically presents with renal or cardiac dysfunction. Deposition may also occur in the gastrointestinal tract, causing bleeding or dysmotility. None of the well-described myeloma findings were present in this patient, nor were findings typically expected in the setting of progressive dysphagia. First-line studies for dysphagia including swallow study, barium esophagram, and direct visualization were minimally revealing, necessitating expansion to less-commonly used modalities. Though there was no visible mass or obstruction, MRI soft tissue neck revealed the nonspecific lesion of laryngeal amyloid that would lead to diagnosis of multiple myeloma. Exhaustive multimodal workup was necessary, and the MRI soft tissue neck – rarely used outside of known head/neck malignancy (2) – showed utility in this novel presentation and may be worth consideration in other cases of dysphagia where etiology is not readily apparent.

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MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE
Lakshmi G Rao, DO

Asymptomatic Compartment Syndrome from an Ulnar Approach

Title

Asymptomatic Compartment Syndrome from an Ulnar Approach

Authors

Lakshmi Rao, DO; Anila Rao, DO; Don Tait, DO; Surya Rao, MD

Introduction

In the United States, the rate of upper extremity arterial approaches in cardiovascular procedures has grown from 1% in 2008 to 40.6% in 2017. A complication that may arise from these procedures is acute compartment syndrome. Compartment syndrome classically presents with the 5Ps: pain, pulselessness, paresthesia, paralysis, and pallor. We present a case of asymptomatic compartment syndrome following an aortogram performed using a right ulnar approach.

Case Presentation

A 89-year-old female presented to the hospital with a right lower extremity that was cool to touch with associated non-healing right foot ulcer. An aortogram was performed utilizing ultrasound guidance to access the right ulnar artery. The study demonstrated 100% occlusion of the right common iliac artery. Right femoral artery access was then attained and EKOS catheter directed thrombolysis was performed. Ulnar artery hemostasis was maintained with a TR band compression device. However, a right forearm hematoma was still observed on postoperative day 1. During the patient's hospital stay, a thrombectomy and multiple angioplasties were performed of the bilateral lower extremities. The hospital course was further complicated by a questionable bruit auscultated over the right ulnar artery. However, the remainder of the physical exam demonstrated 3+ ulnar and radial pulses, along with no changes in pallor, paralysis, pain or paresthesias. Initial hematoma was notably softened with slight wrinkling of the skin overlying the surrounding area. Ultrasound of the right forearm revealed significant soft tissue edema, a 4.0 cm x 3.0 cm x 1.1 cm fluid collection consistent with findings of a hematoma in the middle and distal forearm. Along with elevated peak systolic velocity within the right radial artery. Despite the lack of classic physical exam findings, the ultrasound results increased providers suspicion for acute compartment syndrome. Thus the decision to perform

invasive compartment pressure measurements was made. The right dorsal and volvar forearm compartment pressures were found to be within 30mmHg of the patient's diastolic blood pressure, confirming the diagnosis of acute dorsal volvar compartment syndrome. Emergent right forearm fasciotomy of the dorsal and volvar aspects with debridement of the necrotic musculature was then performed.

Discussion

Compartment syndrome is a surgical emergency and is typically diagnosed by clinical suspicion, related risk factors, and physical examination. This case illustrates an atypical presentation of acute compartment syndrome in an otherwise asymptomatic patient where physical examination findings were unreliable in making the diagnosis. Therefore, there should be a high index of suspicion for acute compartment syndrome in any patient with a forearm hematoma after radial and ulnar procedures despite clinical symptoms. This is even more crucial in the setting of recent administration of thrombolytics or use of anticoagulation. Ultrasound evaluation should be utilized as a noninvasive screening tool when there is any suspicion of compartment syndrome. This should be followed by invasive measurements of compartment pressures if suspicion remains after the initial screen. Emergent fasciotomy and debridement of necrotic tissue should occur when the compartment pressures are found to be within 30mmHg of the diastolic blood pressure confirming the diagnosis of acute compartment syndrome.

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MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE
Lakshmi G Rao, DO

AN ATYPICAL PRESENTATION OF POST-TRANSPLANT LYMPHOPROLIFERATIVE DISORDER (PTLD): ISOLATED CARDIAC TAMPONADE WITH LYMPHOMATOUS FLUID STUDIES

Title

AN ATYPICAL PRESENTATION OF POST-TRANSPLANT LYMPHOPROLIFERATIVE DISORDER (PTLD): ISOLATED CARDIAC TAMPONADE WITH LYMPHOMATOUS FLUID STUDIES

Authors

Lakshmi Rao, DO; Anila Rao, DO; Surya Rao DO

Introduction

The incidence of post-transplant lymphoproliferative disorder (PTLD) is 2-3.5% after orthotropic liver transplantation (OLT). We present the first reported case of PTLD isolated only to the pericardial fluid in the setting of cardiac tamponade.

Case Presentation

A 71 year old male with history of HCV cirrhosis status post liver transplantation with sustained viral response presented with one week of abdominal pain and distension, dyspnea, decreased urine output and fatigue. Patient was compliant with his immunosuppressive regimen of tacrolimus. Abnormal labs revealed an elevated alkaline phosphatase 205, elevated BNP 93, BUN 79 and Cr 3.36. Transthoracic echocardiogram (TTE) revealed an ejection fraction of 55% and a circumferential moderate to large pericardial effusion with echocardiographic evidence of cardiac tamponade. Pericardiocentesis removed 470 mL serosanguinous output with pericardial drain placed. Fluid analysis revealed 47% atypical blastoid cells and an elevated LDH 11,572. Cytopathological analysis of pericardial fluid was consistent with diffuse large B-cell lymphoma (DLBCL). CT chest, abdomen, and pelvis did not reveal any areas of enlarged lymph nodes or concern for lymphoma. Peripheral blood smear and bone marrow biopsy were unremarkable. Rituximab, cyclophosphamide, hydroxydaunorubicin hydrochloride, vincristine and prednisone (R-CHOP) and Granix were initiated prior to discharge.

Discussion

For any patient that presents with clinical symptoms and TTE findings consistent with cardiac tamponade with a history of transplantation or immunosuppressive therapy, possible malignant etiology needs to be considered. Fluid analysis and cytology should be performed despite what imaging or peripheral blood smear may reveal. This case illustrates the importance of considering diagnostic pericardiocentesis for new pericardial effusions in patients on immunosuppression with a history of solid organ transplantation to exclude PTLD.

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MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE Rita Rehana

A Rare Case of Salmonellosis Seeding the Brain

Title

A Rare Case of Salmonellosis Seeding the Brain

Authors

Rita W. Rehana, M.D., Internal Medicine, Henry Ford Macomb Hospital, Clinton Township, MI; Michel Hanna, M.D., Infectious Disease, Henry Ford Macomb Hospital, Clinton Township, MI; Niluka Weerakoon, M.D., Internal Medicine, Henry Ford Macomb Hospital, Clinton Township, MI

Introduction

Salmonella is a facultative intracellular bacterium that can colonize humans through fecal-oral route transmission. Salmonella Dublin is known to be prevalent on dairy farms in the United States. Pathogenic potential and disease outcomes differ substantially by serotype. Invasive nontyphoidal Salmonella isolated pathogenic serotypes are most commonly Salmonella enteritidis and typhimurium. Salmonella enterica serotype Dublin, is known to have a greater predisposition for causing invasive disease and more likely to cause bacteremia. The clinical presentations can vary between acute and chronic carriers. Symptoms include gastrointestinal manifestations, septicemia or focal infections. Focal intracranial infections are unusual and rare manifestations of salmonellosis. According to literature review, focal infections due to salmonella are very rare and not many cases have been reported in world literature. We describe an interesting case of salmonella bacteremia complicated by subdural salmonella empyema.

Case Presentation

An 83 year-old female with history of hypertension presented to the emergency department with altered mental status for the past 2 days. Family reported patient to have a low impact fall, 2 weeks prior. In route, patient was noted to be febrile at 101.7°F. Upon arrival, vitals were stable. Patient was found to have impaired mobility and aphasia. Per family, patient was at her normal baseline health prior. Bloodwork was significant for hyponatremia and electrolyte disturbances. CT head showed acute and subacute and acute on chronic subdural hematomas overlying the left and right cerebral convexities measuring up to 2 cm and 0.8 cm in thickness

respectively. Associated mass effect on the left cerebral hemisphere with extensive sulcul effacement and mild 4 mm left-to-right midline shift. Neurosurgical recommendations for burr hole evacuation of subdural hematoma and insertion of drain. During procedure, purulent malodorous bloody was drained and cultures obtained. Meanwhile, blood cultures returned positive for pan-susceptible Salmonella Dublin. Subsequent hematoma cultures were positive for Salmonella, making the post-operative diagnosis subdural hematoma and empyema. Antibiotics were initiated with plan to treat for 8 weeks.

Discussion

We describe a rare case of salmonellosis seeding the brain. Our patient was diagnosed with salmonella bacteremia, resulting in an infected subdural hematoma. Extra-intestinal focal infections are related to host immune deficits and diseased tissue. The mainstay treatment is with antibiotic therapy and surgical debridement, if necessary, to achieve clinical and bacteriologic cure. Invasive non-typhoidal salmonella is an emerging pathogen. The usual suspect is an immunocompromised host. With a better understanding of its ecological and immunological niche and epidemiology, we can create new avenues for public health strategies to prevent infections and minimize transmission. This should also prompt clinicians to have an increased awareness of possible occult immunosuppressive disease in an infected patient with salmonellosis.

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MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE Rita Rehana

Primary Central Nervous System Lymphoma: The Great Imitator

Title

Primary Central Nervous System Lymphoma: The Great Imitator

Authors

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Introduction

Primary central nervous system lymphoma (PCNSL) is a rare type of diffuse large B-cell lymphoma (DLBCL), representing less than 3% of all primary intracranial malignancies. It also rarely presents in immunocompetent patients. PCNSL in immunocompetent hosts are most commonly single lesions and supratentorial, in locations such as basal ganglia, thalamus, and corpus callosum. PCNSL can arise in the brain, eyes, spinal cord, leptomeninges, or cranial nerves, with only 9% of cases involving cerebellum. On the contrary, the most common cerebellopontine angle tumor is a vestibular schwannoma. Both of these tumors can have symptoms relative to their location and very similar clinical features. The most common clinical presentations include focal neurological symptoms, ocular deficits, headache, nausea, vomiting, and seizures. Often, differential diagnoses may include, nerve sheath tumor, peripheral vestibular dysfunction or vertigo. We present a case of primary DLBCL of the central nervous system with an unusual presentation masked by systemic symptoms.

Case Presentation

A 68-year-old female with past medical history of hypertension, hypothyroidism was admitted for dizziness and ataxia with associated nausea-vomiting. Gastroenterology evaluation with endoscopy was unremarkable. Supportive care was advised and she was discharged home. Patient returned with complaints of profound dizziness. Further workup with magnetic resonance imaging (MRI) brain demonstrated restricted diffusion and homogenous enhancement of mass at the left pontomedullary junction measuring 17.3 x 14.0 x 15.5 mm. The mass was located near the origins of the hypoglossal, vagus and spinal accessory nerves, favored to represent a hypoglossal nerve schwannoma. She was evaluated by otolaryngology-audiology with findings revealing right peripheral vestibular impairment and recommended

steroids for potential neuritis and vestibular rehab. Patient was discharged to subacute rehab with subsequent re-hospitalization for facial droop and syncope. At this time, patient was re-evaluated by neurosurgery who performed suboccipital craniectomy and excision of mass. Pathology was consistent with aggressive B-cell lymphoma with the histopathologic features of DLBCL. Metastatic workup was negative.

Discussion

PCNSL is a malignant subtype of DLBCL. DLBCL is an aggressive malignancy of the lymphatic system. This case highlights an immunocompetent patient presenting with initial symptoms mimicking an acoustic tumor, when in fact, the diagnosis was an isolated primary CNS tumor. Our patient presented with multiple different symptoms that made the initial diagnosis particularly challenging. Differential diagnoses such as posterior stroke or tumor became more evident. Many conditions can mimic posterior circulation stroke, peripheral vestibular dysfunction, and vertigo. The patient's relentless nausea, vomiting, and dizziness despite multiple interventions, prompted a MRI brain, the most sensitive imaging for the posterior fossa. The clinical picture usually determines the location of the tumor. However, the tumor location and the patient's persistent symptoms were perceived as an acoustic neuroma, which further delayed the diagnosis. PCNSL is characterized by homogenous contrast enhancement of lesion, as well as, restricted diffusion on diffusion-weighted imaging on MRI. The patient's MRI brain findings were compatible to characteristics of PCNSL. This case demonstrates the importance that a broad differential diagnosis must be considered, because many malignant and benign tumors can present with similar clinical and radiographic patterns.

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MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE
Bernadette Schmidt

tPA Induced Angioedema: A common remedy with an unexpected reaction

Title

tPA Induced Angioedema: A common remedy with an unexpected reaction

Authors

Bernadette Schmidt*, Vatsal Khanna*, Victoria Gonzalez, Aldin Jerome, Zain Kulairi

Introduction

Angioedema of the tongue subsequent to intravenous tissue plasminogen activator(tPA) administration is rare with a prevalence of 1.3-5%(3). Angioedema is a self-limited, localized subcutaneous (or submucosal swelling, which results from extravasation of fluid into interstitial tissues. Angioedema results from the release of inflammatory mediators, mainly histamine and bradykinin, causing increase in vascular permeability of the affected tissue that leads to asymmetric, non-dependent and non-pitting swelling. We present a novel case of angioedema following administration of tPA in a patient with acute ischemic stroke.

Case Presentation

A 56-year-old woman with a history of hypertension presents to our hospital with chief complaint of acute right sided facial droop without associated aphasia, visual, sensory or other motor symptoms. The onset of symptoms was 10 minutes prior to presentation. Imaging illustrates, ischemic stroke of left cerebral hemisphere. NIHSS of 3 was calculated and stroke neurologist was notified, deeming the patient a tPA candidate with ICU admission for close monitoring. Soon thereafter, patient began to have angioedema of mouth, and bilateral hands, without airway compromise. She denied any history of allergies to medications. Home medications include amlodipine and paroxetine. Patient denied any similar episodes in the past. Patient received solumedrol, famotidine and Benadryl with improvement of symptoms. After work-up was completed, her angioedema improved, and she was discharged home with full resolution of neurological deficits.

Discussion

Intravenous (IV) recombinant tissue plasminogen activator(rt-PA) not only improves outcomes in acute ischemic stroke but is a relatively safe drug(1, 2). Even the most feared complication of IV rt-PA, symptomatic intracranial hemorrhage, occurs in only 2-9% of treated patients(1, 2). Orolingual angioedema as a complication of IV rt-PA is very rare but extremely fatal. It has been reported in 1.3-5% of stroke patients treated with IV rt-PA(3). It can manifest as a transient, self-limited swelling of the lips and tongue, but its severity and rapid progression may necessitate emergent intubation or cricothyrotomy(4). However, these interventions are not necessary in most of the patients as majority of the patients have self-limited benign clinical courses (3, 5, 6). Patients taking angiotensin converting enzyme(ACE) inhibitors are at increased risk of developing angioedema after rt-PA(3), but it has been reported in patients not taking these medications as well(5) as seen in our patient. The pathophysiology involves increased levels of plasma kinins. IV rt-PA generates plasmin, which is a protease that cleaves bradykinin from high-molecular weight kininogen. An increase in bradykinin leads to increased vascular permeability, which is the primary cause of angioedema associated with rt-PA(7). There are no first-line treatment options for orolingual angioedema caused by tPA administration, but standard prophylaxis treatment can be used to relieve or contain worsening edema(8). Many patients have resolution of symptoms with supportive care, corticosteroids, epinephrine, and histamine antagonists. Interestingly, tPA was the only identifiable factor leading to angioedema in this patient presenting with ischemic stroke and should be considered a rare, but potential risk, in patients receiving this life saving therapy.

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MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE
Radhika Sheth, MD

Collapsing type Focal Segmental Glomerulosclerosis: A Case of COVID19-associated Nephropathy

Title

Collapsing type Focal Segmental Glomerulosclerosis: A Case of COVID19-associated Nephropathy

Authors

R. Sheth, MD, K. Luthra, MD

Introduction

Collapsing focal segmental glomerulosclerosis (FSGS) is usually seen in association with HIV (known as HIV-associated nephropathy or HIVAN). However, it can also be seen in the association of other infections like parvovirus B19, cytomegalovirus, tuberculosis, and more recently, the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). The data we have is sparse, but it has been seen that COVID19 (Coronavirus Disease 2019) infection is often associated with acute kidney injury in hospitalized patients. Several cases of collapsing FSGS have been reported in patients cohorts from China and New York.

Case Presentation

This is a case of a 53-year-old African American gentleman with a history of bipolar disorder and hypertension. He was sent to the emergency room after he was found to have acute renal failure on a routine blood test with a creatinine of 7.27 mg/dL, blood urine nitrogen of 93 mg/dL, and a glomerular filtration rate of 8 mL/ min/ 1.73 m2. He had tested positive for COVID-19 a week before he presented to the emergency department. He had no peripheral signs of fluid overload and reported that his urine output was unchanged. His urinalysis was positive for 3+ protein. A 24-hour urine test showed nephrotic range proteinuria (7.5 grams/day). A work-up for nephrotic syndrome revealed normal complement levels, along with negative serum tests for C-ANCA, cryoglobulin, and serum protein electrophoresis. He also had negative tests for HIV 1/2 antibodies, VDRL, hepatitis A, B, and C. The renal ultrasound showed increased cortical echogenicity with enlargement of bilateral kidneys, consistent with chronic parenchymal renal disease. Nephrology was consulted and he underwent a renal biopsy that showed collapsing type FSGS. Over the course of his hospital admission, the AKI improved, and

a repeat COVID19 test was negative after two weeks. His proteinuria was in remission in a week from discharge, with a decrease from 7.27 to 3.5 grams/day.

Discussion

COVID19 has disproportionately affected people of color, especially the African American population. AKI, an independent risk factor of in-hospital mortality, has been reported in patients hospitalized with this infection- more so in African American patients in whom the presence of G1 and G2 allelic variants of the gene APOL1 confers an increased risk of FSGS and other kidney diseases. It is also postulated that there is a release of pro-inflammatory cytokines ("cytokine storm") causing podocyte injury leading to nephrotic range proteinuria. Our case adds to the existing literature regarding the renal manifestations of SARS-CoV-2. Generally, FSGS responds to steroids and calcineurin inhibitors, while some patients may require hemodialysis if their kidney function fails to respond. However, further studies need to be done regarding the role of steroids, antiviral medications, and cytokine inhibitors in COVID19-associated FSGS.

MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE
Gulmohar Singh

A Curious Case of Prolonged QTc

Title

A Curious Case of Prolonged QTc

Authors

Gulmohar Singh-Kucukarslan, MD, Nikko Sirdenis, MD, Zain Azzo, MD

Introduction

Adrenal insufficiency is a rare cause of prolonged QTc. It should be considered in a patient when no other etiology is present.

Case Presentation

A 59-year-old female with a medical history significant for secondary adrenal insufficiency, hypothyroidism, and NSTEMI presented to our hospital with abdominal pain, nausea, vomiting, and diarrhea. Vital signs notable for a blood pressure of 93/63 mmHg. Initial lab work revealed normal electrolytes: sodium 135, potassium 4.1, magnesium 2.3 and calcium 9.3. CT abdomen/pelvis was negative for acute process. High sensitivity troponin was elevated to 1030 ng/L. ECG revealed T wave inversions that were previously present but now more pronounced and QTc prolongation to 691 msec. Echocardiogram showed preserved ejection fraction without wall motion abnormalities. TSH was 4.27 mIU with a free T4 of 0.82 ng/dL. On further investigation, it was noted that the patient had not been taking her prescribed Cortef of 10 mg in the morning and 5 mg in the evening. She received IV magnesium and calcium gluconate for cardiac membrane stabilization. Given her normal TSH and free T4, hypothyroidism was excluded as a cause. There was no underlying infection, electrolyte abnormality, medications, or cardiac ischemia to explain prolonged QTc. Her Cortef regimen was restarted given her signs of adrenal insufficiency which resulted in a rapid decrease in her QTc interval to 496 msec over 24-hours. Her other adrenal insufficiency symptoms of abdominal pain, nausea, vomiting and diarrhea all resolved as well. She was discharged home on Cortef.

Discussion

This case illustrates a rare presentation of isolated secondary adrenal insufficiency with QTc prolongation. Only a handful of cases have been published. This case emphasizes the need for a wide differential when addressing prolonged QTc. The exact mechanism behind the link between adrenal insufficiency and QTc prolongation is unknown. One theory notes that glucocorticoids are known to upregulate the delayed rectifier K+ current channels responsible for ventricular repolarization; deficiency therefore results in prolonged QTc. These same channels have been implicated in congenital long QT syndrome. Overall, this is a curious case of prolonged QTc.

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MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE
Christopher Tan, MD

An Intracranial Tumor That Wasn't

Title

An Intracranial Tumor That Wasn't

Authors

Tan, CC; Loganathan A; Kudva, GC

Introduction

Intracranial tumors often present with progressive headaches, focal neurological deficits, and seizures. However, these symptoms are not unique to tumors.

Case Presentation

A 45-year-old Caucasian woman reported left-sided headaches, right-sided facial numbness and tingling for several months before presentation with right facial drooping and slurred speech. She also suffered a witnessed episode of convulsions and loss of consciousness, prompting her to seek care at our institution. A CT scan of the head revealed a left frontal lobe spherical mass measuring 2.6 x 2.8 cm, subsequently confirmed by MR Imaging. A CT of chest, abdomen and pelvis, performed particularly because of a significant smoking history, revealed only a benign appearing 4 mm pulmonary nodule in the left lower lobe and no evidence of a primary cancer in the lung or elsewhere. She underwent a successful left frontal craniotomy and resection of the mass. Pathological evaluation of the excised lesion identified hemorrhage and brain parenchyma with inflammatory cells. No tumor, benign or malignant, was identified. After excision biopsy of the intracranial mass confirmed the diagnosis of intracerebral hematoma, a thorough interview revealed no history suggestive of a bleeding disorder. A laboratory work-up for bleeding disorders was normal. Further inquiry revealed a remote history of cranial trauma secondary to domestic abuse, which likely caused the intracranial hematoma.

Discussion

This case illustrates how a slow bleed, due to a remote and apparently innocuous head injury, may be able to locally displace brain parenchyma and present with symptoms mimicking an intracranial tumor.

MICHIGAN POSTER FINALIST - CLINICAL VIGNETTE Wei Zhao

A Lurking Danger in Chronic Opioid Users

Title

A Lurking Danger in Chronic Opioid Users

Authors

Zhao, Wei MD, PhD; Sako, Zeyad MD; Hadid, Tarik MD, MS, MPH, FACP

Introduction

Opioid use has been surging since 1990s and evolving into a full-blown epidemic. Two million people aged 12 or older in the United States were estimated to suffer from opioid use disorder according to the 2018 National Survey. Opioid overdose has been well recognized as a leading cause of mortality. As a result, strict legislation efforts and preventive medical measures are implemented. However, opioid-induced adrenal insufficiency (OIAI) is often overlooked despite of the reports of adrenal crisis following acute insults in patients taking opioid chronically. Opioid causes central adrenal insufficiency by suppressing hypothalamus-pituitary-adrenal axis.

Case Presentation

A 34-year-old African American male with a past medical history of hemoglobin SC disease presented with a recurrent episode of acute vaso-occlusive pain crisis while on oral morphine. He endorsed severe stereotyped symmetrical pain in his lower back, hips and legs. He had been taking morphine sulfate extended release 200 mg three times a day and morphine sulfate immediate release 30 mg as needed with daily morphine milligram equivalents (MME) exceeding 700 mg since 2018. Upon interview, patient was talking and moving at a surprisingly slow pace. He also experienced fatigue, poor appetite, nausea and vomiting which cannot be fully explained by acute vaso-occlusive pain crisis itself. Complete blood counts revealed elevated eosinophil counts ranging from 0.08 to 0.75 K/mcl. His clinical picture raised the suspicion of underlying adrenal insufficiency. In line with this thought, morning cortisol level, morning adrenocorticotropic hormone (ACTH) level and ACTH stimulation test were checked. Morning cortisol level was 1.4 mcg/dL and 9.7 mcg/dL before and 60 minutes after administration of 250 mcg cosyntropin, respectively. Morning ACTH level was inappropriately normal at 33 pg/mL. These results confirmed the presence of central adrenal insufficiency. MRI brain was ordered to further evaluate the etiology and did not reveal any intrasellar, suprasellar

or parasellar mass. Opioid-induced adrenal insufficiency was diagnosed due to central adrenal insufficiency without a discernible pituitary mass. After consulting endocrine service, we started him on 20 mg of oral hydrocortisone three times a day. His functional status and gastrointestinal symptoms improved 2 days after receiving hydrocortisone. His hydrocortisone dose was subsequently tapered to 20 mg every morning and 10 mg every night.

Discussion

The symptoms of OIAI manifest as fatigue, weight loss, gastrointestinal dysfunction, headache or muscle aches. Observational studies have shown that the estimated prevalence of OIAI is 9% to 29% in patients who use opioids on a daily basis. It's safe to say that the prevalence of OIAI is far from uncommon in the middle of opioid epidemic. A huge gap exists in the management of chronic opioid users because clinicians frequently overlook or was unaware of OIAI. OIAI not only impairs patients' quality of life, it also potentially leads to catastrophic adrenal crisis and mortality under acute metabolic stress. Importantly, the awareness to OIAI should be raised in both patients and clinicians. Collaborative efforts of primary care physicians and endocrinologists should be made to timely diagnose this condition.

MINNESOTA POSTER FINALIST - CLINICAL VIGNETTE
Jennifer Gile

Hemophagocytic Lymphohistiocytosis Caused by Disseminated Histoplasmosis

Title

Hemophagocytic Lymphohistiocytosis Caused by Disseminated Histoplasmosis

Authors

Jennifer Gile, M.D. Chineze Akusoba, M.D. Doug Challener, M.D. Mark Enzler, M.D.

Introduction

Hemophagocytic Lymphohistiocytosis (HLH) is a rare and life-threatening hematologic disorder characterized by severe immune system overactivation. Patients with HLH are often ill and the presentation can be variable, making the diagnosis difficult. With nonspecific clinical presentations, providers should have a high index of suspicion to make the diagnosis as mortality is high without appropriate intervention.

Case Presentation

A 43-year-old female with medical comorbidities including multifocal choroiditis with panuveitis on adalimumab and mycophenolate was hospitalized locally with nausea, vomiting, fevers, headaches and night sweats of 2 weeks duration. Laboratory workup was significant for pancytopenia, transaminitis and elevated inflammatory markers. CT abdomen/pelvis revealed hepatosplenomegaly with diffuse hepatosteatosis. CT Chest demonstrated a rounded 1.4 cm ground-glass opacity in the left upper lobe and mediastinal adenopathy. A peripheral smear demonstrated burr cells and smudge cells. Initial ferritin was >5000 mcg/L (normal 11-307 mcg/L). Antinuclear antibody, double-stranded DNA, antineutrophil cytoplasmic antibodies and rheumatoid factor were negative. Lumbar puncture revealed elevated opening pressure and protein. Cerebrospinal fluid testing including cell count, glucose, protein, JC virus/Lyme PCR /West Nile virus/ HHV6 PCRs was negative/normal. Testing for tick borne illness, viral hepatitis, CMV and EBV were negative. The patient was transferred to our institution for further workup. Blastomyces, Bartonella, and Coxiella serologies were obtained and negative. Histoplasma urine antigen was >23 ng/mL (normal 0-0.1 ng/mL) confirming our suspicion that the patient had disseminated histoplasmosis (DH). Subsequent fungal blood cultures grew H. capsulatum and Histoplasma serology antibody complement fixation serologies were positive: yeast 1:128, mycelial 1:8 and both H & M bands were present. Repeat ferritin was >11,000 mcg/L.

Hematology was consulted with concern for hemophagocytic lymphohistiocytosis (HLH) secondary to DH infection since she fulfilled 5 of 8 diagnostic criteria for HLH: fever =38.5°C, splenomegaly, =2 cytopenias, ferritin level >500 ng/mL, and hypofibrinogenemia. Bone marrow biopsy demonstrated normocellular bone marrow and hemophagocytosis of red cell precursers and white cells and yeast forms were visualized on silver stain. The patient was diagnosed with HLH secondary to DH in the setting of immune deficiency. She received high-dose IV steroids for treatment of HLH and IV liposomal amphotericin B for induction treatment of the histoplasmosis with an excellent clinical response.

Discussion

HLH is a syndrome of pathologic immune activation and is classified as primary or secondary. Secondary causes of HLH include malignancies and infections associated with Epstein Barr Virus and H. capsulatum. Diagnosis of HLH is suspected based on presentation and laboratory abnormalities, as no single definitive diagnostic test exists. Initial treatment of HLH involves the use of steroids to block the hyper-inflammatory response and treatment of the underlying process if one is found. DH has emerged as one the second most common infectious cause of HLH in some case series. The patient was exposed to H. capsulatum during her childhood in which she lived on a farm in the Midwest. Her presentation is consistent with recrudescent histoplasmosis given her immunocompromised status. Histoplasmosis should be suspected in patients with risk factors for disease, fever, fatigue, weight loss, cytopenias, adenopathy, splenomegaly and elevated liver function tests.

MINNESOTA POSTER FINALIST - CLINICAL VIGNETTE
Sneha Mohan

Disseminated mycobacterial infection following cardiac surgery: the outbreak continues

Title

Disseminated mycobacterial infection following cardiac surgery: the outbreak continues

Authors

Sneha Mohan M.B.B.S., Internal Medicine, Mayo Clinic, Rochester, MN Mark J. Enzler M.D., Internal Medicine, Division of Infectious Diseases, Mayo Clinic, Rochester, MN

Introduction

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Case Presentation

A 66-year-old male presented with fevers, night sweats, decreased appetite and weight loss of 25kg over 10 months. Comorbidities included Type 2 diabetes mellitus, atrial fibrillation and aortic stenosis for which he had undergone surgical aortic valve replacement with a tissue valve, along with pulmonary vein isolation and left atrial appendage ligation and clip implantation in October 2018. Examination noted cachexia, sarcopenia, elevated JVP and bilateral pedal edema. Investigations revealed pancytopenia, hemoglobin 12.8 (ref:13.2-16.6 g/dl), white count 1.5 (ref:3.4-9.6 x 10(9)/L, platelets 88 (ref:135-317 x 19(9)/L) and elevated liver enzymes, ALT 41 (ref:7-55 U/L), AST 92 (ref:8-48 U/L) and alkaline phosphatase 470 (ref:40-129 U/L). Borderline high ESR of 20 (ref:2-20 mm/h) and C-RP 42.1 (ref:=8 mg/L) suggested systemic inflammation. Imaging with chest x-ray and CT chest identified moderate pericardial effusion and clear lung fields. CT abdomen and pelvis was unremarkable. Rheumatologic work up revealed positive ANA 1:320 titer (ref: < 1:80) with speckled pattern, normal complement, negative ENA, dsDNA and antiphospholipid labs, felt to be nonspecific and not further pursued. Infection workup, including general bacterial/fungal blood and urine cultures, QuantiFERON TB and serologies for Histoplasma, tick borne pathogens, HIV, Hepatitis B/C, Lyme, Coxiella and Whipple's were negative. FDG PET-CT (sarcoid diet protocol) demonstrated avidity in the left atrium at the site of implanted clip. Transthoracic echocardiogram revealed thickening of aortic valve leaflets and bulging of mobile tissue density from mitral annulus into the left atrium, with no vegetations. He remained febrile despite

empiric vancomycin and cefepime. 2 weeks later, mycobacterial blood cultures grew acid fast bacteria (AFB). Bone marrow biopsy to evaluate pancytopenia identified AFB associated with non-caseating granulomas. He was diagnosed with disseminated mycobacterial infection presumably from Mycobacterium chimaera, (a non-tubercular mycobacteria, NTM) so antibiotics were switched to IV amikacin, plus oral azithromycin, ethambutol and rifampin. Next generation sequencing of the patient's blood rapidly identified M. chimaera cell free DNA in the plasma (1226, ref:

Discussion

M. chimaera, a ubiquitous NTM, part of the Mycobacterium avium complex, is responsible for a global outbreak of local and disseminated infection following cardiac surgery with exposure to contaminated heater-cooler units manufactured by LivaNova in Germany. Symptom latency is approximately 1.6 years (range: 0.1 to 6.3 years) and is associated with high mortality(>50%). The outbreak was identified in 2016, when warnings were issued by the manufacturer. Our patient was exposed in 2018, highlighting the importance of remaining vigilant for this diagnosis. While mycobacterial blood cultures are the gold standard for disseminated NTM diagnosis, next generation sequencing studies can provide rapid identification of the organism in blood to facilitate early diagnosis and therapy of these infections. Surgery to remove infected prosthetic material provides improved outcomes.

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MINNESOTA POSTER FINALIST - CLINICAL VIGNETTE Alex Tarabochia

Leukemia Cutis: An Extramedullary Leukemia in a Patient with Bone Marrow Failure

Title

Leukemia Cutis: An Extramedullary Leukemia in a Patient with Bone Marrow Failure

Authors

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Introduction

Leukemia Cutis (LC) is an extramedullary form of leukemia that presents most often as a nodular or plaque like rash affecting the superficial and deep dermal layers of the skin. Rarer presentations include erythematous macules, blisters, and ulcers. We present a case of LC in a patient with longstanding hematological abnormalities including thrombocythemia diagnosed 25 years ago which has now progressed to bone marrow failure with myelofibrosis and pancytopenia.

Case Presentation

The patient is a 70-year-old man with past medical history of mild diastolic heart failure, prior tobacco use, mild COPD, hypertension, dyslipidemia, and myelofibrosis with pancytopenia requiring supportive transfusions who presented for evaluation of a new rash over the past one month. Review of systems was significant for arthralgias over a several month period treated with an increasingly higher dose of corticosteroids. Physical exam was significant for scattered, erythematous, tender, and rubbery with palpation randomly distributed over the upper upper extremities, scalp, chest, and thighs. The sizes ranged from 1-4 centimeters. Given the atypical distribution he was referred to dermatology and he underwent biopsy. The pathology was consistent with leukemia cutis, prompting further evaluation with bone marrow biopsy and translocation analysis. These additional tests showed no transformation to acute leukemia, hypocellularity, and 2-3 % blasts. He was started on ruxolitinib for myelofibrosis therapy.

Discussion

LC occurs is an extramedullary form of leukemia most commonly seen in AML and CLL (3-30%). The majority of patients diagnosed with LC have a known prior diagnosis of leukemia (55-77%), others are diagnosed with leukemia simultaneously (23-38%), and a very small minority of patients are aleukemic (7%). The latter, like our patient, almost always go on to develop leukemia over the span of a couple of months to years. Unfortunately the prognosis is quite grim with an average life expectancy of 1-3 months at time of diagnosis. The most classic physical exam finding is a nodular or plaque like rash. In rare cases it can present as erythroderma, ulcers or blisters. The differential is vast and includes non-malignant and malignant skin disorders. Non-malignant mimickers may include erythema nodosum, syphilis, psoriasis, drug eruption, viral infection, ulcering of various origins, and blistering diseases. Malignant mimickers may include Sweet's Syndrome, primary systemic amyloidosis, dermatomyositis, neurofibromatosis, lymphoma, and primary tumor invasion of the skin. The appearance of a plaque like or nodular rash that does not follow a classic distribution of any of the above, particularly in a patient with constitutional symptoms or a prior malignancy, should prompt a more extensive workup including blood work, dermatological evaluation, skin biopsy, and bone marrow biopsy if warranted. The treatment of all paraneoplastic skin disorders, including LC, requires treatment of the underlying malignancy.

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MINNESOTA POSTER FINALIST - CLINICAL VIGNETTE Grant A Wintheiser, MD

No Immunocompromise? No(cardia) Problem!

Title

No Immunocompromise? No(cardia) Problem!

Authors

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Introduction

Although typically thought of as an opportunistic infection, disseminated Nocardia can occur in immunocompetent patients. A high index of suspicion is required to make this diagnosis, as disseminated disease can involve almost any organ and result in a variety of clinical manifestations. Treatment for severe disseminated disease with CNS involvement is prolonged, with an initial IV induction phase followed by dual oral therapy.

Case Presentation

A previously healthy 44-year-old male was admitted with a several month history of headaches, fevers, fatigue and weight loss. He also had recurrent thromboses in the inferior vena cava, renal veins, and common iliac veins despite therapeutic anticoagulation. Prior to admission, he had undergone an extensive rheumatologic, infectious, thrombotic, and hematologic (including bone marrow biopsy and flow cytometry) workup, all of which had returned negative. MRI of the head a couple of months prior had reportedly been normal as well.

A PET-CT scan was obtained and showed a 1.5cm FDG-avid nodule in the left upper lung and hypermetabolic soft tissue masses in bilateral inguinal regions. He underwent biopsy of the lung nodule and the left inguinal mass. Histopathology of both samples demonstrated clumps of filamentous branching bacilli on Grocott's methenamine silver (GMS) and gram stain, consistent

with *Nocardia*. Broad range bacterial PCR (16s rRNA detection) returned positive for *Nocardia paucivorans*. He was started on intravenous (IV) trimethoprim-sulfamethoxazole (TMP/SMX) and amikacin. Subsequent MRI of the head showed innumerable enhancing lesions throughout the brain, consistent with abscesses, and so IV imipenem was added to his treatment. Immunodeficiency workup including HIV testing, immunoglobulins, dihydrorhodamine flow cytometry, quantitative lymphocyte subsets, and lymphocyte proliferation to antigens/mitogens was unremarkable. He was discharged with plans to complete an initial twelve weeks of IV triple therapy. Due to renal toxicity and ototoxicity, amikacin was discontinued after two weeks and replaced with oral minocycline. Tissue cultures eventually grew pan-susceptible *Nocardia paucivorans*.

Discussion

Nocardia is a filamentous, gram-positive, partially acid-fast bacterium that is ubiquitous in the environment. It is capable of disseminating to almost any organ, but it has a predilection for the lungs and brain. It also has a tendency to recur.[1] Disseminated infection is more common in immunocompromised hosts, but approximately one-third of infections occur in patients who are immunocompetent, such as ours .[2,3,4]

Treatment for severe disseminated infection involving the central nervous system (CNS) consists of at least six weeks of IV induction therapy, followed by prolonged dual oral therapy to complete twelve months of treatment. TMP/SMX forms the backbone of induction therapy and is combined with both amikacin and imipenem in life-threatening illness. Imipenem is needed in all cases with CNS involvement. Oral therapy consists of TMP/SMX and either minocycline or amoxicillin-clavulanate.[4] In those patients where immunosuppression cannot be reversed, secondary prophylaxis with TMP/SMX is often continued indefinitely.[5] In all cases it is imperative that susceptibilities be obtained, as different Nocardia species have variable resistance patterns.[6]

There is no evidence in the literature of *Nocardia* infection being associated with thrombosis or septic thrombophlebitis. The cause of our patient's recurrent extensive thromboses is unclear.

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MISSISSIPPI POSTER FINALIST - CLINICAL VIGNETTE
Valencia Monita Oglesby, DO

Enough Is Enough: A Case of Acromegaly

Title

Enough Is Enough: A Case of Acromegaly

Authors

Valencia Oglesby, DO; Ellie Dauterive Caswell, MD; Lillian F. Lien, MD, FACP

Introduction

Too much of a good thing can become an impediment. Our patient's case of acromegaly, an excess of growth hormone in adults, is a prime example of bigger not always being better.

Case Presentation

Patient is a 56-year-old African American female who mentioned to her primary care physician that clothing and accessories no longer fit her. Over the course of a year, she became unable to wear her favorite rings, and her feet had grown from a size 11 to a size 13. She had not grown in height nor weight. On physical exam, her hands and feet were indeed large. Her facial features had also coarsened in comparison to her driver's license photo taken a few years prior evidenced by widened nasal bridge, teeth spacing, and tongue enlargement causing a deep, muffled voice. Documented lab testing showed an elevated GH of 20 and IGF-1 of 982. A 2 cm pituitary macroadenoma found on brain MRI was found to be the culprit of the growth hormone secretion. The patient was later admitted to UMMC where a successful transsphenoidal resection was performed. After the surgery, she noticed her hands were "smaller" (less edematous) already, but not her feet yet. Post-surgical AM cortisol and serum osmolality were within normal limits. The patient was discharged on post-operative day 2.

Discussion

Acromegaly is defined as excess growth hormone secretion in adults, unlike gigantism found in children and adolescents before epiphyseal plates fuse. Over-secretion of growth hormone is usually caused by a benign pituitary tumor. The hepatic stimulation of insulin growth factor 1 generally causes the physical manifestations of acromegaly. Common physical presentations include findings such as enlargement of hands/feet along with nose/frontal/jaw bones

enlargement and coarsening of facial features. The diagnosis of acromegaly is confirmed by elevated IGF-1 levels and serum GH concentration. Inadequate suppression of serum GH after a glucose load can also confirm acromegaly in patients with an equivocal IGF-1 concentration. A brain MRI should be performed next to look for a GH-secreting pituitary adenoma. Treatment generally includes transsphenoidal resection of the tumor followed by post-operative monitoring for potential cortisol deficiency, transient SIADH, and diabetes insipidus. Physicians should obtain IGF-1 levels and a random GH level approximately 12 weeks after surgery. The somatostatin analog octreotide can be administered as an IM 20 mg once monthly dose in those who are not surgical candidates. The early cure rate in patients with acromegaly is 80 to 90 percent for microadenomas and less than 50 percent for macroadenomas.

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MISSISSIPPI POSTER FINALIST - CLINICAL VIGNETTE
Jeswinder Paul

Title: HIV-Associated Nephropathy in Early HIV-1 Infection Requiring Emergent Hemodialysis

Title

Title: HIV-Associated Nephropathy in Early HIV-1 Infection Requiring Emergent Hemodialysis

Authors

Authors: Jeswinder Paul, MD1; Hytham Rashid, DO, MPH2; Tiarra Clayton, DO1; Sowmya Puthalapattu, MD2; Kurt Bruckmeier, MD1

Introduction

HIV-Associated Nephropathy (HIVAN) rarely occurs early in the course of HIV-1 infections and is primarily managed with initiation of highly active antiretroviral therapy (HAART). Previous literature describes HIVAN classically presenting in individuals of African descent with advanced HIV infection experiencing heavy proteinuria and a rapid decline in kidney function due to a collapsing form of focal segmental glomerulosclerosis (FSGS). The following case illustrates an atypical presentation of acute HIVAN requiring emergent hemodialysis.

Case Presentation

A 25-year-old African-American male with hypertension and diet-controlled type 2 diabetes mellitus presented to the emergency department complaining of worsening diffuse abdominal pain for 3 months that evolved into nausea with nonbloody, nonbilious vomiting for the past day. He also reported persistent muscle cramping and facial swelling over the past two weeks. His social history was most significant for unprotected, receptive anal intercourse with 3 different male partners of unknown HIV status in the past year with his last HIV test reported as negative two years ago. Initial exam found an elevated systolic blood pressure of 150/57mmHg. He appeared somnolent with non-pitting periorbital edema, diffuse abdominal tenderness, and bilateral 1+ pitting edema below the knees. Pertinent labs included proteinuria of >300mg/dL (n: 0), hypoalbuminemia of 0.7g/dL (n:3.5-5.0), low total serum protein of 5.8g/dL (n:6.4-8.2), elevated creatinine of 7.53mg/dL (n:

Discussion

This case highlights a rare case of HIVAN in the era of HAART that progressed rapidly to require hemodialysis. Early initiation of HAART remains the mainstay of treatment, as it improves median survival and delays the need for dialysis initiation, however this patient did not experience renal recovery after 4 month follow up. Close surveillance of HIV in high risk populations can prevent HIVAN and delay renal replacement therapy. Following acute HIV infection, localized cytopathic effects occur in infected kidney epithelial cells, leading to chronic inflammatory changes as solid organs serve as a reservoir for HIV-1. The disproportionate incidence of HIVAN in patients of African descent implicates host-specific genetic risk factors such as APOL1 gene polymorphisms. Overall prognosis is directly associated with the severity of immunosuppression at the time of diagnosis. Further research to identify risk factors and optimize therapy may improve clinical outcomes.

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MISSOURI POSTER FINALIST - CLINICAL VIGNETTE
Debapria Das, MD

In the Wrong Place, Caught at the Right Time: An Atypical Cause of Chest Pain

Title

In the Wrong Place, Caught at the Right Time: An Atypical Cause of Chest Pain

Authors

Debapria Das MD, Maliha Bhatti MD, Hiral Choksi MD

Introduction

Ruling out cardiac causes of chest pain is a bread and butter skill of an internist. Many are aware of hypertrophic obstructive cardiomyopathy as a cause of chest pain and sudden cardiac death in young adults. However, fewer encounter the second most common cause.

Case Presentation

A 36 year old female with a past medical history of hypothyroidism, type two diabetes, asthma, polycystic ovarian syndrome, and bipolar disorder presents with sharp chest pain that radiates to her left neck and arm. She states that the pain started suddenly when she was sitting 10 hours ago and gets worse with exertion. She had one episode of similar chest pain in the past since 2012 and had an unremarkable stress test. In the emergency department, her vitals were within normal range. Physical examination revealed some tenderness to palpation of her left upper quadrant. She had an observed episode of syncope upon standing, lasting a few seconds. Pertinent laboratory findings included LFTs within normal limits, negative D-dimer, and three negative troponins. EKG showed T-wave inversion in the precordial leads which were unchanged from previous findings. Echo was unrevealing, however a repeat stress test showed an area of mild to moderate ischemia in the anterior wall. A subsequent coronary angiogram revealed an anomalous left coronary artery arising from the right coronary cusp. Further imaging with CT angiography showed that the anomalous coronary artery took an interarterial course with evidence of compression between the pulmonary artery and aorta. Patient was discharged with aspirin, imdur, diltiazem, and nitroglycerin until scheduled patch angioplasty and reimplantation of the left coronary artery.

Discussion

It’s proposed that less than 2% of the general population have an anomalous origin of their coronary artery from the opposite sinus. In most cases, this finding is found incidentally on imaging. In cases where the artery runs an interarterial or a transseptal course, the patient may experience sudden or exercise-related cardiac death. Fibrosis is a common finding on autopsy studies, suggesting ischemia occurs prior to the terminal event. Current AHA guidelines recommend surgical intervention if there are any signs of ischemia or ventricular arrhythmias. It is important to recognize congenital heart disease as a cause of chest pain in young adults as misdiagnosis can be fatal in these individuals. When symptomatic anomalous coronaries are identified, it is important to evaluate the appropriateness of surgical repair as this is the definitive management to alleviate symptoms. Patients should be counseled to restrict themselves from competitive sports or other strenuous activities while awaiting surgery.

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MISSOURI POSTER FINALIST - CLINICAL VIGNETTE Piotr Horbal, DO

Orthostatic Hypotension? Let's Check the Gamma Gap

Title

Orthostatic Hypotension? Let's Check the Gamma Gap

Authors

Piotr J Horbal (1), Jackson Meland (1), Ghassan Daher (1) 1: Saint Louis University, Department of Internal Medicine, Saint Louis, MO

Introduction

A gamma gap provides invaluable insight into possible underlying processes, which should be investigated further. This case shows the significance of such 'deeper-dive' in a presentation where initial signs pointed towards orthostatic hypotension and deconditioning. This led to the diagnosis of both AIDS and Cryptococcal meningoencephalitis, an aggressive disease with short median survival rate if not diagnosed early.

Case Presentation

A 71-year-old male with a medical history significant for hypertension, coronary artery disease and cerebral vascular accidents presented with generalized weakness and sense of lightheadedness worsening in severity leading up to hospitalization. Upon examination patient was noted to have positive orthostatic blood pressure which, along with symptoms, improved with IV fluids. Labs pertinent for sodium 131 (136-145 mmol/L), calcium 9.1 (8.4-10.2 mg/dL), creatinine 1.58 (0.6-1.2 mg/dL), protein total 9.9 (6.0-8.3 g/dL) and albumin 3.4 (3.4-5.0 g/dL) with resultant gamma gap of 6.5 (2560). MRI brain was obtained notable for diffuse FLAIR hyperintensity in bilateral basal ganglia, periventricular, subcortical and pontine white matter along with cystic encephalomalacia and gliosis. Patient was started on Amphotericin B and Flucytosine with a diagnosis of cryptococcal meningoencephalitis.

Discussion

Cryptococcus neoformans infection has been observed in approximately 3% of AIDS patients whom have a CD4 count below 100 cells/uL. Presentation of symptoms often occurs over a period of 2-4 weeks, predominantly with headache, vision changes, malaise and fevers. In

known HIV patients with such presentation, a high degree of suspicion for opportunistic infections is required, for which a serum Cryptococcal antigen can provide adequate screening prior to performing diagnostic lumbar puncture, as data has shown it comparable to CSF testing. Gamma gaps provide an initial clue to possible underlying etiologies such as HIV, Hepatitis C and monoclonal gammopathies. In patients such as this case where the diagnosis of HIV was made concomitant with Cryptococcal meningoencephalitis, antiretroviral therapy (ART) should be delayed to avoid higher mortality during induction of antifungal therapy. Preferred treatment is with induction antifungal therapy utilizing Amphotericin B and Flucytosine for a minimum of two weeks followed by a year of Fluconazole maintenance therapy.

MISSOURI POSTER FINALIST - CLINICAL VIGNETTE Kristen E Jones, DO

A case of peritoneal mesothelioma presenting with ascites

Title

A case of peritoneal mesothelioma presenting with ascites

Authors

Kristen Jones, DO, MA - UMKC Internal Medicine-Pediatrics Resident, Joseph Julian, MD, MPHTM - UMKC Associated Program Director Internal Medicine-Pediatrics Residency

Introduction

Peritoneal mesothelioma is a rare and aggressive malignancy of the peritoneal mesothelial cells. The incidence in the United States is1.94 and 0.41 cases per 100,000 people for men and women respectively. (1). Asbestos exposure is the most common carcinogen found in 33-50% of cases (1). Diagnosis is difficult due both to the rarity and the nonspecific clinical presentations.

Case Presentation

We present the case of a 74-year-old female who presented to the emergency department with three months of lower extremity swelling, abdominal distention, and weight gain. Patient had a remote history of malaria but otherwise had no significant medical history. Initial labs demonstrated anemia and a low albumin but were otherwise within normal limits. Abdominal US demonstrated large ascites and concern for cirrhosis. Paracentesis was completed with 7L of straw-colored fluid removed. Peritoneal fluid had a SAAG of 1.1, total protein of 6.2, and approximately 622 PMN. CT abdomen/pelvis again demonstrated cirrhosis and ascites but no other findings. ECHO demonstrated a normal EF and no valvular abnormalities. Due a re-accumulation of ascites, repeat paracenteses was completed. Cytology for malignant cells and cultures from both paracenteses were negative. Further work up for ascites revealed sickle cell trait but otherwise labs to evaluate autoimmune and infectious causes were negative. CT chest obtained due to concern for malignancy was unremarkable. Liver biopsy demonstrated central vein dilation and sinusoidal congestion consistent with hepatic congestion but there were no signs of cirrhosis or other primary liver disease. Patient was discharged home on diuretics to follow up as an outpatient. Outpatient EGD and small bowel biopsy were unremarkable. Colonoscopy demonstrated two sessile polys that were removed and pathology demonstrated

tubular adenomas. At follow up, patient's edema responded well to diuretics but she continued to report worsening fatigue. She also developed new right upper quadrant pain below her ribs. It was believed to be musculoskeletal in origin however pain persisted and did not respond as expected. Hematology recommended an MRI to ensure no underlying venous clots given her sickle cell trait. MRI again demonstrated cirrhotic morphology of the liver, but also enhancement and thickening along the right lateral peritoneal wall concerning for possible malignancy. There were also several pancreatic cystic lesions of unclear etiology but possibly malignancy as well. Patient's fatigue continued to worsened and she was clinically deteriorating so she was re-admitted for further evaluation. Given the increasing concern for malignancy, patient had an open biopsy with general surgery. Patient was found to have a mucinous substance throughout the abdominal cavity consistent with pseudomyxoma peritonei. Multiple biopsies were obtained that returned as peritoneal mesothelioma. Patient's condition continued to deteriorate and she unfortunately passed away approximately 1 month after diagnosis.

Discussion

This case highlights several difficulties in diagnosing peritoneal mesothelioma. Presentation is insidious and often nonspecific. Work up for these nonspecific symptoms can be extensive and costly. This case also demonstrates how bias can affect our workup and treatment of patients. Ultimately, providers much have a high index of suspicion for underlying malignancy when other causes do not fit.

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MISSOURI POSTER FINALIST - CLINICAL VIGNETTE Eugene C Nwankwo Jr, MD

5-Fluorouracil Hyperammonemia: A Rare Cause of Encephalopathy

Title

5-Fluorouracil Hyperammonemia: A Rare Cause of Encephalopathy

Authors

Eugene Nwankwo MD MS, Tim Brotherton MD, Adam Welu BS BSHS, Megan Quan BS, Debapria Das MD, Chad Miller MD

Introduction

Gastric cancer remains a common cause of mortality globally.1,2 Anatomically, these cancers are primarily classified as cardia and non-cardia. Cancers of the gastric cardia arise at the esophageal-gastric junction and non-cardia cancers typically arise in the lower portion of the stomach.2 So far, 5-fluorouracil (5-FU), leucovorin, oxaliplatin, docetaxel (FLOT) chemotherapy has demonstrated higher 5-year survival and disease-free survival rates in the treatment of gastric cancers.3 5-FU is an antimetabolite and antineoplastic agent that poses challenges to treatment due to its side effects. Mild adverse effects include nausea, vomiting, diarrhea or bone marrow suppression.4 Severe side effects, such as hyperammonemic encephalopathy, is a rare in 5-FU treatment. 5 Here we present a patient with non-cardiac adenocarcinoma of the stomach who developed hyperammonemic encephalopathy after 5-FU chemotherapy.

Case Presentation

A 75-year-old man presents with altered mental status for one day. On exam, patient was nonverbal, opening eyes spontaneously, and responsive to painful stimuli. CT head, chest x-ray, urinalysis, blood cultures, urine cultures, metabolic panel, blood counts, and toxicology screen were all not significant for acute findings. The patient has a history of stage IIa proximal gastric adenocarcinoma (TxN1M0) and currently receiving 5-fluorouracil, leucovorin, oxaliplatin, docetaxel (FLOT) chemotherapy. Patient had received 5-fluorouracil the day prior to admission. Two weeks earlier, he presented similarly with lactic acidosis (12.4 mmol/L) one day after receiving 5-fluorouracil. CT head, lumbar puncture, metabolic panel, and blood counts were all unremarkable. Toxicology screen was positive for cocaine two weeks ago and encephalopathy was attributed to cocaine toxicity after spontaneously resolving over several hours. During this admission, his labs are notable for hyperammonemia (153 µmol/L) and lactic acidosis (12.1

mmol/L). Patient received a lactulose enema and he responded well. Ammonia decreased to 15 µmol/L and lactic acid to 1.2 mmol/L with resolution of encephalopathy. No metabolic, infectious, toxic, ischemic, or structural causes explained the encephalopathy and presence of hyperammonemia without liver disease. He was diagnosed with 5-fluorouracil-induced hyperammonemia and discharged with a plan for a 50% dose reduction of 5-fluorouracil for his fourth cycle of chemotherapy.

Discussion

We present a case of 5-fluorouracil hyperammonemic encephalopathy following FLOT chemotherapy. Fluorouracil is a commonly used chemotherapeutic agent for a variety of malignancies including breast, colon and rectal, gastric, and pancreatic cancer. 5-fluorouracil hyperammonemia encephalopathy is a very rare, but increasingly well-known complication of fluoropyrimidine therapy. Neurotoxicity occurs in an estimated 0.7% of 5-fluorouracil patients and is characterized by an abrupt alteration in mental status. 6 Similar presentations can also occur following cytoreductive therapy or bone marrow transplantation in hematologic malignancies.7

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MISSOURI POSTER FINALIST - CLINICAL VIGNETTE Mukti A Patel, MD

Hide and Seek: A case of diffuse large B-cell lymphoma hidden within an abdominal hematoma

Title

Hide and Seek: A case of diffuse large B-cell lymphoma hidden within an abdominal hematoma

Authors

Mukti Patel, MD, Aarati Keshary, MD

Introduction

Diffuse large B cell lymphoma (DLBCL) is the most common subtype of lymphoma. Patients typically present with an enlarging symptomatic mass, usually as nodal involvement in the neck or abdomen. However, primary lymphomas of the GI tract are extremely rare. We present an uncommon case of primary DLBCL involving the biliary system, with a unique therapeutic approach due to concurrent head and neck cancer.

Case Presentation

A 39-year-old male with newly diagnosed squamous cell carcinoma of the tongue presented with epigastric pain, scleral icterus, and dark urine. Physical exam revealed diffuse jaundice, scleral icterus, a tender mass below the right mandible, epigastric tenderness, and mild hepatomegaly. CT abdomen pelvis with contrast revealed a large mass in pancreatic head region, with severe intrabiliary ductal dilatation and high-grade stenosis of the portal vein. Successful stent placement was performed via ERCP, and fine needle aspiration (FNA) of the mass was suggestive of hematoma. He was discharged in stable condition with appropriate medications and follow-up. Due to severely worsening pain, he returned to the hospital one week later. Labs noted elevated total bilirubin (11.9), alkaline phosphatase (408), AST (118), ALT (55), and lipase (98). CT angiogram showed interval increase in the periportal hematoma size, but no active bleeding. MRI with MRCP detected a large hypoenhancing mass encasing the common bile duct and main portal vein, abutting the liver and pancreatic head with possible invasion. Repeat endoscopic ultrasound with FNA of the pancreatic mass unveiled mature B-cell lymphoma. During these acute hospitalizations treatment of the head and neck cancer was delayed, resulting in encasement of the right internal and external carotid arteries. Given two

curative malignancies, a treatment regimen with a platinum-based agent was chosen to target both cancers.

Discussion

DLBCL arises from mature B cells and can present as a symptomatic mass lesion anywhere in the body. The disease occurs in extranodal extramedullary tissues in up to forty percent of cases, with potential to involve the GI tract. Symptoms of GI lymphomas are attributable to the involved organ, as with our patient who experienced pain and obstructive jaundice. Imaging confirmed a mass at the head of the pancreas, initially thought to be a hematoma. However, when mass effect symptoms persist or worsen despite relief of obstruction with stenting or resection, a progressive etiology such as malignancy should be on the differential. R-CHOP, or rituximab plus cyclophosphamide, doxorubicin, vincristine, and prednisone, remains the standard treatment for DLBCL. R-DHAP, which includes a platinum-based agent, is a treatment regimen typically indicated in refractory or relapsed DLBCL. However, this was the initial chosen therapy for our patient, as cisplatin would be able to treat both his head and neck squamous cell carcinoma and abdominal DLBCL. PET scan later showed improvement in both areas of disease. While primary lymphomas of the GI tract are an infrequent cause of obstructive jaundice, they should be considered in the differential diagnosis of pancreatic mass when malignancy is suspected. Given the high mortality of this disease, prompt diagnosis and treatment may improve patient outcomes.

MISSOURI POSTER FINALIST - CLINICAL VIGNETTE Mukti A Patel, MD

MINOCA in Sickle Cell Disease: a different acute chest syndrome

Title

MINOCA in Sickle Cell Disease: a different acute chest syndrome

Authors

Mukti Patel, MD., Paul Kunnath, MD.

Introduction

Sickle-shaped erythrocytes in sickle cell disease (SCD) lead to microvascular occlusion complications in many organ systems, accounting for significant morbidity and mortality. Commonly encountered conditions include musculoskeletal pain, anemia, and frequent infections. We report the case of myocardial infarction with non-obstructive coronary arteries in a patient with SCD

Case Presentation

The patient is a 31-year-old male with medical history significant for hemoglobin SC disease complicated by hemorrhagic stroke without residual deficits, DVT, and PE who presented with acute hypoxemic respiratory failure requiring 100% FiO2 and new ataxia, dysarthria and left sided weakness. CT pulmonary angiography was negative for clot, but revealed bilateral groundglass opacities in the lungs. Stroke evaluation with CT head and CT angiography were also negative for visible clots. Further investigation of neurologic deficits with brain MRI revealed multifocal embolic infarcts. His course was complicated by myocardial infarction with troponin elevation to 13 ng/mL and ST elevations in leads V3-5. Left heart catheterization revealed coronary arteries free of atherosclerotic disease, and possible distal occlusion of apical LAD. He was subsequently placed on a heparin drip for 48 hours, with transition to oral rivaroxaban thereafter. With a diagnosis of myocardial infarction with non-obstructive coronary arteries (MINOCA), the decision was made not to continue an antiplatelet agent. Due to the clinical diagnosis of acute chest syndrome and ischemic stroke, he underwent exchange transfusion with appropriate reduction in his Hemoglobin S concentration, and rapid improvement in respiratory status and neurological status. He was discharged with recommendations to continue monthly exchange transfusions along with daily folic acid, hydroxyurea, and rivaroxaban.

Discussion

SCD is a hematologic condition in which atypical hemoglobin molecules result in sickle-shaped erythrocytes and disrupting normal blood flow in small vessels. Signs and symptoms of the disease are related to the vaso-occlusion of small blood vessels or fat embolism syndrome due to vaso-occlusve fat necrosis in the bone marrow, leading to ischemia and inflammation. Stroke and ischemic heart disease are known life-threatening complications of sickle cell disease. Myocardial ischemia results from a combination of hypoxia, anemia, microthrombi, and increased blood viscosity. Patients with SCD have a lower prevalence of risk factors for coronary artery disease. However, cardiopulmonary complications remain prominent risk factors for morbidity and mortality in these patients, as the disease process is attributable to microvascular disease, rather than epicardial coronary artery disease. Outcomes of patients with MI are worse for those with sickle cell disease. There is often delayed diagnosis and initiation of guideline directed therapy due to nonspecific symptoms that overlap with acute chest syndrome. Exchange transfusions can be considered to reduce blood viscosity. They are particularly useful in acute chest syndrome, stroke, and MI, but studies about target hemoglobin S concentrations are lacking. Our patient manifested multiple ischemic complications of SCD including cardiac ischemia and was treated with standard MI therapy as well as exchange transfusions. SCD is associated with significant morbidity and mortality, especially in cases complicated by MI. Knowing the life-threatening complications of the condition may prevent delays in recognizing and treating MI in affected patients.

NEBRASKA POSTER FINALIST - CLINICAL VIGNETTE Moeed Ahmed

Intravitreal bevacizumab induced nephropathy

Title

Intravitreal bevacizumab induced nephropathy

Authors

Moeed Ahmed, Neil Alouch, Arslan Ahmed, Sunil Jagadesh

Introduction

Bevacizumab is a VEGF inhibitor used to treat diabetic retinopathy. It has been reported to be associated with worsening proteinuria and hypertension. We present a case of a patient (on intravitreal bevacizumab) hospitalized with worsening renal function, hypertension and nephrotic-range proteinuria in the setting of tight glycemic control.

Case Presentation

A 41 year old male with a past medical history of CKD stage 3, Diabetes Type 2, Diabetic Retinopathy and Hypertension presented to the ED with shortness of breath for about a month. He reported lower extremity swelling for about a year that was refractory to lasix 80 mg bid. He also reported about 60 lb weight gain in about a year. He had never seen a Nephrologist. His family history was significant for ESRD in his father. Physical exam was remarkable for bilateral lower extremity pitting edema and lung crackles. His BP in ED was 219/117. Labs revealed normal troponin, pro BNP 5759 pg/ml, d-dimer 0.72 mg/L and creatinine 2.15 mg /dl (baseline around 1.5 - 1.9 mg/dl). CXR showed bibasilar opacities and Lung V/Q scan showed low probability of pulmonary embolism. Renal ultrasound was unremarkable. His home medications were furosemide 80 mg bid, metoprolol, metformin and levemir. He had been getting intravitreal bevacizumab injection for diabetic retinopathy for about a year. He was given IV Lasix with improvement in shortness of breath. His BP remained high. He was started on nicardipine drip and then switched to amlodipine, carvedilol and oral hydralazine with various adjustments in dosages. Urinalysis revealed proteinuria (over 1000 mg/dl), microscopic hematuria and granular casts. HbA1c was 5.9% (improved from 8.3% 4 months prior to admission). Further work up revealed normal C3 and C4 levels, negative ANA, c-ANCA and p-ANCA, unremarkable SPEP, and PLA2R antibody, negative serum cryoglobulin, elevated kappa-lambda ratio of 2.66, urine immunofixation negative for monoclonal protein, urine

protein/creatinine ratio of 11.2. Given microscopic hematuria and substantial proteinuria, patient underwent left kidney biopsy that showed diabetic nephropathy and scattered IgA deposits (possibly due to bevacizumab). BP remained difficult to control. He was discharged on bumex 2 mg bid, amlodipine 10 mg, carvedilol 25 mg bid and hydralazine 100 mg tid and furosemide, metformin and metoprolol were discontinued. His creatinine remained between 2.15 to 2.76 mg/dl in the hospital. He was not started on ACEi/ARB due to decline in GFR. He was scheduled to follow-up with Nephrology in clinic for revaluation.

Discussion

Our patient had nephrotic-range proteinuria with HbA1c of 5.9%. This case illustrates that intravitreal bevacizumab injection may lead to worsening proteinuria, renal function and hypertension. Both physicians and patients should be aware of this possibility and alternative therapies for diabetic retinopathy should be considered when possible.

NEBRASKA POSTER FINALIST - CLINICAL VIGNETTE Anne Heenan, MD

Complicated MSSA Bacteremia Following an Influenza Vaccination Site Infection

Title

Complicated MSSA Bacteremia Following an Influenza Vaccination Site Infection

Authors

Anne Heenan, MD; Lauren Keim, MD; Ann Pearson. Department of Internal Medicine, University of Nebraska Medical Center, Omaha, Nebraska.

Introduction

A healthy 75-year-old male suffers from multiple complications of MSSA bacteremia as a result of infected site from influenza vaccine. This case highlights the need for further investigation of vaccine administration techniques. Providers must recognize potential complications from parenteral medications to minimize complications.

Case Presentation

A 75-year-old male presented with acute onset of altered mental status, dysarthria, and agitation after two weeks of intermittent fevers. On initial evaluation, he was disoriented with incomprehensible speech. He was moving all extremities with equally reactive pupils. Laboratory findings were significant for WBC of 18,000 and procalcitonin of 2.25ng/mL. Head CT revealed a hemorrhagic infarction of the left parietal lobe. Blood cultures grew methicillin sensitive staphylococcus aureus. Mental status improved and was nearly back to baseline after three days of antibiotics and non-operative stroke management. Patient was found to have a 1cm x 3cm area of fluctuance over his deltoid muscle with associated tenderness and erythema where he had received his influenza vaccine four weeks prior. This fluid collection was drained; cultures grew MSSA. Persistently positive blood cultures prompted further investigation of potential sources. MRI of the spine and left wrist due to mild pain and stiffness showed T11-T12 osteomyelitis with epidural abscess and ulnar joint effusion. These were drained operatively and cultures grew MSSA. A TEE was done for new murmur which showed a 1.4cm x 0.4cm vegetation on his mitral valve. He was treated with an extended course of cefazolin with outpatient follow-up with cardiothoracic surgery. The patient had a medical history of hyperlipidemia; no history of intravenous drug use.

Discussion

This patient's bacteremia with seeding in his spine, wrist, and mitral valve is thought to be secondary to skin infection from influenza vaccine. His initial presentation with hemorrhagic stroke is attributed to septic embolization. While cellulitis is the most common infectious event after administration of vaccines, case reports have identified bacteremia, osteomyelitis, meningitis, and necrotizing fasciitis secondary to parenteral injections. The majority of these infections are due to Staphylococcus aureus. There have been case reports of transmission of infectious agents such as MRSA and mycobacterium linked to a single vaccine administrator. There are varying standards internationally for skin disinfection guidelines prior to injections. Current WHO recommendations do not require cleaning the injection site unless the skin is visibly soiled or dirty. OSHA guidelines do not require gloves to be worn during vaccine administration. CDC guidelines recommend standard hand hygiene but do not have standards for patient skin sterilization. Small studies have shown varying effectiveness in disinfection rates using isopropyl alcohol and other sterilization techniques. Further research regarding sterilization technique and associated patient outcomes is warranted. Clinicians should consider parenteral injections as a potential source of infection in patients with cellulitis and complicated infections.

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NEBRASKA POSTER FINALIST - CLINICAL VIGNETTE
Christine Ryu, MD

A Sticky Pleural Effusion

Title

A Sticky Pleural Effusion

Authors

Christine Ryu, MD[1], Kaleb J Thomas, MD[1]

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Introduction

Pleural effusions due to pleuroperitoneal leak are a rare complication in peritoneal dialysis (PD), occurring in about 2% of patients on PD.[1,2] The most common presenting symptom is acute onset shortness of breath, but many patients are asymptomatic due to its slow accumulation.[1] We present an uncommon cause of a large pleural effusion which should be considered in patients on peritoneal dialysis.

Case Presentation

A 44-year-old male with diabetes type 2, hypertension, uremic pericarditis, and end stage kidney disease (ESKD) on PD presented with acute onset shortness of breath. He stated that he had been compliant with nightly PD and reported “slow drain” alerts from his PD machine. He had been diagnosed with ESKD and had the PD catheter inserted 11 months prior to presentation. Pre-procedural chest radiograph showed right hemidiaphragm eventration but no pleural effusion. During the three months before presentation, patient noted intermittent slow draining of his PD fluid. He received three abdominal radiographs, the last which was done one week before his admission. The first image showed the PD catheter tip in the left lower abdominal quadrant. The following two images revealed the catheter tip in good position and a possible right pleural effusion.

Vital signs showed hemodynamic stability on room air. On physical exam, he had decreased breath sounds over his right chest and mild abdominal distension. His PD catheter site did not show signs of infection. Chest radiography revealed a large right pleural effusion and partial right lung collapse with possible loculated components. Point of care

cardiac ultrasound was limited by abdominal distension and the large right pleural effusion but revealed normal left ventricular function and a small pericardial effusion without tamponade.

During his hospitalization, patient underwent an ultrasound-guided right thoracentesis with drainage of 2400 mL of clear fluid. Pleural fluid studies revealed pH 7.61, LDH 28 U/L, protein <3.0 g/dL, and glucose 116 mg/dL, which was higher than serum glucose. Cultures and cytology were negative. PD was discontinued and intermittent hemodialysis was initiated. Patient did not have recurrence of pleural effusion on follow up over two months.

Discussion

Given the high volume of the pleural effusion yet relative stability of the patient, the effusion was hypothesized to have accumulated slowly over a long period, allowing compensation. The patient's transudative pleural fluid with high glucose and low cell counts was consistent with the etiology; a pleural fluid glucose higher than serum glucose is expected due to the high dextrose content of PD dialysate.[3,4] Even low gradients of <50 mg/dL of pleural fluid glucose minus serum glucose should not rule out pleuroperitoneal leak.[4] The elevated right hemidiaphragm noted before PD catheter insertion may have been due to a previously acquired or congenital diaphragmatic defect.

In these uncommon cases of pleuroperitoneal leak, conservative management of pausing PD for 2-6 weeks has been shown to be effective in over 50% of cases.[2,3] This break allows the diaphragmatic defect to spontaneously heal, and many patients can resume PD. Other management options include small-volume PD, pleurodesis, or surgical diaphragmatic repair.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE Kaniz Abbas

EKOS method of CDT an effective treatment of submassive PE when thrombolysis and systemic anticoagulation fails

Title

EKOS method of CDT an effective treatment of submassive PE when thrombolysis and systemic anticoagulation fails

Authors

Kaniz Zehra Abbas, Luma Aldabbagh, Muhammet Ozer, Mohammed Omar, Mohammad Usman Mustafa

Introduction

Pulmonary embolism is associated with high mortality, thus requires aggressive treatment upon presentation. The most effective treatment of pulmonary embolism involves systemic anticoagulation as the primary intervention. Additional therapies, including systemic thrombolysis, catheter embolectomy, or open surgical embolectomy, may require in more complicated cases. Submassive pulmonary embolism presents with hemodynamically stable with evidence of persistent right ventricular dysfunction or right heart strain. This is the case report of a 62-year old female presented with submassive pulmonary embolism following three months of noncompliance with prescribed anticoagulation therapy. This report demonstrates the effectiveness of ultrasound-assisted catheter-directed thrombolysis (CDT) with EKOS (EkoSonic Endovascular System) endowave infusion after the failure of thrombolysis and systemic anticoagulation.

Case Presentation

This is a 62-year old African American female with a past medical history of diabetes, hypertension, HIV, previous PE, and DVT on anticoagulation, who presented with acute worsening of shortness of breath (SOB) for the past three days. She self-reported not taking apixaban for the past five months as she was unable to follow up secondary to COVID situation. She presented with significant dyspnea on exertion that limited her mobility at home. In ED, the patient was hemodynamically stable, and on the further investigation with CT angiography, an acute saddle pulmonary embolism in the main pulmonary artery extending bilaterally was identified. In the emergency department, she underwent tPA thrombectomy and was admitted

for overnight infusion of tPA followed by systemic anticoagulation with heparin infusion, which continued for six days. Over the course of treatment with systemic anticoagulation, there was no improvement in her SOB. She had rapid response team evaluation for increasing SOB twice as she tried to move out of bed and became short of breath and desaturation on the monitor. A repeat CT angiography was done, which demonstrated no change in the size of the saddle embolus. Therefore, on day 6, EKOS was performed using femoral access, which immediately showed improvement in her symptomatology. The patient was transferred to another hospital with an EKOS facility. She remained on anticoagulation with heparin drip and subsequently bridged to warfarin. The patient was subsequently discharged home after three days on room air and warfarin for anticoagulation.

Discussion

CDT is an emerging therapeutic modality for PE treatment in cases where systemic fibrinolysis is contraindicated. CDT therapy infuses a high concentration of thrombolytic agents directly into the thrombus. It has been observed to be superior to conventional systemic anticoagulation with early resolution of pulmonary artery embolism and restoration of right ventricular function. EKOS is an ultrasound-accelerated CDT treatment that, in addition, provides low intensity, high-frequency ultrasound waves. This acoustic energy disrupts the fibrin network's cross-linking without causing thrombin fragmentation, thus enhancing thrombolytic penetration into the thrombus and increases thrombus surface area, which allows for more significant fibrinolytic drug binding. The benefit of this procedure is reduced doses and shorter infusion time of intravenous anticoagulation therapies and less bleeding risk. Our case highlighted the efficacy of EKOS in a patient where systemic thrombolysis and anticoagulation failed to resolve a potentially life-threatening thrombus.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE Arjan Ahluwalia

The Masquerading Knee Injury

Title

The Masquerading Knee Injury

Authors

Arjan Ahluwalia, MD, Lehigh Valley Health Network Yasin Kanakrieh, DO, Lehigh Valley Health Network Amy K. Slenker, MD, Lehigh Valley Health Network

Introduction

Kaposi sarcoma (KS) is a low-grade vascular tumor associated with infection with human herpesvirus 8 (HHV-8) and in today's Western society is most often seen as sequela from longstanding AIDS. The following case highlights this disease process that is becoming increasingly rare due to increased access to antiretroviral therapy (ART). Furthermore, this case highlights that the diagnosis of Kaposi sarcoma must be consider as a differential given its wide varieties of clinical presentations and the importance of making an earlier diagnosis.

Case Presentation

A 53-year-old male with a history of uncontrolled HIV presented to the Emergency Department (ED) immediately after arriving to the United States from Kenya. The patient reported that during his travels he was struck by a motorbike and developed sudden knee pain. In the ED his knee laceration required no intervention but on questioning, he admitted to noncompliance with antiretroviral therapy (ART) for over a year. He denied fevers, chills, weight loss, cough, chest pain, shortness of breath, nausea, vomiting or abdominal pain. However, he endorsed bloody diarrhea for three weeks and a painful rash on his foot which had been progressing for several months. He was given various antibiotics for his foot rash in Kenya without improvement. Physical exam was significant for a cachectic man with bilateral inguinal adenopathy. Skin exam revealed several non-blanching, hyperpigmented, firm and rubbery nodules. One well-circumscribed lesion was present on his right upper arm, four lesions were present on right medial thigh, and the right plantar foot contained several diffuse well-circumscribed macules and one large well-circumscribed plaque yet only the plantar lesions were tender. The arm lesion was biopsied and revealed Kaposi's Sarcoma (KS). Bronchoscopy revealed friable, erythematous, vascular-like inflammation throughout the lower lobe airways

bilaterally and fortunately MRI brain did not reveal any CNS abnormality. The patient was started on ART and monitored for Immune Reconstitution Inflammatory Syndrome (IRIS) prior to discharge. Outpatient PET scan revealed disseminated KS with substantial pulmonary involvement, soft tissue involvement, nodal disease above and below the diaphragm, active osseous metastases, and GI involvement. Due to widespread visceral involvement, he was also started on Doxorubicin in addition to his ART.

Discussion

Kaposi's Sarcoma is a form of cancer with variable presentations. It can form masses in the skin, lymph nodes and other organs. The masses can occur singularly, in a limited area, or be widespread as in our case. Despite its varied presentations, Human Herpesvirus 8 (HHV-8) is found in the lesions of all those who are affected. With the increasing access to ART across the world, the rates and severity of epidemic KS are declining, yet even in resource-rich regions of the world, it is an important diagnosis to consider on a differential for a wide array of clinical presentations, particularly because in some countries it has become the most frequently reported cancer. This patient presented for an unrelated complaint and was incidentally diagnosed with advanced malignancy. Although we rarely see this disease process, it should not be missed on a differential in the appropriate clinical context.

NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE Arjan Ahluwalia

The Hidden Myopathy

Title

The Hidden Myopathy

Authors

Arjan Ahluwalia, MD, Lehigh Valley Health Network. Alaynna C. Kears, DO, Lehigh Valley Health Network. Eric Torkildsen, MD, Lehigh Valley Health Network

Introduction

Idiopathic inflammatory myopathies (IIMs) typically occur in individuals between the ages of 40 and 60 years old. Patients usually present with proximal muscle weakness which develops over weeks to months. The most common IIMs are polymyositis and dermatomyositis with anti-synthetase syndrome being the most uncommon. We present a case of this rare diagnosis and highlight its multi-organ effects including the development of interstitial lung disease (ILD).

Case Presentation

A 30-year-old female with no significant past medical history presented to the Emergency Department with a nonproductive cough, fevers, and dyspnea. She indicated that she recently had a rash on her thighs and upper abdomen as well as weakness in her upper and lower extremities. On exam, she was tachycardic with mildly elevated jugular venous pressure, crackles at the lung bases, and decreased muscle strength in the shoulders and hips bilaterally. Her labs were remarkable for a transaminitis and elevated troponins which peaked at 1.05. She had a urinalysis which revealed proteinuria. Computed tomography of the chest revealed diffuse ground glass opacities with reticular interstitial prominence and a moderate pericardial effusion. Echocardiogram did not reveal any tamponade physiology. Cardiac magnetic resonance imaging (MRI) was unremarkable. Creatine Kinase level was 13,000 with elevated erythrocyte sedimentation rate and c-reactive protein. Anti-nuclear antibody, anti-Jo-1 antibody, and anti-Ro antibody were all detected. Her aldose level was found to be elevated to 170. She had an MRI of her left leg which revealed myositis. To confirm the diagnosis, a thigh biopsy was performed and revealed perivascular lymphocytes with perifasicular involvement also consistent with myositis. She was diagnosed with ILD secondary to anti-synthetase syndrome and started on prednisone.

Discussion

ILD tends to occur more often in patients with anti-synthetase syndrome than with other IIMs. It often tends to be more rapidly progressive in these patients leading to increased risk for morbidity and mortality. Our patient presented with a positive anti-Ro antibody which has been associated with a more severe and fibrotic form of ILD. Treatment of ILD in these patients is with corticosteroids however most of the time patients will also require additional immunosuppressive medications to prevent recurrence of lung disease. As you can see, it is crucial to promptly diagnose these patients in order to begin treatment as soon as possible given the progressive nature associated with this type of ILD and the increased risk for morbidity and mortality.

NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Behzad Amoozgar, MD

Severe Allergic Reaction and Cross-Reactivity Post Administration of Nebulized Acetylcysteine: A Case Report

Title

Severe Allergic Reaction and Cross-Reactivity Post Administration of Nebulized Acetylcysteine: A Case Report

Authors

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Introduction

Mucomyst (N-acetylcysteine) is commonly implemented for the treatment of thick or inspissated mucous secretions and occasionally for potential renal protection prior to contrast load for procedures such as cardiac catheterizations. Although it is frequently utilized without any potential life-threatening complications, it can result in severe adverse allergic reactions such as bronchoconstriction and airway obstruction. Here we present a case where a patient not only suffered from severe airway obstruction after the use of this medication; but consequently, developed other significant allergies and cross-reactivity to meat products during his hospital stay.

Case Presentation

A 66-year-old male presented with two days of exertional chest pain, shortness of breath, and sweating. He had a PMH of CHF and an allergy to eggs and ibuprofen. On admission, ECG and troponin series were normal. The patient was admitted with for unstable angina and possible acute on chronic heart failure and started on ACS medications and furosemide. As the patient continued to have intermittent chest pains, cardiology decided to perform left heart catheterization. He received Mucomyst before the test at both cardiology and nephrology consultants' recommendations. Cardiac catheterization results were normal. A day after the procedure he had an allergic reaction to apple juice, where he got a rash, and later as he received the last dose of mucomyst, he developed difficulty breathing and gradually became cyanotic and tachypneic. He was given epinephrine IV, but as he continued to desaturate, he

was urgently intubated. After 3 days the patient was extubated and the next day as he was started on the diet, he became short of breath (SOB) after drinking cranberry juice. Later, he had a more severe episode of SOB while eating chicken and later turkey that required steroids. The patient improved and was discharged from the hospital with a referral to an allergy specialist.

Discussion

Although an allergic reaction to mucomyst is not uncommon, acquired sensitization to it has been reported as rare incidences. Most commonly anaphylactic reaction to mucomyst happens with IV administration and is observed to be histamine mediated. Occasionally, patients exposed to the inhalation of acetylcysteine aerosol respond with the development of hypersensitivity reactions which may lead to airway obstruction of varying and unpredictable presentations. Patients who have had inhalation treatments of acetylcysteine without incident may still react to a subsequent inhalation with increased airway obstruction. Further, the patient may even develop cross-sensitization to other foods including meat. Although rare, there have been increasing case reports of allergies to meat such as beef, pork, lamb, and poultry. There is a theory that serum albumin cross-reactivity is a large component of many food allergies. Poultry and egg related reactions are IgE mediated as is the mucomyst reaction. The mechanism and type of exposure that results in anaphylactic sensitization remains uncertain to this day. As the link between these sensitizations remain uncertain at best; having a patient with pre-existing food allergies should raise a concern when giving other medications that are known to also cause anaphylactic type reactions; especially in the case of mucomyst.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Ahmed Ali Aziz

Autoimmune Hepatitis - Unusual Presentation.

Title

Autoimmune Hepatitis - Unusual Presentation.

Authors

Ahmed Ali Aziz, M.D., Sneha Kola, M.D., Ahmed Elkhouly, M.D., Adam C Kaplan M.D., FACP.

Introduction

Autoimmune hepatitis (AIH) is an inflammatory disease of the liver characterized by circulating autoantibodies directed against liver parenchyma. Clinical manifestations range from asymptomatic to fulminant liver failure. Diagnosis usually occurs across a bimodal age distribution (in the second decade and fifth-sixth decade of life) with a predominance in females. We present a unique case of autoimmune hepatitis diagnosed in a male patient in his 8th decade of life who presented with acute liver failure of unknown etiology.

Case Presentation

An 83-year-old male presented with complaints of fatigue, jaundice, and abdominal distention for the past few months. Physical examination revealed scleral icterus, asterixis, palmar erythema and ascites. Blood work showed elevated liver enzymes with AST and ALT more than 200 U/L, total bilirubin of 3.3 mg/dL, Gamma glutamyl transpeptidase 300 U/L. The patient's ascitic fluid analysis, viral hepatitis panel, detailed review of potential exposures including alcohol, medication, and infectious etiologies were ruled out by negative history and lab work. The patient's hospital course was complicated by hepatic encephalopathy, refractory ascites, and worsening liver and renal function. Auto-immune serology revealed elevated Anti-Nuclear Antibodies(>1:1280), Anti-Smooth muscle Antibodies of 87 units (normal less than 20 units) and Anti-ds DNA Antibodies of 1247 IU/mL (normal less than 200 IU/mL) and serum IgG of 2317 mg/dL (normal range less than 1741 mg/dL). AIH was suspected with an indeterminate but elevated AIH score of 6. Multispecialty consultation agreed to initiate prednisone 40 mg oral once daily for 7 days. Our patient's clinical symptoms subsequently improved.

Discussion

Pathogenesis of AIH is secondary to development of autoantibodies directed against the liver. Diagnosis involves multi-pronged approach including symptoms (fatigue, abdominal discomfort, arthralgia, pruritus and jaundice), labs tests (AST, ALT, Gamma globulins/IgG), serologic markers (ANA, SMA, anti-LKM1) and liver biopsy. Prednisone and sometimes a combination of prednisone and azathioprine are used for treatment of AIH. AIH has female predominance and age of presentation is usually in 20s or 50s-60s. However, a substantial proportion of patients are diagnosed at the extreme ends of the spectrum with either asymptomatic or overt liver failure. Early diagnosis may be difficult because the clinical picture is heterogeneous and there is no specific test applicable for the patients. AIH should always be in the differential diagnosis for acute liver failure in the elderly as it is easily overlooked. An elevated simplified autoimmune hepatitis score of 6, as in our patient, suggests a probable diagnosis of AIH, where as a score of 7 confirms the diagnosis. Treatment with steroids is recommended because silent disease is progressive, and treatment has shown to yield normal life expectancy.

NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE Joti Bai

Primary adrenal insufficiency secondary to immune point check inhibitors

Title

Primary adrenal insufficiency secondary to immune point check inhibitors

Authors

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Introduction

Advances in our understanding of the immune response to cancer and mechanisms of immune modulation have been translated to immunotherapy for the treatment of many advanced solid tumor and hematological malignancies. Since 2011 six immune checkpoint inhibitors (ICI) have been approved to treat patients with many advanced solid tumor and hematological malignancies to improve their prognosis(1, 2). Immune checkpoint inhibitors are humanized or human immunoglobulin antibodies that target different proteins Program death protein-1 (PD-1) receptors on T cells deactivates the T cells and prevents autoimmune tissue injury. Administration of a monoclonal antibody that interrupts the interaction between PD-L1 and PD-L2 and the T-cell PD-1receptor allows tumor-infiltrating lymphocytes (activated T cells) to aggressively identify and destroy cancer cells. However, Use of ICIs can result in toxicity called immune-related adverse events (IrAEs). We present a case of a 55 year old male with history of metastatic malignant melanoma who presented with ICI induced adrenal insufficiency.

Case Presentation

55-year-old male past medical history of hypertension, COPD, Hypothyroidism, metastatic malignant melanoma was recently started Nivolumab presented to emergency department with altered mental status and confusion. Laboratory values were notable for hypoglycemic (46mg/dl), hyponatremia (124mmol/l) and borderline High potassium (5mmol/l), serum osmolality 256 mosm/kg and urine osmolality 538 Mosm/kg. He was initially treated with IV dextrose. Serum cortisol and ACTH were checked to rule out adrenal insufficiency as etiology for above laboratory abnormalities and history of treatments with ICI (nivolumab) . while awaiting these lab results, patient was started on fluid restriction and salt tablets for

management of hyponatremia based on available labs at that point which pointed to hypotonic hyponatremia with high urine osmolality pointing to ADH release and goal for correction for sodium level maintained 6-8 Meq for 24hours. Both serum early morning cortisol and ACTH levels were reported to be low with values of 1.4ug/dl and 3.5pg/ml respectively. Patient was subsequently started on IV fluids and IV Hydrocortisone 100 Q8H. Serum sodium level improved at appropriate rate during the course of hospitalization and serum sodium at the time of discharge were in safe range (136mmol/l) . Other peripheral hormone including prolactin , Growth hormone, TSH LH and FSH which were normal. Of note, MRI Brain was done few days prior to the hospitalization as outpatient setting to rule out Hypophysitis which revealed normal sella.

Discussion

This patient was diagnosed with metastatic melanoma 18 months prior to hospitalization, was initially managed with shave excisionand ICIs Ipilimumab which was eventually switched to Nivolumab due to autoimmune colitis. Unfortunately, he developed autoimmune adrenal insufficiency from Nivolumab, which is one the immune related adverse events with this class of medication. Long-term follow-up of endocrine irAEs suggests that on occasions thyroid function may recover, but that dysfunction of the corticosteroid and gonadal axis is likely to be permanent. Patients should be informed of the potential adverse events prior to initiation of immune check point inhibitors. Laboratory findings similar to our patient should raise concern for adrenal insufficiency to allow timely diagnosis and management and thus prevent morbidity and mortality.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Karim Bayanzay, MD

Trans-radial Cardiac Catheterization with Norepinephrine causing Critical Digit Ischemia

Title

Trans-radial Cardiac Catheterization with Norepinephrine causing Critical Digit Ischemia

Authors

Karim Bayanzay MD, Ruwaidah Majeed, Tasneem Yousif, Bharat Gautam, Alissa Holman, Mahmood Alam MD

Introduction

The trans-radial approach to cardiac catheterization has been preferred to femoral, due to improved comfort, decreased length of hospital stay, and fewer complications. Currently, there have been no studies or discussion of possible increase in digital ischemia in patients undergoing transradial catheterization while receiving norepinephrine drip. Here, we provide the first published case of critical digit ischemia and eventual amputation after trans-radial cardiac catheterization, while receiving norepinephrine.

Case Presentation

A 47-year-old male arrived to the ER after cardiac arrest. ROSC was achieved enroute, total downtime is unknown. EKG showed ST elevation in leads II, III, aVF, with elevated troponins. Norepinephrine was started for cardiogenic shock. He underwent cardiac catheterization with trans-radial approach. Two stents were placed in the PCA/RCA. Afterwards, patient was able to follow commands, so targeted temperature management wasn't performed. ACS medication with heparin and integrelin drip was started. The following day, his right thumb and index appeared dusky, pulse was difficult to palpate, but radial and ulnar artery pulse were visualized by ultrasound. Over the week, his cyanosis worsened, and the patency of radial and ulnar artery was confirmed via doppler. Angiography of the right arm was not performed because he was scheduled for catheterization the following day. Over the next two weeks, the right 1st and 2nd digit became more necrotic, with duskiness noticed in the 3rd digit. He underwent amputation of the right first and second digits 4-6 weeks later.

Discussion

Trans-radial access catheterization (TRA) is increasing worldwide and specifically in the United States. There are many complications of TRA which may cause digit ischemia, such as radial artery occlusion (RAO) and radial artery spasm. The pattern of ischemia is consistent with the distribution of radial artery. His symptoms developed shortly after the TRA, therefore, it is almost certain that it played a direct role. Considering there have been no published reports of critical digit ischemia after TRA, it is unlikely that the TRA is the singular factor; other contributory factors also played a role. Alpha receptor mediated vasoconstriction, in the setting of pre-existing peripheral vascular disease and prolonged hypotension can lead to development of digital ischemia in patient receiving norepinephrine. However, norepinephrine classically causes bilateral and symmetrical necrosis, most often affecting the toes. Typically, when a hand is affected unilaterally, most often all digits are affected, rather than following a specific arterial distribution. Considering timing, distribution, and severity, it is more likely that the TRA, in conjunction with vasopressor administration, contributed to his eventual complication. Radial artery spasm, a known complication of TRA, may have been particularly severe in this patient due to the concomitant administration of vasopressors. In combination with an incomplete palmar arch, this is a potential pathophysiological mechanism to explain the severity and distribution of our patient's critical digit ischemia. To date, no studies have evaluated whether concomitant vasopressors administration while performing a TRA is associated with increased rates of limb ischemia. However, due to the theoretical risk, practitioners should consider a femoral approach to catheterization when prolonged vasopressor administration is anticipated.

NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Akshay Chaudhari

Schmidt syndrome presenting as endometriosis

Title

Schmidt syndrome presenting as endometriosis

Authors

Dr. Akshay Chaudhari, Saint Peter's University Hospital Dr. Monarch Shah, Saint Peter's University Hospital Dr. Shweta Chaudhary, Saint Peter's University Hospital Dr. Anil Anandam, Saint Peter's University Hospital

Introduction

Autoimmune Polyglandular Syndrome type 2 (APS-2) is a polygenic disorder that includes autoimmune thyroid disease, Type 1 Diabetes Mellitus (T1DM), primary adrenal insufficiency, primary hypogonadism, and less commonly hypoparathyroidism or hypopituitarism. We are reporting a case of female patient with intractable abdominal pain mimicking pelvic pathology but later diagnosed as APS-2 with adrenal insufficiency and hypothyroidism.

Case Presentation

A 38-year-old lady with no past medical history presented with severe crampy lower abdominal pain, nausea, vomiting and inability to eat for four days. Patient did not report any fevers, chills, constipation or diarrhea. Other positive history was chronic tiredness and irregular menstrual periods with heavy bleeding since menarche and reported increased abdominal pain during her cycles. On exam, she was afebrile, tachycardic at 122 and blood pressure of 102/65 mm mercury. Focused exam revealed very tender lower abdomen with cervical motion tenderness. Initial labs were pertinent only for hemoglobin of 8 grams per deciliter, sodium of 130 and glucose of 70. These findings were attributed to menorrhagia and poor oral intake. Computed tomography of abdomen and pelvis was unremarkable except 8 mm fibroid. Endometriosis and pelvic inflammatory disease were suspected and was started on empiric antibiotic regimen. Gynecology team recommended pain control and outpatient hormonal therapy and laparoscopy for evaluation of endometriosis. On third day, she became hypotensive to 80/60mm of hg and labs showed sodium of 129, potassium of 5.4 and glucose of 48. Adrenal insufficiency was suspected due to persistent abdominal pain, hypotension, hyponatremia, hyperkalemia and hypoglycemia. Random cortisol -1.2 mcg/dl, 6 am cortisol -1.5 mcg/dl and

high dose cosyntropin stimulation test cortisol -1.7 mcg/dl confirmed our diagnosis. Subsequent hormonal workup revealed adrenocorticotropic hormone -1398 pg/ml, aldosterone < 1 ng/dl and plasma renin activity 12.29 ng/ml/h, all consistent with primary adrenal insufficiency. Further testing showed thyroid stimulating hormone 16, free thyroxine 0.72, total T 3 0.81 and normal gonadotropins. Magnetic resonance imaging of adrenal glands was normal. Patient was initiated on hydrocortisone with dramatic improvement in symptoms. Outpatient workup was positive for 21 hydroxylase and thyroid peroxidase antibodies suggesting autoimmune pathology. She was managed with hydrocorisone, fludrocotisone and levothyroxine.

Discussion

In patients with APS-2, autoimmune thyroid disease is present in 70-75%, T1DM in 40-60%, and addison's disease in 40-50%. In 1926, Schmidt M.B. described 2 patients with non-tuberculous addison's disease and thyroiditis with lymphocytic infiltration of both glands. "Schmidt syndrome" is a subset of APS-2 that includes Addison's with autoimmune hypothyroidism and or T1DM. Our case emphasizes the significance of revisiting differential diagnosis and knowledge of varied manifestation of endocrine disorders which often can be very subtle resulting delayed diagnosis and treatment.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Kalpana Chintha, MD

Severe Hydroxychloroquine overdose resulting in life-threatening QTc prolongation

Title

Severe Hydroxychloroquine overdose resulting in life-threatening QTc prolongation

Authors

First Author: Kalpana Chintha, MD

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Introduction

The use of hydroxychloroquine (HCQ) gained significant popularity during the early stages of the COVID-19 pandemic, as did general familiarity with this medication outside its use for the potential treatment for SARS-CoV2 infection. We present a case of life-threatening QTc prolongation from HCQ toxicity.

Case Presentation

A 42-year-old male with a past medical history of Post-Traumatic Stress Disorder and Major Depression was admitted to the ICU after an intentional ingestion of 30 tablets of HCQ 200mg. He presented with a decreased level of consciousness and hypotension. He required intubation and mechanical ventilation along with continuous cardiac monitoring. Poison Control was contacted and recommended serial EKGs to monitor the QTc interval. His initial EKG showed a QTc of 592 ms, peaking at 750 ms after 8 hours on serial measurements. He briefly needed epinephrine for hemodynamic support. He was subsequently started on midazolam infusion for sedation and seizure prophylaxis. The patient was placed on a bicarbonate infusion as well as aggressive potassium (160 mEq) and magnesium (3 gms) repletion, with marked improvement in his electrolytes. His initial hydroxychloroquine level was later revealed to be 7400 ng/mL (typical therapeutic plasma concentration 410+/-130 ng/mL after a dose of 400mg per our reference lab). His hydroxychloroquine level decreased to 4600 ng/mL the following day with a QTC of 505 ms. His QTC continue to trend down and returned to normal within the first 48 hours and he was successfully extubated on ICU day 3. He was discharged to an inpatient psychiatry unit on Hospital day 5.

Discussion

Hydroxychloroquine is widely used to treat a variety of illnesses, including Malaria, Systemic Lupus Erythematosus, Rheumatoid Arthritis, and more recently it was commonly used in the initial phase of the SARS-CoV2 pandemic (3). It is generally well tolerated but has some well-known side effects including cardiotoxicity - prolongation of QTc interval, Torsade de Pointes, and ventricular arrhythmias (1); it can lower the seizure threshold; and may cause life-threatening hypokalemia. Currently, recommended treatment for overdose includes early intubation and mechanical ventilation, high dose diazepam to prevent seizures, epinephrine for myocardial depression, potassium correction, and activated charcoal for gastrointestinal decontamination if the patient presents within one hour of ingestion (2). With prompt diagnosis and treatment outcomes and prognosis can be improved.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE Jay Desai

You See UC But I See UC And ITP

Title

You See UC But I See UC And ITP

Authors

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Introduction

Ulcerative colitis (UC) is commonly identified by the recurring episodes of inflammation affecting the mucosal layer of the colon. UC is associated with both intestinal and extra-intestinal complications. Intestinal complications include severe bleeding, fulminant colitis, toxic megacolon, and possible perforation. Extraintestinal complications include conditions such as arthritis, uveitis, erythema nodosum, primary sclerosing cholangitis, venous/arterial thromboembolism, and on rare occasion immune thrombocytopenia (ITP). ITP is characterized by thrombocytopenia caused by autoantibodies against platelet antigens. ITP can be primary, due to autoimmune mechanisms, or secondary, from a related condition. Patients generally present with petechiae, purpura, epistaxis, severe hemorrhage, and a platelet count of

Case Presentation

A 40 year-old male with a past medical history of UC and ITP presented with abdominal pain, generalized weakness, and presyncope after having daily hematochezia for two weeks. The patient was initially managed outpatient with vedolizumab but his symptoms progressed. On admission, CT of the abdomen showed diffuse nonspecific colitis, and he was subsequently admitted for UC flare. Aggressive volume resuscitation was administered with intravenous hydration and packed red blood cell transfusions. Diagnostic workup was notable for positive CMV PCR, thrombocytopenia, and colonic biopsy revealed acute inflammation with no dysplasia. He was started on intravenous steroids, vedolizumab, mesalamine enemas, and loperamide for control of ulcerative colitis flare. His platelet count also trended up likely in response to steroid regimen. The hospital course was complicated by several recurrent

episodes of hematochezia which eventually resolved. He was discharged home on gradual oral steroid taper and vedolizumab and was to follow with gastroenterology as an outpatient.

Discussion

UC flares are characterized by significant colorectal bleeding, and the combination with ITP leads to increased bleeding complications and requires aggressive management. The simultaneous findings of UC and ITP points towards a causal relationship between them. In most patients with both disorders, UC was diagnosed prior to ITP. In the few cases where ITP preceded UC, it is speculated that UC already existed subclinically at the time of the ITP diagnosis. The treatment of UC (with steroids, biologics and mesalamine) will concomitantly treat the ITP as well in the acute and chronic setting. For this reason, it is recommended that in cases of concurrent UC and ITP, treatment efforts are focused on management of the UC flare.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE Brian Ebo

A not-so-benign breast lesion and pancytopenia

Title

A not-so-benign breast lesion and pancytopenia

Authors

Brian Ebo, MD., Fariba Basali, MD., Dolly, Patel, MD.

Introduction

The guidelines for age-appropriate screening programs such as mammograms are usually predicated on a risk-versus-benefit model, as well as cost consideration, with major emphasis on the harms of false-positivity and overdiagnosis which typically overshadows the potential for missed diagnosis and false negatives. False negatives and missed diagnosis can occur equally with screening and diagnostic tools, and may provide unexpected challenges in patient care.

Case Presentation

A 59-year-old lady with history of well-controlled diabetes and hypertension presented at the ED with bleeding gums and nose bleeds of a month's onset with worsening fatigue and dyspnea in the last two days. Her recent history was insignificant except for a screening mammogram performed two months prior, which had shown right breast calcifications without a mass but a subsequent stereotactic breast biopsy only revealed benign breast tissue with calcifications, stromal fibrosis and ductal hyperplasia. In the ED, she had a hemoglobin of 4.8 g/dL and platelets of 5000/uL. She had dried blood on her nares and gums. Further workup showed normal coagulation profile, renal and liver function test. Her reticulocyte count, haptoglobin and LDH were all within normal limits. Serum folate and cyanocobalamin levels were normal. Differential count showed increased immature granulocytes and nucleated RBCs. She had no schistocytes or spherocytes and coombs was negative. Differentials at this time included possible immune thrombocytopenic purpura, myelodysplasia or leukemia. She received steroids and immunoglobulin without improvement. She received blood product transfusions as well. CT chest showed a right breast mass with right axillary lymphadenopathy and diffuse Thoracic-spine mixed lytic and blastic lesions. Her bone marrow tap was dry however a core specimen was collected, and pathology revealed metastatic invasive breast lobular carcinoma,

hormone receptor positive and HER2 negative. Patient was started on Letrozole and with resolution of her symptoms, she was discharged home to follow with oncology.

Discussion

Screening mammograms start with the goal of early detection of suspicious lesions, which may then followed by biopsy and then a radiologic-pathologic correlation. Concordantly negative results are followed by routine interval screening while concordant positive results proceed to management modalities as directed by the management team. Non-concordant results as seen in this patient, who had a suspicious calcified breast lesion that was found to be benign on pathologic exam pose a management challenge and is usually an indication for a shortened interval screening. This patient was planned for a follow up repeat mammogram at 6 months, but unfortunately, developed metastatic disease with bone marrow involvement and symptomatic pancytopenia which confounded her diagnosis. In conclusion, no screening tests is perfect. Mammograms may miss up to 20% of breast malignancy and image-guided core biopsy have a sensitivity and specificity of 87 and 98% respectively. Clinicians should always maintain a high clinical suspicion when faced with unexplained symptoms, especially in the setting of allegedly negative screening or biopsy results.

NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE Iyad Farouji, MD

An Unusual Presentation of Transient Hypothermia in HIV Infection

Title

An Unusual Presentation of Transient Hypothermia in HIV Infection

Authors

Iyad Farouji, MD, Hossam Abed, MD, Theodore DaCosta, DO, Rushdy Abanoub, MD, Jihad Slim, MD, Fayez Shamoon, MD

Introduction

Hypothermia, defined as a core body temperature less than 35°C, causes hundreds of deaths annually. It can occur in a variety of clinical settings, including environmental exposure, shock, infection, metabolic disorders, alcohol, or drug toxicity, and malnutrition. This condition can affect many different organ systems and may lead to serious complications including cardiac arrhythmia. Only a few cases have been reported for HIV patients presenting with hypothermia and sinus bradycardia.

Case Presentation

we are reporting a 65 year old malnourished gentleman with with a past medical history of advanced HIV disease, chronic kidney disease, chronic hepatitis C, who presented with hypothermia complicated by sinus bradycardia. After extensive workup, he was found to low levels of the insulin like growth factor-1 (IGF-1), in addition to be severely immunosuppressed with very low levels of CD4 count and high viral load. He was successfully treated with active warming, Antiretroviral therapy (ART) and good nutrition.

Discussion

Acquired immunodeficiency syndrome (AIDS) of humans is caused by two lentiviruses, human immunodeficiency virus types 1 and 2 (HIV-1 and HIV-2). To our knowledge, there are only a few cases of HIV induced hypothermia and bradycardia described in literature. There are a few different hypotheses that may be contributing to this condition. One of these assumptions is malnutrition. Also, patients with HIV infection frequently experience loss of appetite. This may be due to sores in the mouth, an acute illness, or because HIV infection itself can cause a loss of

appetite. Opportunistic infections can affect the mouth and the esophagus and may also play a role in malnutrition. Furthermore, some antiretroviral medications can cause poor appetite. In addition to the neuropsychiatric effects of HIV and socioeconomic factors. Growth hormone and the insulin-like growth factor-1 axis (GH/IGF-1) can be used as an indicator of the nutritional status of the patients. HIV-infected individuals experience disruptions in the circadian rhythmicity of several functions, including body temperature. Another possible theory for the hypothermia in HIV patients, is the neurodegenerative effects of the virus in the central nervous system that may affect the thermoregulatory centers. Besides, it has been reported that HIV patients who develop AIDS have a reduced number of vasopressin- and oxytocin-expressing neurons in the suprachiasmatic nucleus and paraventricular nucleus, respectively, indicating that hypothalamic neurons are compromised during the progression of the HIV disease. Herein, we are reporting a case of a gentleman with uncontrolled HIV who presented with hypothermia associated with sinus bradycardia. This condition was most likely secondary to severe malnutrition which was confirmed by significant decrease in the IGF-1 levels, and a very high viral load with severe immunosuppression likely causing an additive effect. He was initially started on active external and internal warming along with the introduction of the highly active antiretroviral therapy (HAART) and oral feeds leading to a significant improvement in his body temperature and normalization of his heart rate.

NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Khalil Fayad

Pericardial Effusion as a Rare Presentation of Large B-Cell Lymphoma

Title

Pericardial Effusion as a Rare Presentation of Large B-Cell Lymphoma

Authors

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Introduction

Diffuse large B cell lymphoma (DLBCL) is the most common histologic subtype of non-Hodgkin lymphoma (NHL) accounting for approximately 25 % of NHL cases. DLBCL typically presents with rapidly enlarging symptomatic mass in the neck, abdomen or in the mediastinum, but it is extremely rare to present with pericardial effusion or cardiac tamponade. We present a case of an elderly male, in whom DLBCL presented as a pericardial tamponade.

Case Presentation

An 84-year-old man with past medical history of CAD, presented with few days of progressively worsening shortness of breath and tachypnea associated with fatigue, fever and chills. The patient denied chest pain, palpitations, orthopnea, paroxysmal nocturnal dyspnea, dizziness or weight loss. Vital signs were normal and the rest of physical examination was unremarkable. A laboratory workup showed BUN 30 mg/dl, Cr 1.40 mg/dl, WBC 8.8 x 10?/L, hemoglobin 12.6 mg/dL, hematocrit 37.7%, platelets 212 x 10?/L, PT 14.6 sec., INR1.1, aPTT 34 sec. LDH 2005 U/L, CRP 7.6 mg/dL, troponin 0.028 ng/ml . EKG showed HR of 130 BPM, narrow-complex regular rhythm without clear P waves, incomplete bundle branch block with non-specific lateral repolarization abnormalities. Portable chest x-ray showed mild cardiomegaly, clear lungs without pleural effusion or pneumothorax. CT chest demonstrated small pulmonary emboli within the descending branch of the left pulmonary circulation, moderate pericardial effusion and enlarged perivascular lymph nodes. Echocardiography revealed left ventricular ejection fraction of 55%, moderate to large pericardial effusion with right atrial inversion and hemodynamic compromise. Patient was taken to the OR for pericardiocentesis. Subxiphoid pericardial window yielded 550 mL of bloody pericardial fluid. Pericardial biopsy revealed

fibromembranous and mature adipose tissues with acute hemorrhagic change with no evidence of malignancy. Pericardial fluid cytology demonstrated aggressive large B-cell lymphoma with high cellularity due to numerous atypical hematolymphoid cells of intermediate to large size. Immunohistochemical analysis revealed tumor cells expressing CD20, PAX-5 and co-expressing CD43, CD10, and bcl-2. The Ki-67 (MIB-1) proliferative index is high (> 90%). HIV antibody was negative. CT abdomen and pelvis was unremarkable. Bone marrow biopsy was negative for malignancy. Repeated echocardiography showed no recurrence of pericardial effusion. Patient was started on R-CHOP (Rituximab-cyclophosphamide, doxorubicin, vincristine, prednisone) chemotherapy regimen and was discharged home with follow up with his oncologist.

Discussion

Pericardial effusion can be caused by several etiologies including malignancy. Cardiac manifestations of lymphoma are highly variable and non-specific, and most cardiac involvement in lymphoma remains undiagnosed and is only found on autopsy. Clinicians should be aware of different clinical presentations of lymphoma to be able to diagnose and treat it on time to prevent devastating outcomes. We can also note that initial presentation of pericardial effusion as cardiac tamponade increases the likelihood of malignant etiology.

NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Muhammad Salman Ul Haq

Follicular Lymphoma Presenting as Intussusception in an Adult. A Case Report

Title

Follicular Lymphoma Presenting as Intussusception in an Adult. A Case Report

Authors

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Introduction

In this article, we discuss a rare case of follicular lymphoma presenting as intussusception in an adult patient. Our objective is to emphasize the significance of diagnosing intussusception in an adult patient where the underlying cause is usually more malignant, and how to manage such cases.

Case Presentation

61 year old male with no past medical history presented with intense abdominal pain for three days, associated with hematochezia, nausea, and non-bloody vomiting. Physical exam of the patient revealed normal vital signs, mildly distended but diffusely tender abdomen without rebound tenderness, guarding, or the presence of any mass. CT scan of the abdomen showed a distended small bowel, mesenteric lymphadenopathy, and intussusception of the distal ileum into the cecum with obstruction. An emergent exploratory laparotomy along with ileocolic resection was done. Immunohistochemical staining showed the following results: CD20 positive; CD79A positive; CD10 positive; CD23 positive; BCL-2 positive; BCL-6 positive. The diagnosis of follicular lymphoma (grade 1-2) was confirmed. A subsequent PET/CT scan showed intense uptake in the residual cecum and ascending colon (SUV 10.5), multiple mesenteric/peritoneal lymph nodes with the most prominent uptake adjacent to the cecum, and two left inguinal lymph nodes with intense uptake (SUV 6.7). The patient was then started

on chemoimmunotherapy with R-CVP regimen (cyclophosphamide, vincristine, and prednisone plus rituximab). The patient is currently being followed in an outpatient oncology clinic.

Discussion

Intussusception is a condition that involves the invagination of the proximal segment of a bowel tract into its contiguous distal segment as a result of enthusiastic or impaired peristalsis. Only 5% of total intussusception cases are found in adults. Most cases in adults are caused by pathological lead points which can be benign or malignant. Unlike children, adults present with nonspecific symptoms with the most common one being abdominal pain. Lymphomas rarely present with intussusception and follicular lymphomas are even less common. To the best of our knowledge, there have only been a few such cases of follicular lymphomas with the initial presentation of intussusception. The most common site for GI lymphoma is the stomach, followed by the small intestine and the ileocolic region. Imagining modalities like abdominal films, ultrasonography, and CT scan are most commonly utilized to establish a diagnosis of intussusception in adults. Unlike children, intussusception in adults cannot be reduced by a non-surgical approach and surgical intervention is always necessary, by either a complete resection or surgical reduction and then partial resection. For the treatment of lymphomas, different modalities are available, including surveillance, chemoimmunotherapy, and radiotherapy. The treatment is directed by the disease burden and the stage of the lymphoma. Surveillance is generally acceptable in advanced asymptomatic cases, while patients with high disease burden require chemoimmunotherapy with R-CHOP/R-CVP regimens. Adult intussusception varies greatly from intussusception in children, with different underlying causes, clinical course, diagnostic approach, and management plans. It is a rare finding in adults and if present, should be carefully examined to rule out malignancy.

NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Namrata Jannareddy

Post Treatment Surveillance Of Neurosyphillis In HIV Patients

Title

Post Treatment Surveillance Of Neurosyphillis In HIV Patients

Authors

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Introduction

Careful serological monitoring, symptom recognition, risk assessment and close follow-ups are essential after treatment of neurosyphillis in HIV patients to prevent severe neurological complications.

Case Presentation

A 26yr old African American heterosexual male with PMH of HIV and neurosyphillis 3 years ago had a follow up RPR titer of 1:16 which had increased by 4 fold from his post-treatment baseline. He received full treatment with IV penicillin 3 years prior and followed up with his primary care for surveillance serum RPR titres. Due to elevated RPR titers, he was advised to be admitted for inpatient treatment with IV penicillin. The patient's HIV has been under control with HAART as per recent CD4 count and viral titers. Upon admission, his vitals were stable, physical evaluation had no abnormalities, labs were normal, and CT scan was unremarkable. The patient continued to receive HAART therapy for HIV and in addition, he was placed on IV Penicillin G. Lumbar puncture was unnecessary at this point of time since he already had an established diagnosis of neurosyphillis and was currently asymptomatic.

Discussion

If there is a rise in serum RPR titers in a previously controlled neurosyphillis infection, it should be considered as a recurrence, and the patient should get another full course of 10-14 days IV penicillin. A repeat CSF study is not needed if there is improvement in the serological titers and

the patient is asymptomatic. Counselling regarding safe sexual behavior is important especially in the young population during follow up visits with PCP to prevent re- infection. In HIV patients coinfected with neurosyphillis, a four fold decrease in non treponemal titres over a period of 12 to 24 months is considered a successful serological response. Here we can rule out treatment failure based on his adequate serological response and clinical symptoms. This patient should be assumed to have a recurrence of neurosphyllis and receive full treatment with IV antibiotics based on his elevated RPR titres within a year until proven otherwise. The etiology behind this patient's elevated RPR titers within a year could be attributed to recurrence of infection due to high risk sexual behavior as the patient is young. The patient could've received specific counseling regarding safe sexual practices by his primary care due to his pre- existing conditions. However, he had missed the follow-up visits due to the Covid-19 pandemic and could not receive the appropriate counselling.

NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE Sahil Mamtani

Rapidly Developing Iatrogenic Contrast Induced Acute Compartment Syndrome of Hand and Forearm

Title

Rapidly Developing Iatrogenic Contrast Induced Acute Compartment Syndrome of Hand and Forearm

Authors

Sahil Mamtani 1, Muhammad Omar Butt 1, Joti Bai 1, Dr Marija Tusheva 2 1. Medical Resident at Atlanticare Regional Medical Center 2. Physician at Atlanticare Regional Medical Center

Introduction

Acute compartment syndrome (ACS) is a surgical emergency commonly caused by traumatic injuries. It is most frequently linked to fractures of long bone. Its pathophysiology involves any condition which can increase the intracompartmental pressure. Similarly in rare circumstances IV contrast extravasation into soft tissues can lead to ACS requiring urgent surgical intervention.

Case Presentation

We hereby present a 39 year old female with a history of spina bifida complicated by paraplegia who presented to the hospital with one week history of mid to lower back pain and fever. For suspected spinal infection, CT scan of the spine using contrast dye was obtained. Within one hour of CT scan, patient complained of increasing right hand and forearm tenderness, swelling and discoloration. On physical examination there was decreased sensation over the hand, poor capillary refills and cyanosis of the skin. Based on clinical findings and rapidity of symptoms acute compartment syndrome was suspected due to contrast extravasation. Surgery was called immediately to assess the patient and right forearm fasciotomy was performed urgently. Postoperatively, patient reported drastic improvement in symptoms with resolution of cyanosis and regained sensation. Wound vacuum assisted closure device was also placed post operatively to aid with healing. Patient was then followed by occupational therapy for continued hand function improvement.

Discussion

ACS occurs when fluid volume within the muscle compartment increases or an external force limits the expansion of the compartment leading to an increased intracompartmental pressure. This can lead to reduced tissue perfusion subsequently causing cellular anoxia. The result is nerve and muscle tissue damage. This is generally seen in traumatic injuries. Since ACS commonly develops after traumatic injuries it is most often missed in the absence of trauma. In this case we highlight the importance of identifying iatrogenic contrast induced ACS which may be more common than reported. Recently with the introduction of mechanical injectors, the rate of contrast media extravasation has increased from 0.03%-0.17% to 0.25-0.9%. This higher rate of extravasation may lead to more cases of limb threatening ACS. This also further highlights the need to understand use of contrast media more properly for more relevant use. Early identification is important to prevent loss of significant limb function and improve mortality. Diagnosis is mostly clinical however in an uncertain situation compartment pressure can be measured with a delta pressure of 30 mmHg or less suggesting the diagnosis of ACS. Management of such patient is immediate removal of all external dressing, urgent surgical consultation and emergent fasciotomy.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Zulfiya Manning

C3 Mediated Immune Complex Glomerulonephritis Triggered By MGRS

Title

C3 Mediated Immune Complex Glomerulonephritis Triggered By MGRS

Authors

Zulfiya Manning, MD; Muhammet Ozer, MD; Susanna Avanesyan, MD; Afshin Hannani, MD; Neel Gandhi, MD; Eddie Akrout, MD

Introduction

Dense deposit disease (DDD) and C3 glomerulonephritis (C3GN) are rare forms of glomerulonephritis that affect both children and adults. Both conditions result from abnormal regulation of the alternative complement pathway and are now classified as “C3 glomerulopathies.” C3 is occasionally diagnosed in adults who have been found to have an underlying monoclonal gammopathy. The monoclonal gammopathy of renal significance (MGRS) describes a group of disorders that cause renal damage via monoclonal immunoglobulin secreted by nonmalignant or premalignant B cell or plasma cell clones.

Case Presentation

The patient is a 73-yo-female with a past medical history of hypertension (HTN), transient ischemic attack (TIA), and anemia. She presented to our hospital with generalized weakness, which worsened for the past six months after her TIA. She reported on and off fatigue, generalized body aches, bilateral lower extremity cramps, and shortness of breath on exertion. She lost 10 lbs in the past three months. She denied recent injury, easy bleeding, fever, chest pain, nausea, vomiting, or bowel movement changes. The physical exam was unremarkable. The basic metabolic panel was unremarkable except for an elevated creatinine of 3.76 mg/dL. Her baseline creatinine level was 1.41 mg/dL, which was checked 40 days ago. Complete blood count showed a hemoglobin (Hb) level of 7.2 g/dL. Her last hemoglobin level was 8.6 g/dL 20 days ago. The fecal occult blood test (FOBT) was negative. The renal US revealed bilateral medical renal disease with increased echogenicity. Urine protein was 1376 mg/24 hr. UA was positive for microhematuria, proteinuria. The electrocardiogram showed normal sinus rhythm with low voltage QRS complexes. Chest X-ray did not demonstrate any active pathology except borderline cardiomegaly. Transthoracic echocardiography (TTE) revealed moderate eccentric

hypertrophy, grade II diastolic dysfunction without valvular disorders. The pro-BNP level was 5284 pg/ml. Left renal core biopsy findings were consistent with C3 glomerulonephritis (diffuse mesangial and focal endocapillary proliferative glomerulonephritis with focal crescents and C3-dominant immune deposits). She also underwent bone marrow biopsy to rule out multiple myeloma, which showed slightly increased plasma cells, but not detectable clonal plasma cell population. Flow cytometry did not detect a specific abnormality. The immunofixation test showed a faint lambda band, which was suggestive of monoclonal protein. The patient was started on mycophenolate mofetil and prednisone treatment. After three months of treatment initiation, her creatinine improved, and hemoglobin was stable.

Discussion

The term MGRS was proposed in 2012 by the International Kidney and Monoclonal Gammopathy Research Group to collectively describe patients who would otherwise meet the criteria for MGUS but demonstrate renal injury attributable to the underlying monoclonal protein. MGRS encompasses a wide spectrum of renal pathology, including immunoglobulin deposition disease, proliferative glomerulonephritis, C3GN with monoclonal gammopathy, and light chain proximal tubulopathy. Conclusion: Identification of signs and symptoms of MGRS is essential, especially in an outpatient setting, and start treating early. The primary goal in treating MGRS is to preserve kidney function and avoid the progression of extrarenal manifestations if present.

NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Sharde McLeish, MD

From Skin to Brain: Systemic Scleroderma, An under-recognized risk for stroke

Title

From Skin to Brain: Systemic Scleroderma, An under-recognized risk for stroke

Authors

Sharde McLeish, MD, Michael Basir, MD, Alyssa Foster, MD, Sang-Min Chang, MD, Julie-ann Allen, MD, Sofia Terner, MD, Donjeta Sulaj, MD, Jamuna Rajasingham, MD

Introduction

Formerly thought to involve primarily the microvasculature, Systemic Sclerosis(SSc) has been increasingly linked to macrovascular disease. Few case reports have been written detailing the occurrence of cerebrovascular disease in patients, particularly in women with SSC. We present such a case here.

Case Presentation

A 33-year-old female with a history of limited Scleroderma diagnosed in 2015 and prescribed Methotrexate but non-adherent to same, presented to the Emergency Room with one day of acute onset dizziness associated with nausea and vomiting. An urgent CT head was performed, which was negative for acute intracranial pathologies. The patient was discharged home with a course of Meclizine. One day later, the patient re-presented with the same dizziness with new-onset dysphagia coupled with right-sided facial numbness and left arm numbness. On examination, the patient's vitals were unremarkable. Physical exam was significant for bilateral horizontal and rotatory nystagmus, and hyper-pigmented morphea lesions on bilateral anterior thighs and forearms. Lab work was significant for positive ANA with 1:320 speckled titer and positive anti-U1 RNP antibody with negative anti-SS-A/SS-B, normal lipid panel, normal CRP and ESR with negative pro-thrombotic workup. MRI Brain revealed a 3 cm region of restricted diffusion in the right inferio-medial cerebellum extending to both the right cerebellar tonsil and right lateral medulla along with multiple acute infarctions in the right cerebellum. CT angiogram of the neck and brain revealed steno-occlusive disease with a laterally directed 3mm left posterior communication artery aneurysm. Additionally, there was a thromboembolic occlusion of the right vertebral artery V4 segment and a 4mm left ICA posterior lateral wall aneurysm, which was the presumed likely source of the stroke. She then underwent a conventional

angiogram, which confirmed thromboembolic occlusion of the right vertebral artery without dissection. The patient was managed per acute ischemic stroke protocol with Aspirin and high dose statin. She received physical therapy, where she showed subsequent improvement in neurological defects and was then discharged with outpatient follow-up.

Discussion

There is a paucity of literature regarding the presentation of ischemic neurovascular disease within scleroderma, a poorly understood autoimmune disease. To the best of our knowledge, there have been few case reports published describing similar events of large thrombotic lesions in the cerebral vasculature. The pathogenesis is complex and has not been fully delineated. In 16% of cases of SSc, neurological symptoms precede cutaneous manifestations (2). Of particular interest, in this case, is the patient's cutaneous manifestation that first appeared leading to her diagnosis. Additionally, of peculiarity is her short chronicity of illness leading to significant thrombosis of her posterior cerebral vasculature compounded with multiple acute on chronic infarcts mimicking embolic CVA. A study by Chiang et al. showed that SSc patients without previous stroke have a 43% higher risk of developing ischemic stroke in comparison to healthy control, also revealing that conventional treatment did not modify this risk (3). Further research and development of standardized guidelines regarding screening, management, and follow up for these patients may allow for alleviation of the significant disease burden in Scleroderma and may improve patient morbidity and mortality.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Angelica Medina Pena, MD

What is that in the Aorta? : A case of G-CSF induced Aortitis

Title

What is that in the Aorta? : A case of G-CSF induced Aortitis

Authors

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Introduction

Granulocyte Colony-stimulating factor (G-CSF) induced aortitis is infrequently documented in literature, however its repercussions are potentially life threatening. We present a case of pegfilgrastim induced aortitis which resolved with steroid administration.

Case Presentation

Patient is a 64 y/o F with a history of recently diagnosed Large B Cell Lymphoma (Stage IV). Approximately 20 days prior to admission patient received her first chemotherapy cycle with R-CHOP after which she developed neutropenia treated with 2 doses of pegfilgrastim. She then presented to her outpatient oncologist with a 1-week history of fever and chest pain. She was found to have elevated d-dimer that prompted performing a CT chest which found evidence of aortitis. She was initially placed on Prednisone 10 mg daily; however, after 6 days without symptomatic improvement she was sent to ED. On arrival patient was noted to be febrile at 102 F, tachycardic, with CRP >200mg/L and ESR 106mm/hr. WBC was unremarkable. Repeat CT chest showed rapidly progressive descending abdominal aortitis. A full infectious workup was performed revealing negative Blood cultures, HIV, CMV, EBV, Quantiferon TB and RPR. Additionally, ANA, anti-dsDNA and ANCA were negative. MRA Brain was unremarkable. Echocardiogram had no evidence of cardiomyopathy. She was placed on IV Methylprednisolone 1mg/kg daily. With continued steroid administration, patient's inflammatory markers trended down, and her fevers and chest pain resolved. She was discharged on oral Prednisone. On follow up, patient was noted to have resolution of aortitis on repeat CT approximately 8 weeks later.

Patient has continued to receive R-CHOP therapy in conjunction with a slow Prednisone taper with no recurrence of aortitis.

Discussion

This report showcases Aortitis caused by a G-CSF. Aortitis is inflammation of one or more layers of the aortic wall [(1)]. Causes can be infectious or non-infectious. Most common non-infectious causes include large vessel vasculitides [(1)]. However, there are increasing reports of G-CSF induced Aortitis, especially associated with the long acting pegfilgrastim [(2)]. We believe this was the etiologic agent in our case as all other causes were ruled out by laboratory and imaging evidence. This remains a rare event. By 2018 there were only 15 cases reported to the Food and Drug Administration Adverse Event Reporting System [(3)]. G-CSF assists in the differentiation and maturation of neutrophils therefore minimizing neutropenic fevers in patients undergoing chemotherapy and with bone marrow suppression. It has been proposed that G-CSF causes an inflammatory response due to production of inflammatory cytokines [(1,2,4)]; however, this is not definitively known. Clinically, patients present with symptoms such as chest pain, malaise, fever, and elevated inflammatory markers. Patients respond well to prolonged courses of high-dose steroids (1mg/kg) but not to low-moderate doses [(5)]. Aortitis can progress to life threatening complications such as aneurysm formation and dissection. Delay in diagnosis could be catastrophic. Due to the non-specific symptoms and increased inflammatory markers, patients may be assumed to have neutropenic fever, infection, or other rheumatologic causes [(6)]. In patients with known previous exposure to a G-CSF, early suspicion, imaging, and high dose steroids are pivotal to improve patient outcome.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Archana Nair, MBBS

Bacteremia due to Citrobacter species: Not unheard of

Title

Bacteremia due to Citrobacter species: Not unheard of

Authors

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Introduction

Citrobacter species, frequently found in water, soil, food, and the intestines of animals and humans, belong to a group of facultative, anaerobic, Gram-negative bacilli within the family Enterobacteriaceae. Little is known about Citrobacter bacteremia in terms of incidence, associated underlying diseases, primary sites of infection, and outcome. In the present case report, we provide the clinical evidence indicating that C. farmeri is indeed a human pathogen. The fact that C. farmeri was isolated in pure culture twice from the blood of a patient with systemic signs of sepsis supports its role in the illness.

Case Presentation

61year old male patient with a past medical history of COVID, prolonged ICU stay, recent cerebrovascular accident, and critical care neuropathy was brought to the emergency department from an acute rehabilitation facility after he was found unresponsive. In the emergency department patient was found to be in atrial flutter with a rapid ventricular rate of 160, hypotension with a mean arterial pressure of 50, and unresponsive. The patient was emergently intubated for airway protection. He did not respond to adenosine and underwent synchronized cardioversion, and subsequently was started on amiodarone infusion with a reversal to sinus rhythm. Lab studies were significant for bandemia of 20, Positive Urine analysis for bacteria, elevated lactate of 5, procalcitonin of 100. The patient was in severe septic shock with acidosis and anuria. Treatment initiated with IV pressors norepinephrine, phenylephrine, dobutamine and vasopressin, broad-spectrum antibiotic piperacillin sulbactam

and vancomycin, and was initiated on continuous renal replacement therapy. On the second day of admission blood, cultures, and urine cultures came back positive for Citrobacter farmeri, pan sensitive to antibiotics. Antibiotics were continued for a duration of 7 days, and the patient was subsequently extubated and taken off CRRT with the resolution of acidosis and anuria and was weaned off all pressors and inotrope. A CT scan abdomen done showed signs of cholelithiasis without cholecystitis. Thus the primary source of bacteremia was confirmed to be due to urinary tract infection. The patient was downgraded to a non-critical care floor for further management.

Discussion

Citrobacter bacteremia is a rare infection. Bacteremia commonly originated from sites such as the abdominal cavity (51.1%), urinary tract (20%), and lung (11.1%). The urinary tract was the leading site of Citrobacter infection in many previous reports. The overall mortality associated with Citrobacter bacteremia range from 33.3% to 48.3% in previously reported cases. Poor prognostic factors included pneumonia, altered mental status on presentation, hypothermia, oliguria, septic shock, deterioration in mental status, hyperbilirubinemia, azotemia, and thrombocytopenia Multidrug resistance among Citrobacter species was found to be associated with administration of a third-generation cephalosporin before the onset of bacteremia. Combination therapy with a Beta Iactam and an aminoglycoside are suggested as the initial empirical treatment because this combination is associated with a lower mortality rate. Septic shock with organ failure was the most important poor prognostic factor, and the need for good supportive care for patients with this complication cannot be overemphasized.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Michael Nicholson, DO

Acute Lobar Nephronia Presenting as Cold Agglutinin Hemolytic Anemia

Title

Acute Lobar Nephronia Presenting as Cold Agglutinin Hemolytic Anemia

Authors

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Introduction

Acute lobar nephronia (ALN) is a non-liquefactive, localized bacterial infection of the kidney. Disease prevalence is extremely low in adult populations [1]. It is generally considered to be a midpoint between acute pyelonephritis and intrarenal abscess on the spectrum of urinary tract infections (UTIs). Acute infection most commonly manifests as fever, abdominal pain, flank pain and vomiting [2]. In the absence of this classic symptomatology ALN is not a leading differential diagnosis. In this case we present a patient whose only clinical complaint was symptomatic anemia but was then discovered to have underlying ALN.

Case Presentation

Our patient is a 65-year-old male who initially presented to his outpatient clinic with complaints of recent onset fatigue and weakness. His blood work in the office showed anemia with a hemoglobin of 6.4g/dL. Patient was advised to present to the emergency department for further evaluation. Upon admission, urinalysis was positive for leukocyte esterase, nitrites, white blood cells and bacteriuria. CT scan of the abdomen and pelvis revealed a mass lesion at the mid to lower pole of the left kidney requiring further imaging to better characterize. Anemia workup revealed elevated indirect bilirubin and decreased haptoglobin consistent with a hemolytic etiology. Iron levels, vitamin B12, folate levels, hemoglobin electrophoresis, glucose-6-phosphate-dehydrogenase activity were all found to be unremarkable. Peripheral smear was reviewed and contained cold agglutinins leading to clumping of red blood cells (RBCs). Direct coombs test was positive for the presence of auto-antibodies on patient's RBCs.

Renal ultrasound was performed and revealed a 3.7x2.3x2.8cm hypoechoic mass in the mid to lower pole of the left kidney consistent with lobar nephronia. Urine cultures and blood cultures were both positive for Klebsiella pneumoniae. Patient received targeted antibiotic therapy for ALN and four units of packed red blood cells for anemia. He was also started on low dose prednisone therapy for autoimmune hemolytic anemia. Hemoglobin stabilized and there were no further episodes of hemolysis. Patient was discharged on oral antibiotics and low dose prednisone.

Discussion

ALN is an underdiagnosed upper GU infection that is rare in adult populations [1]. Due to the low prevalence of this disease, little is known regarding its array of possible complications. In this case, we presented a patient in whom classic symptoms associated with ALN were absent, but a novel complication of the disease was present. Our case is unique for multiple reasons. First, there are no prior documented reports of ALN associated with cold agglutinin formation or autoimmune hemolytic anemia. Second, ALN has been shown to cause more severe GU infections associated with sepsis, multi-drug resistant bacteria and longer hospital stays [3]. This clinical course did not occur in our patient. This case implies that the combination of ALN and anemia should raise suspicion for cold agglutinin autoimmune hemolytic disease. It also demonstrates that ALN can occur and cause complications without the presence of its commonly associated symptoms. Further study of ALN is required for better understanding of disease process as well as identification, prevention and treatment of possible complications.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Amogh Pathak

Mediastinal DLBCL: Presenting with Right Ventricular Outflow Tract Obstruction and Systolic Murmur

Title

Mediastinal DLBCL: Presenting with Right Ventricular Outflow Tract Obstruction and Systolic Murmur

Authors

Dr. Amogh Pathak, Dr. Marnie Rosenthal

Introduction

Primary Mediastinal B Cell Lymphoma (PMBL) is a type of diffuse large B cell lymphoma (DLBCL) and comprises 7% of all non-Hodgkin lymphomas. There is a female predominance with median age of diagnosis in third to fourth decade. Lymphomas presenting with mechanical airway obstruction or superior vena cava syndrome have rarely been reported. Right ventricular outflow tract (RVOT) obstruction is an extremely rare presentation.

Case Presentation

This is a 28-year-old Asian Indian female presenting with one month of worsening dyspnea, night sweats and dry cough. She was treated for asthma with inhalers as an outpatient. She had no past medical history and patient was asymptomatic till one month before the presentation. She was afebrile, with a heart rate of 80/min and blood pressure of 126/82mmHg. Cardiac auscultation revealed grade IV pan-systolic murmur prominent over right heart border along with parasternal heave, and raised jugular venous pressure (JVP) with a positive hepatojugular reflux. Breath sounds were absent in all zones on left side with dullness on percussion and a decreased vocal resonance, indicating a possible effusion. Chest X-ray revealed complete opacification of the left lung and shift of cardiac silhouette to the right; CT scan demonstrated a 16*16cm anterior mediastinal mass with atelectasis of left lung and a large pleural effusion. Echo-cardiogram confirmed moderate tricuspid regurgitation and right ventricular hypokinesis. Right ventricular pressure was 58mmHg with signs of pulmonary hypertension. The mass had an encasing effect over pulmonary arteries producing the clinical signs, with secondary malignant pleural effusion causing the dyspnea and cough. Biopsy confirmed the diagnosis of diffuse large B-cell lymphoma. Flow cytometry was performed to confirm the cell markers for B

cell lineage. Bone marrow biopsy revealed no infiltration. Treatment with standard R-CHOP was initiated inpatient given her high tumor load. Further chemotherapy and radiation is planned.

Discussion

Clinically detectable RVOT resulting from compression of pulmonary artery is rare. It is uncommon for mediastinal masses to compress major arteries sufficiently to produce murmurs or hemodynamically significant obstruction. This is possibly secondary to tendency of mediastinal tumors to enlarge laterally. PMLB being a very rare cause of this, very few cases have been reported previously. Purpose of this abstract is to reveal possible rare presentations of mediastinal lymphomas.

NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Alessandra Petrillo

A rare case of malignant superior vena cava syndrome

Title

A rare case of malignant superior vena cava syndrome

Authors

Alessandra Petrillo, PGY2 Vishnu Bharani, MSIII

Introduction

Approximately 15,000 cases of superior vena cava (SVC) syndrome occur each year in the United States (1). Soft tissue sarcomas compromise less than 1% of malignant neoplasms and their proportion among thoracic malignancies is estimated to be 0.01% (2). Intimal sarcomas are a rare etiology for SVC obstruction and, in general, are exceeding rare malignancies. In this case report, we present a 23-year old female who presented with symptoms of SVC obstruction found to have intimal sarcoma of the SVC.

Case Presentation

The patient is a 23-year-old Hispanic female with no significant past medical history, presented with a chief complaint of progressive head and neck swelling followed by persistent exertional dyspnea. She first noticed symptoms of eye swelling about one month ago. Over the course of that month, she then began to notice progressive swelling of her face and neck along with the emergence of superficial spider-like veins on her neck. On physical exam in the ED, the patient's vitals were blood pressure 134/84 mmHg, temperature of 98.5 °F (36.9 °C), pulse of 95 beats per minute, and a respiratory rate of 16 breaths per minute with an oxygen saturation of 95%. She had circumferential neck swelling, cranial swelling, moderate right arm swelling, and bilateral cervical adenopathy. She also had mild voice hoarseness with a midline trachea. She had symmetric chest expansions with good respiratory effort. On auscultation, her lungs were clear bilaterally with vesicular breath sounds and no crackles or wheezes. On percussion, her lungs were resonant bilaterally. The remainder of her physical exam was benign. On imaging, posterior-anterior and lateral chest x-rays showed a large right-sided para-mediastinal mass (Figure 1). A follow-up computed tomography of chest with intravenous contrast was performed which revealed a large 8.65 x 6.41 x10.6 cm right paratracheal mediastinal mass suspicious for malignancy (Figure 2). The mass posterolateral displaced and narrowed the

trachea to a minimum diameter of 0.5 cm. The mass appeared inseparable from the superior vena cava and occluded it. The patient was found to have superior vena cava syndrome secondary to an unknown mass. The patient was sent for a right thoracoscopy and biopsy of the mass at an outside hospital. Immunostaining showed multifocal striking nuclear positivity for MDM2 and CDK4. A diagnosis of an intimal sarcoma of superior vena cava origin was made.

Discussion

The patient in this report was found to have positivity for MDM2, CDK4, and methylation of lysine 27 on histone 3 (H3K27-me). FISH confirmed MDM2 gene amplification. MDM2 is a gene that encodes nuclear-localized E3 ubiquitination ligase. The encoded protein can promote tumor formation by targeting tumor suppressor gene tumor protein 53 (p53) for proteasomal degradation. Overexpression and amplification of MDM2 can be detected in different types of cancers, and in this case, specific to sarcomas (3). The role of this oncogene was found to be amplified in more than one third of human sarcoma samples (4). Targeting MDM2-p53 interaction for MDM2 positive gene amplified confirmed sarcomas may have implications for cancer therapy and cancer progression.

NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Abdul Rehman, MBBS

An Unusual Occurrence of Abdominal Pain

Title

An Unusual Occurrence of Abdominal Pain

Authors

A.Rehman, AThoppil, M Hassib, M Malak, and SL Wallach.

Introduction

In late 2019, a novel coronavirus was identified that spread rapidly and was declared a pandemic within 3 months of early reported cases. We present an intriguing case of this viral infection that presented with abdominal pain.

Case Presentation

A 33-year-old woman with no medical or surgical history presented to the ED in July 2020 with acute abdominal pain for 1 day. The pain was in RLQ with radiation to the LUQ. She reported 1 episode of vomiting but denied URI, shortness of breath, diarrhea, constipation, fevers, chills or dysuria. Her vital signs were normal except low grade fever of 38.1. Physical exam was normal except that abdominal examination demonstrated a soft abdomen with normal bowel sounds and mild tenderness in RLQ and LUQ with no Murphy's sign. Lab tests revealed an elevated d-dimer (0.61 ug/ml), fibrinogen (457 mg/dl), CRP (1.45 mg/dl) and ESR (88 mm/hour). Liver function tests, lipase, lactate, WBC, LDH, PTT, aPTT, BUN and creatinine were normal. Chest radiograph showed clear lung fields. CT abdomen and pelvis with IV contrast revealed non-opacification of the right portal vein- concerning for thrombosis- and a wedge-shaped hypodensity in the spleen and an ill-defined density in right hepatic lobe, suspicious for acute infarcts. She tested positive for COVID The patient was treated with therapeutic enoxaparin. There was no family history of clotting disorders. Phospholipid B2 glycoprotein Ab, cardiolipin Abs , ANA, p-ANCA, c-ANCA, anti-smooth muscle Ab, anti-microsomal Ab, AMA, and complement 3, 4 were all normal. Serologies for acute viral infections with hepatitis A, B, C as well as EBV, herpes simplex 1 & 2 were all negative. Double-stranded DNA titer was elevated at 460 IU (this finding is non-specific); normal results for factors V Leiden, prothrombin gene ,l antithrombin III, protein C & S activities ruled out common hypercoagulable disorders. SARS CoV-2 seemed the likely culprit for the portal vein thrombosis and splenic infarct. The patient's

hospital course was uncomplicated, and her abdominal pain resolved by the 8th day of hospitalization. At discharge she was prescribed coumadin for 6 months and follow up was arranged.

Discussion

It is uncommon for a patient with portal vein thrombosis secondary to COVID-19 to present with abdominal pain and no respiratory complaints, even remotely. In their review of cases of splanchnic vein thrombosis (SVT) in COVID. Singh et al prevent cases of SVT who presented with fever, abdominal pain, acute abdomen. sepsis, pneumonia ,and ARDS. 1 Our patient was relatively well and never demonstrated any signs of hemodynamic compromise, sepsis, pneumonia, or acute abdomen. It is crucial that patients with portal vein thrombosis and COVID be promptly anticoagulated. During this pandemic, patients with abdominal pain should be evaluated for COVID-19.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Faseeha Rehman, MBBS MD

A Rare Case of Primary Small Bowel Obstruction

Title

A Rare Case of Primary Small Bowel Obstruction

Authors

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Introduction

Small bowel obstruction is a commonly encountered diagnosis in the in-patient setting. An obstruction can be primary or secondary. We present a rare cause of primary obstruction secondary to a parasitic leiomyoma. This case illustrates the critical element of etiology in the operative decision-making process.

Case Presentation

A 59-year-old female presented with a one-day history of 6/10, sharp, periumbilical pain radiating to the back. She additionally reported nausea, vomiting, and obstipation. She denied any surgical history. Her vitals were: BP 192/78, HR 73, Temp 97.9. On physical exam, she appeared lethargic. Her abdomen was distended and diffusely tender. WBC was 15.9. CT abdomen/pelvis revealed focal dilation of mid-jejunal small bowel with inflammatory changes in the mesenteric fat and a jejunal diverticulum. Meckel scan was negative. Review with radiology and correlation with previous imaging revealed a small bowel obstruction with a transition point away from the jejunal diverticulum site. The patient was taken to the operating room for primary small bowel obstruction. Intraoperatively, several blood vessels were found originating from a leiomyoma wrapped around the jejunum, causing a stricture, several additional vessels were wrapped around the neck of the patient's jejunal diverticulum. The surgeon elected to perform a stricturoplasty at the obstruction site and a small bowel resection at the jejunal diverticulum site. The patient had an uneventful postoperative course, recovered bowel function, and was discharged. She followed up with an OBGYN postoperatively to address the “parasitic leiomyoma”.

Discussion

Etiology is a critical determining point in the operative decision-making process for small bowel obstruction. Obstructions can be primary or secondary. Secondary obstructions are caused by adhesions and are often managed non-operatively. In contrast, primary obstructions result from various entities such as internal hernias, tumors, and inflammatory strictures. They generally require surgical exploration to determine and manage their cause [1], [2]. Despite advances in imaging, intraoperative findings are often unanticipated. In fact, unsuspected malignancy is found 7.7 to 13.4 percent of the time [1]. 'Parasitic Leiomyoma' is a rare cause of primary obstruction. Parasitic Leiomyomas are masses related to uterine leiomyomas [3]. They are generally pedunculated and derive their blood supply by neo-vascularization [4]. The parasitic leiomyoma in our patient partially derived its blood supply from the mesenteric vasculature. In doing so, one of its arteries wound around the small bowel and caused a stricture while the other constricted the neck of the patient's jejunal diverticulum. Our case demonstrates how essential a good surgical history remains in guiding the management of patients with small bowel obstruction. Despite considerable advances in imaging, the old surgical adage that primary obstructions need exploration continues to stand the test of time.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Paarth Shah

A Rare Case of High-Grade, Well-Differentiated Neuroendocrine Tumor of Unknown Primary Site

Title

A Rare Case of High-Grade, Well-Differentiated Neuroendocrine Tumor of Unknown Primary Site

Authors

Paarth Shah, MD Rohit Kulkarni, MD Krupa Gandhi, MD Joseph Berman, MD

Introduction

Neuroendocrine neoplasms (NENs) are an uncommon group of aggressive malignancies. Most are classified as poorly-differentiated carcinomas, however a rare subset demonstrates well-differentiated morphology and is called high-grade, well differentiated neuroendocrine tumors (NET G3). There is limited data available for management of NET G3. We present a case of a patient diagnosed with high-grade, well differentiated neuroendocrine tumor with an unknown primary site.

Case Presentation

A 42-year-old male with no known history presented to the emergency department with right upper quadrant abdominal for one-week duration. Physical examination revealed hepatomegaly. Labs showed hyperbilirubinemia and transaminitis. CT angiography showed a small 4.2mm right lung nodule, innumerable hypoattenuated lesions throughout the liver, and portal vein thrombosis. Anticoagulation was initiated and he was admitted to the hospital. A core liver biopsy revealed neoplastic cells which exhibited a moderate degree of nuclear atypia and abundant cytoplasm with no nuclear molding or necrosis. Immunohistochemistry demonstrated positivity for synaptophysin the Ki-67 index was 70%. Tumor markers were all within normal limits with the exception of lactate dehydrogenase (LDH). Hormonal testing was also unremarkable. MRI abdomen and pelvis revealed hepatomegaly with innumerable liver lesions with a central necrotic appearance, the largest of which was 13cm. MRI brain and bone scan were unremarkable. Upper endoscopy and colonoscopy were unremarkable and did not reveal a primary tumor site. The patient was diagnosed with high-grade well-differentiated neuroendocrine tumor of unknown primary site and was started on combination chemotherapy

with carboplatin and etoposide. The patient was also empirically treated with octreotide, as a somatostatin receptor scintigraphy was not available for this patient. The patient was discharged from the hospital in stable condition. After discharge, he completed two cycles of carboplatin and etoposide, two rounds of octreotide, and was supported with G-CSF. He then returned to the ED and was readmitted to the hospital for worsening abdominal pain and shortness of breath. Repeat imaging revealed progression of disease in the liver with increasing sizes of masses and new ascites. During the second admission, he completed two additional cycles of chemotherapy. Unfortunately, the patient did not improve clinically and eventually died under hospice care from worsening liver failure.

Discussion

NET G3 is a rare subset of neuroendocrine tumors which demonstrates a Ki-67 index of >20% but relatively well-differentiated histology. Median survival was found to be more than double of poorly-differentiated NENs (40 months vs. 12 months). It's recommended to explore the possibility of a NET G3 tumor if the Ki-67 is greater than 20%, if somatostatin receptor scintigraphy is positive, and when a primary pancreatic tumor is present. Unfortunately, the optimal treatment of NET G3 is not yet established, as this subset of tumors is often excluded in prospective clinical trials. In contrast to poorly-differentiated neuroendocrine tumors, recent studies suggest low response rates to platinum and etoposide regimens. This case demonstrates the need for additional clinical trials with new therapies in hopes of more responsiveness to treatment of NET G3 in the future.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Sreeja Sompalli, MBBS

Two Sharks in a Bowl: Dieulafoy lesion and Acute MI in a patient with Anomalous Right Coronary Artery

Title

Two Sharks in a Bowl: Dieulafoy lesion and Acute MI in a patient with Anomalous Right Coronary Artery

Authors

Sreeja Sompalli MD, Sahil Mamani MD, Nandan Thirunahari MD

Introduction

Anomalous coronary arteries are a rare congenital anomaly with the potential for myocardial ischemia and sudden death. Some of the variations are benign while some are potentially life-threatening. We present a case of Right Coronary artery (RCA) with a malignant course which presented as Acute Myocardial Infarction (MI) and Dieulafoy lesion, leading to a fatal course of events.

Case Presentation

A 74-year-old female with the known anomalous right coronary artery (RCA) diagnosed 6 years ago presented with acute onset of dizziness and syncope. Initial EKG showed an Inferior-lateral myocardial infarction (MI). Immediate cardiac catheterization revealed Moderate Aortic stenosis and RCA arising near the vicinity of the left main following an intra-arterial course between the pulmonary artery and Aorta with complete occlusion of the anomalous artery in the proximal part. Despite twelve attempts, a guide catheter could not be seated. The patient was maintained on aspirin, eptifibatide, heparin drip, an intra-aortic balloon pump. 24 hours later, she developed severe gastric bleeding for which an endoscopy was performed revealing a Dieulafoy lesion in the gastric fundus which was successfully clipped. The patient remained in severe cardiogenic shock requiring two pressers. Given the extent of MI and the malignant course of the vessel which was not amenable for further intervention, the patient could not be saved.

Discussion

The clinical presentation of the Anomalous origin of the Coronary Artery varies depending on the anatomical course of the affected coronary artery. The risk for Sudden Cardiac Death (SCD) is reported to be 87% when the anomalous coronary artery takes an inter arterial course. In our patient, not only that RCA took inter arterial course, it was complicated by 100% thrombosis of the inter arterial part of the RCA, Moderate Aortic Stenosis and also Dielufoy lesion. She developed an upper GI bleed 24 hrs because of which the antiplatelets and anticoagulants had to be discontinued even when had active MI. The anomalous coronary artery is seen in 0.5-1% in patients undergoing AV placement, making it technically challenging if the artery is traversing between the aorta and pulmonary artery. The best choice of imaging to understand the course of coronary artery would be coronary magnetic resonance angiography (CMRI) or CT coronary angiography. Surgical repair was recommended for an inter arterial course of RCA in the presence of documented ischemia. Our patient was diagnosed with coronary CT angiography 6 years before the presentation at which time, she declined surgical evaluation. The most intriguing part is her survival for all these years despite the Anomalous RCA. Typically, the majority of these patients have an SCD or may need an urgent repair of the anomaly. When she presented to us with inferolateral MI, despite multiple attempts with different catheters, selective engagement of the RCA was unsuccessful. Though the Dielufoy lesion was clipped, due to severe cardiogenic shock and unrepairable Right coronary, she could not be saved.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE Asieh Takalloobakhtiari

Insulin pumps: life savers but in appropriate circumstances

Title

Insulin pumps: life savers but in appropriate circumstances

Authors

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Introduction

There is sufficient evidence that near-normal glycemic control prevents or delays complications of diabetes, which has led to a dramatic increase in continuous subcutaneous insulin infusion (CSII) or insulin pump use. These devices were introduced in the late 1970s and contain an insulin-filled cartridge or a syringe connected to a catheter that is inserted into the subcutaneous tissue. Concern has been expressed about hypoglycemia resulting from unintentional insulin delivery, although hypoglycemia generally occurs less frequently with CSII than with multiple daily injections (MDI).

Case Presentation

The patient is a 62-year-old Caucasian female with PMH of COPD, CHF, Graves disease and Type 1 diabetes mellitus who was brought to the emergency room by EMS after found barely responsive by her friend on the floor. On arrival noted to have POC blood sugar of 41. Initial evaluation revealed the presence of insulin pump which was removed immediately. The patient's mental status normalized a few minutes after administration of 50gr Dextrose. Further investigation showed 4 days prior, the patient sustained a mechanical fall; the event that is the contributing factor for malfunctioning of the pump, most likely. She was following routinely by her PCP but had not seen her endocrinologist for the past 8 months who is the only one involved in managing and monitoring the insulin pump function. During the course of hospitalization, the sugar levels were controlling by multiple daily injections which reached to the optimal level on the day of discharge from the hospital.

Discussion

Adverse events related to insulin pumps can be divided in two types: device malfunctioning, and user related. For the successful use of CSII, thorough evaluation and training of the CSII candidate is crucial prior to implementation. There is also a need for ongoing close contact between the pump user and the health care team, which is not limited to the endocrinologists, but primary care physicians also play a critical role. Although there are potential risks and side effects of using an insulin pump, these can be avoided through proper education and surveillance. We highly recommend educating insulin pump users by primary care providers in every routine visit. The users must know that in case of falling, or trauma to the device they are at risk of receiving insulin out of proportion to their real requirement and in order to prevent the fatal outcomes these events need to be reported to the health care provider as soon as possible. The primary care providers should be knowledgeable about the management of infusion pump therapy, including assessment of patient capabilities and practices, education, insulin adjustment, and techniques of use.

NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Ankita Vaidya

Polymicrobial Superinfection of Scrofula: An Odd Bacterial Jamboree

Title

Polymicrobial Superinfection of Scrofula: An Odd Bacterial Jamboree

Authors

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Introduction

Tubercular cervical lymphadenitis (Scrofula) is the most common extra-pulmonary manifestation of tuberculosis. However, superinfection of scrofula with other bacteria in an immunocompetent host has been rarely reported. We report a case of polymicrobial superinfection in a patient with mycobacterial lymphadenitis in a non-immunocompromised patient.

Case Presentation

A 21-year-old female presented to the hospital with pleuritic right upper chest pain, cough with intermittent whitish phlegm with no hemoptysis, drenching night sweats, and >10% weight loss over 1 month. She reported an episode of post-tussive vomiting with choking 1 month back and a progressively enlarging painful right neck lump since then. She completed a 10-day course of an antibiotic as an outpatient with transient relief in her symptoms. Her last travel to the Dominican Republic was in 2007 from where she immigrated to the US when she was 8 years old and otherwise reported no sick contacts. On presentation, her temperature was 98.1°F, respiratory rate 16 per min, oxygen saturation 100% on room air and BMI was 18. Her examination revealed firm tender, non-erythematous, non-fluctuant partially mobile right cervical mass anterior to sternocleidomastoid 5 mm x 5 mm, and the pulmonary examination was normal. The initial WBC count was 6500/mm^3. CT-Chest showed bilateral cavitary lesions with patchy areas of consolidation and MRI-Neck showed large extensive suppurative/necrotic adenopathy of the right lower neck. Her lymph node fine-needle aspiration biopsy revealed caseating granulomas and grew Pseudomonas aeruginosa, Streptococcus mitis, and Neisseria species. Immunoglobin A/G/M levels were normal and the Dihydrorhodamine test for the

oxidative potential of neutrophil was normal with no evidence of immunodeficiency. HIV test and Histoplasma antibodies were negative and TB quantiferon gold was positive. 3 induced sputum at that time were negative. Her initial diagnosis was cavitary pneumonia and polymicrobial lymphadenitis secondary to aspiration for which she was initially managed with ceftazidime and upon improvement, discharged on 3 weeks of Levofloxacin. After treatment completion, she reported recurrence of dry cough and night sweats. Acid-fast bacilli grew in broth from the aspiration of the right cervical lymph node, and she was started on anti-tubercular treatment with rifampin, isoniazid with pyridoxine, pyrazinamide and ethambutol while being restarted on Levofloxacin in view of probable tuberculosis with pseudomonal superinfection. She has been clinically improving since.

Discussion

This rare case shows that polymicrobial superinfection of scrofula is possible, and should be considered in the differential for a patient with cervical lymphadenitis. The risk of treatment failure exists in such cases unless therapies for both tuberculosis and superinfection are instituted.

We present two hypotheses:

1. Immune dysregulation with tuberculosis facilitates bacterial superinfection.

2. Immune reconstitution post-antibiotic treatment in our patient worsened the tubercular symptoms.

Validating the presented hypotheses warrants further research.

NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE
Maureen Younan, MD PharmD

Lower Extremity Weakness as a Presentation of Adult T-Cell Lymphoma/Leukemia (ATLL)

Title

Lower Extremity Weakness as a Presentation of Adult T-Cell Lymphoma/Leukemia (ATLL)

Authors

Maureen Younan, PharmD, MD

Introduction

Human T-Cell Lymphoma Virus 1 (HTLV) was the first human retrovirus identified1; it infects at least 10 million people worldwide with various manifestations including HTLV-1 Associated Myelopathy/Tropical Spastic Paraperesis and Acute T-cell Lymphoma/Leukemia (ATLL). HTLV-1 infection is endemic in parts of Africa, the Caribbean basin, Italy, and southwestern Japan.

Case Presentation

50-year-old Jamaican man who presents with three-week history of lumbar back pain, bilateral lower extremity weakness, and sensory deficits in the pelvic and perianal areas. The patient's past medical and family history are nonsignificant and he denied any recent gastrointestinal or respiratory infections. On physical exam, he was noted to have 5/5 upper extremity and 4/5 lower extremity strength with right greater than left. Initial labs were not significant but had a reversed albumin to globulin ratio. MRI lumbrosacral spine demonstrated L5-S1 annulus bulge with right-sided foraminal stenosis. MRI thoracic spine did not demonstrate any areas of spinal stenosis but questionable mild T2 hyperintensity at T6 level centrally within the spinal cord as well as diffusely low T1/T2 signal in the bone marrow possibly representing hypercellular marrow. Patient was given IV decadron and neurosurgery consulted. MRI brain demonstrated a left basal ganglia lesion without mass effect. At the suggestion of neurology, Human T-Cell Leukemia Virus 1 antibody titers were ordered for evidence of HTLV-1–associated myelopathy/tropical spastic paraperesis (HAM/TSP) given the patient's ethnicity. The patient was discharged on a steroid taper with neurology follow-up in two weeks. The patient presented again to the Emergency Department three weeks later with progressively worsening lower extremity weakness, right painful inguinal mass, and urinary incontinence after completion of his steroid taper. Review of his previous labs demonstrated HTLV1/2 reactivity;

the patient was then diagnosed with HAM/TSP. CT abdomen/pelvis demonstrated a heterogenous 9.8 x 10 x 10 cm mass in the right groin. Biopsy confirmed T-cell lymphoma, consistent with ATLL. Initial PET scan demonstrated hypermetabolic adenopathy in the bilateral iliac and inguinal regions. The patient was started on a regimen of HYPER CVAD with intrathecal methotrexate. Unfortunately, the patient's disease progressed; he was transitioned initially to ifofosfamide, mesna, carboplatin, and etoposide (ICE), then later transitioned again to brentuximab and bendamustine.

Discussion

New literature has shown that ATLL is numerically the most common cause of death in patients with HAM/TSP with a prevalence of ATLL in HAM/TSP patients found to be about 3%. The mean survival of these patients was 1.19 years. It is unclear what causes the transformation from HTLV-1 infected cells to ATLL cells but CADM1+ and CD7- expression have been implicated. Given the high risk of ATLL development in patients with HAM/TSP and its poor prognosis, it may be worthwhile to evaluate patients for the possibility of simultaneous diagnosis at the time of initial presentation to prevent delays in diagnosis of ATLL. This is even more true as patients who present with symptoms of HAM/TSP are often treated with immunosuppressive treatments such as steroids which may delay ATLL therapy. Furthermore, this case represents the influence that detailed history-taking can have on ordering focused lab tests.

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NEW MEXICO POSTER FINALIST - CLINICAL VIGNETTE
Eyerusalem Akpan

A disease of many colors; A case of IgG4 related pulmonary disease

Title

A disease of many colors; A case of IgG4 related pulmonary disease

Authors

Eyerusalem Akpan, D. Bradley Jackson, N. Suzanne Emil

Introduction

IgG4-related disease (IgG4-RD) is an immune-mediated disease that causes fibro-inflammatory lesions. It often mimics cancer, an infection, or other autoimmune diseases like Sjögren's syndrome or granulomatosis with polyangiitis. IgG4-RD mainly affects Asian men over 50 years of age. It typically presents with swelling of affected organs such as pancreas, salivary or lacrimal glands.

Case Presentation

An 81-year-old non-smoker, Asian male with Type 2 DM, hypertension, CAD, BPH and IgG4-RD (biopsy proven from parotid gland) presented for acute care visit with four days of cough and shortness of breath. He denied fever or chest pain. He has a history of multiple visits to the ED for similar complaints. He was sent to the ED for further work up. On presentation to the ED, he was tachypneic, tachycardic, and required 2.5L of oxygen. Physical exam showed increased work of breathing and diffuse wheezing. Work up revealed unremarkable CBC, CMP and VBG. Lactate level was 4.7. CXR indicated COPD-associated pulmonary artery hypertension and possible superimposed pneumonia. Based on these findings, he was resuscitated with fluids, started on ceftriaxone, azithromycin, and prednisone along with nebulization treatment. He was admitted to the inpatient service for acute hypoxic respiratory failure secondary to bacterial pneumonia vs possible COPD exacerbation. CT chest showed bronchial wall thickening, possibly representing IgG4 bronchovascular disease and mediastinal and hilar adenopathy. He continued to have increased oxygen requirement along with upward trending lactate to 7.9 and worsening VBG necessitating transfer to the MICU. He was placed on piperacillin/tazobactam. Further work up showed normal procalcitonin, and respiratory panel was positive for rhinovirus. Last IgG4 level was 1230mg/dl six months back. After careful review and evaluation, his presentation was felt to be an IgG4-related lung disease flare and rhinovirus

infection. Antibiotics were stopped and high-dose steroid was continued. Over the next 72hrs, he was weaned off oxygen and discharged on prednisone. Follow up chest CT 6 weeks post-discharge showed smaller thoracic lymphadenopathy and decreased bronchial wall thickening.

Discussion

IgG4-RD is a recently recognized disease. It was first described in relation to autoimmune pancreatitis; however, throughout the years, it has been found to involve different organs. Pulmonary manifestation of IgG4-RD was first described in 2004. Since then, intrathoracic involvement by IgG4-RD has been seen in lung parenchyma, lymph node, airways, pleura, and mediastinum. Clinical features of IgG4-related lung disease can be diverse including cough, dyspnea and chest pain, or pulmonary lesions found incidentally on imaging. Four patterns of pulmonary involvement were described based on radiological and histological findings: solid nodular, bronchovascular, alveolar-interstitial, and ground-glass opacities. Diagnosis is based on clinical features, serum IgG4 and histologic features. Corticosteroids remain the standard therapy for IgG4-related lung disease. Due to its unfamiliarity, not a lot of clinicians are aware its wide variety of clinical presentations and complications. IgG4-RD remains underdiagnosed which contributes to delay in treatment, ultimately leading to damage to organs. The purpose of this case report is to broaden the knowledge of this condition among physicians, and be attuned to the kinds of pulmonary symptoms and complications that can result.

NEW MEXICO POSTER FINALIST - CLINICAL VIGNETTE
Ashley Ederle

Amyloidogenic leukocyte chemotactic factor 2 (ALECT2) renal amyloidosis in a patient with squamous cell carcinoma – A case report

Title

Amyloidogenic leukocyte chemotactic factor 2 (ALECT2) renal amyloidosis in a patient with squamous cell carcinoma – A case report

Authors

Ashley Ederle[1], Hannah Groves[1], Erick Lopez[1], Suman Pal[1]

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Introduction

Renal amyloidosis is a rare protein misfolding disorder resulting in progressive renal insufficiency.[1] Amyloid is typically composed of serum amyloid A-related protein (AA) or immunoglobulin light chain (AL); however, amyloidogenic leukocyte chemotactic factor 2 (ALECT2) is increasingly recognized as a cause. [3] It has been previously reported in patients with carcinomas of the kidney, bladder, prostate and breast.[4] We describe a case of ALECT2 renal amyloidosis in patient with squamous cell carcinoma.

Case Presentation

A 73 year-old female with a history of chronic kidney disease (CKD), scleroderma, and squamous cell carcinoma (SCC) of the right leg status post below the knee amputation (BKA) was admitted for surgical site infection of lower extremity stump. She underwent an incision and drainage with vacuum-assisted closure, empiric cefazolin and doxycycline were started. After cultures grew P. aeruginosa and mixed anaerobes, antibiotics were transitioned to levofloxacin and metronidazole, and then again to ciprofloxacin and amoxicillin/clavulanic acid due to medication intolerance. Creatinine (Cr) prior to admission was 1.03 mg/dL, on admission day Cr was 1.74 mg/dL, which rose to 2.38 mg/dL on day 6. Renal ultrasound was consistent with CKD. Urine studies demonstrated few red and white blood cells but no casts. Her renal function continued to decline despite fluid resuscitation, and her Cr spiked to 5.98 mg/dL on day 10. She was started on hemodialysis, and methylprednisolone therapy due to concern for rapidly progressive glomerulonephritis. A renal biopsy was performed and initial pathology report revealed non-AL amyloid, thus glucocorticoids were tapered. Her kidneys did not

demonstrate significant recovery inpatient; she was transferred to a skilled nursing facility on hemodialysis with a Cr of 2.99 mg/dL.

Final pathology results via liquid chromatography-tandem mass spectrometry demonstrated ALECT-2 type amyloidosis. Approximately 2 months after her discharge from the hospital, her Cr was 2.4 mg/dL and hemodialysis was discontinued.

Discussion

Described in 2008, ALECT2 is a recently identified type of systemic amyloidosis that predominantly involves the liver and kidneys [2]. ALECT2 amyloidosis displays a clear ethnic predisposition, with many patients being Hispanic [2]. Unlike other forms of renal amyloidosis, proteinuria is inconsistent finding with ALECT2 amyloidosis and patients may present with bland urinary sediment and only mild proteinuria [4].

The pathophysiology of ALECT2 amyloidosis is incompletely understood, though the strong ethnic predisposition and homozygosity for G allele in majority of patients point to a genetic predisposition. An association with carcinoma with possible upregulation of gene expression has been proposed but not validated by large-scale studies. This case demonstrates the importance of maintaining a high level of suspicion for ALECT2 amyloidosis in older, particularly Hispanic, patients with progressive renal disease. Accurate diagnosis can be essential for management to avoid potentially harmful therapies which might be indicated for other causes of progressive renal disease.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE
Mohammed T Abdulaaima, MD

Rhabdomyolysis following nontyphoidal Salmonella sepsis: case report

Title

Rhabdomyolysis following nontyphoidal Salmonella sepsis: case report

Authors

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Introduction

Introduction: Rhabdomyolysis is a syndrome of muscle breakdown with the release of myoglobin, creatine kinase (CK), and electrolytes into the bloodstream. Disease severity ranges from asymptomatic CK elevation to severe disease resulting in electrolytes disturbances, cardiac arrhythmia, and acute kidney injury (AKI). Various etiologies are implicated in rhabdomyolysis, including infectious ones. We present a case of nontyphoidal Salmonella sepsis, causing rhabdomyolysis in a young male.

Case Presentation

Clinical case: A previously healthy 32-year-old African American male presented with bloody diarrhea and abdominal pain for five days. He was afebrile and vitally stable, with an unremarkable physical exam. Blood count and metabolic panel were normal. He was discharged on cephalexin and metronidazole with a diagnosis of presumed infectious diarrhea. Three days later, he returned to the ED with diffuse muscle aches, generalized weakness, fever, and dark urine. Blood work was notable for leukocytes of 18000 cells/ul (reference range: 4000-11,000 cells/ul), potassium of 7.2 mmol/l (reference range: 3.5-5.1 mmol/l), phosphorus of 12.4 mg/dl (reference range: 2.5-4.5 mg/dl), calcium of 5.7 mg/dl (reference range: 8.2-10.0 mg/dl), urea nitrogen of 45 mg/dl (reference range: 7-25 mg/dl), creatinine of 5.75 mg/dl (reference range: 0.7-1.3 mg/dl) and CK of 7800 U/l (reference range: 22-200 U/l). Stool culture resulted in nontyphoidal Salmonella with otherwise negative blood cultures. He was started on intravenous ceftriaxone for sepsis. He developed progressive fluid overload and anuria; thus,

hemodialysis was started. Fourteen days later, the patient was discharged on hemodialysis three times a week. Two months later, the AKI resolved with no further need for hemodialysis.

Discussion

Discussion: Annually, rhabdomyolysis affects about 26000 patients in the US, with up to 55% developing AKI.[1,2] Pathophysiology stems from an insult to myocyte metabolism that increases intracellular calcium with subsequent activation of proteases, muscle death and contents release.[3,4] These insults can be chemical, physical, biological or hereditary. Among infectious "biological" insults, Salmonella species have been reported as a cause of rhabdomyolysis.[5] Salmonella increases expression of EGFR, which increases intracellular calcium, explaining rhabdomyolysis in these cases, in addition to sepsis and related hypoxia.[6,7] Here we report a case of gastroenteritis caused by nontyphoidal Salmonella followed by rhabdomyolysis and AKI. The temporal association suggests causality, supported by the literature. The absence of other etiologies, such as trauma and exposure to toxic medications or substances, supports our diagnosis by exclusion. Previous normal exercise capacity makes hereditary causes unlikely. Nontyphoidal Salmonella is transiently found in the blood in about 5% of patients, explaining the muscle damage despite a normal blood culture.[8] Otherwise, negative blood culture might be due to the early use of antibiotics. An alternative explanation for the muscle damage is antibiotics as some cephalosporins are known to cause rhabdomyolysis, such as cefdinir and cefaclor.[9] In our case, it less likely that treatment with cephalexin or metronidazole resulted in such adverse reaction, given the absence of reports supporting that. Despite the initial dramatic presentation, early recognition, hemodialysis, and judicious hydration improved our patient's overall condition with a total resolution of his AKI.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Shazia Aziz, MBBS

A Case of Trimethoprim-Sulfamethoxazole induced acute pancreatitis

Title

A Case of Trimethoprim-Sulfamethoxazole induced acute pancreatitis

Authors

Shazia Aziz [1], Syed Haider Ali Shah [1], Yusuf Mubarak [1]

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Introduction

Drug-induced pancreatitis is a difficult diagnosis to establish given the paucity of cases and the variability of temporal relationship between drug exposure and symptom manifestation. While TMP-SMX is classified as Class Ia drug for causing pancreatitis the prevalence is still very low. We present this case of TMP-SMX induced pancreatitis in light of current literature.

Case Presentation

51 years old female with past medical history of alcohol abuse (abstinent since 2014), depression, neurogenic bladder (s/p suprapubic catheter placement, on chronic suppressive Nitrofurantoin), and chronic pancreatitis was admitted with severe epigastric pain radiating to the back plus nausea and vomiting for 2 days. She was first diagnosed with pancreatitis 8 years ago with subsequent multiple admissions for acute pancreatitis secondary to alcohol use. On her last admission for acute pancreatitis, 2 weeks prior, she was also noted to have asymptomatic bacteriuria with urine culture positive for E.Coli and Stenotrophomonas maltophilia that were not sensitive to Nitrofurantoin. She was treated with Ceftazidime and discharged on Amoxicillin-Clavulanate and TMP-SMX. Long-term home medications: Citalopram, Statin, Aspirin and Mirtazapine. On presentation, serum Alcohol level was normal, serum Lipase was 6249 U/L with a baseline of 247 U/L (2 weeks prior), serum Calcium was 8.1 mg/dL. Serum Triglycerides were 63 mg/dL on previous admission. CT Abdomen and Pelvis with contrast was consistent with acute pancreatitis with significant stranding surrounding the pancreas, increased since the study 2 weeks prior; no fluid collection was noted. We suspected antibiotic induced pancreatitis given history of recent exposure. TMP-

SMX was withheld and she was managed conservatively. She was seen by Gastroenterology and Magnetic Resonance Cholangiopancreatography (MRCP) and IgG4 assay were done. MRCP impressions were as follows: S/P cholecystectomy, mild intrahepatic and extrahepatic biliary ductal dilatation; some abrupt cut off within distal portion of the CBD, however, no clear filling defects visualized; no ductal dilatation of pancreas. IgG4 was within normal limits: 22 mg/dL After 6 days of hospital stay, she was discharged in a stable condition with a presumed diagnosis of TMP-SMX induced pancreatitis after an extensive work up ruled out common causes of pancreatitis.

Discussion

Medications contribute to less than 5% cases of acute pancreatitis[1,2,3,4]. Reported mechanisms of drug-induced pancreatitis include immunologic reactions, toxic metabolite accumulation, ischemia, intravascular thrombosis and increased viscosity of pancreatic juice [5,6]. In our present case, we ruled out alcohol use and CBD stone, serum calcium and IgG4 assay during episode were normal. There was no history of similar abdominal pain secondary to amoxicillin-clavulanate use in the past. We strongly suspect TMP-SMX as the trigger for acute pancreatitis given history of recent exposure to the drug and subsequent resolution of symptoms and downtrending lipase levels on withholding it. There are about 10 reported cases of TMP-SMX induced acute pancreatitis in literature, including one case of recurrent pancreatitis after TMP-SMX re-challenge [7] and another where TMP-SMX has been implicated as a cause of fulminant liver failure and acute hemorrhagic pancreatitis simultaneously [8]. The underlying mechanism for TMP-SMX induced pancreatitis is not well understood, but it is reported that TMP-SMX stimulation leads to differentiation of drug-specific T cells and apoptosis of target cells by cytotoxic molecules (type IV hypersensitivity) [9,10]. Hence, high degree of caution should be exercised when prescribing TMP-SMX to patients with history of pancreatitis.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE
Venkata Sireesha Chemarthi, MBBS

Bilateral Lower Extremity Arterial Thrombosis and Pulmonary Embolism in a patient with mild COVID-19 disease

Title

Bilateral Lower Extremity Arterial Thrombosis and Pulmonary Embolism in a patient with mild COVID-19 disease

Authors

Venkata Sireesha Chemarthi, Sharika Gopakumar Menon, Bo Yu, Shazia Aziz

Introduction

COVID-19 has been associated with venous thromboembolic events. However, arterial thrombosis is still rare. We describe a case of bilateral lower extremity arterial thrombosis which led to bilateral Above Knee amputation followed by the development of Pulmonary Embolism despite being on anticoagulation.

Case Presentation

76-year-old male with Diabetes mellitus, Hyperlipidemia, Prostate cancer resection presented with body aches, generalized weakness and shortness of breath. He was noted to be in mild respiratory distress but did not require supplemental Oxygen. COVID-19 PCR was positive and was under observation in the Emergency Department. Initial D-dimer level done as part of COVID-19 lab panel was 9423 ng/mL. CT Angiogram of the chest was negative for PE and showed bilateral ground glass opacities. On day 5 of hospital admission, patient developed pain and discoloration of his right lower limb. Lower extremity Ultrasound was negative for Deep Vein Thrombosis. CT Angiogram of the bilateral lower extremities showed Right Iliac artery and femoral artery occlusion and the patient underwent thromboembolectomy. Two days later, the patient's leg was cold, discolored, tender and there were no palpable femoral and popliteal pulses. He had to undergo above knee amputation on the right side. 5 days later he developed left femoral artery occlusion and had to undergo above knee amputation of the left lower limb. The patient was tachycardic and tachypneic two days later and was found to have acute Pulmonary Embolism in the Right middle and lower lobe segmental arteries inspite of being on anticoagulation. Hypercoagulability work up was negative except for an isolated increase in Cardiolipin antibodies.

Discussion

Deep vein thrombosis and Pulmonary Embolism are the most common thromboembolic complications found in SARS CoV-2 positive patients. Arterial thrombosis has also been reported but less often. Moreover, the thromboembolic complications were noted in patients with severe disease who were in the ICU. Our patient, despite having mild disease developed extensive arterial and venous thromboembolism. COVID-19 related hypercoagulability could be multifactorial-endothelial inflammation, increased pro-coagulant factors, cytokine storm leading to coagulation. Antiphospholipid antibodies were positive in many patients with COVID-19 including ours. It is not clear if they contribute to arterial and venous thromboembolic complications. With the increase in patients with these events, we need further studies and guidelines for anticoagulation even in mild disease to prevent adverse outcomes as seen in our case. We need to be watchful for arterial thromboembolic events even in patients with mild COVID-19 disease.

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Severe COVID-19 infection associated with endothelial activation Robert EscherNeal Breakey et al DOI:https://doi.org/10.1016/j.thromres.2020.04.014 COVID-19 Infection and Arterial Thrombosis: Report of Three Cases BalrajSingh1RagiaAly2ParminderKaur3SachinGupta4RahulVasudev3Hartaj SinghVirk3FayezShamoon3MaheshBikkina3Lower-extremity Arterial Thrombosis Associated with COVID-19 Is Characterized by Greater Thrombus Burden and Increased Rate of Amputation and Death Inessa A. Goldman , Kenny Ye, Meir H. Scheinfeld https://doi.org/10.1148/radiol.2020202348 Acute limb ischemia in patients with COVID-19 pneumonia AlbertoPegorerMDaLucaAttisaniMDaLuisa GiuseppinaCossuMDaCamilloFerrandinaMDaAlessandroFossatiMDaElenaContiMDabRuth L.BushMD, JD, MPHcGabrielePiffarettiMD, PhDd Acute Lower Limb Ischemia as Clinical Presentation of COVID-19 Infection CristinaMietto1ValentinaSalice1MatteoFerraris2GianmarcoZuccon2FedericoValdambrini1GiorgioPiazzalunga2Anna MariaSocrate2DaniloRadrizzani1 Coagulopathy and Antiphospholipid Antibodies in Patients with Covid-19 N Engl J Med 2020; 382:e38 DOI: 10.1056/NEJMc2007575 Venous and arterial thromboembolic complications in COVID-19 patients admitted to an academic hospital in Milan, Italy CorradoLodigianiabGiacomoIapichinocLucaCarenzocMaurizioCecconibcPaolaFerrazziaTimSebastiandNilsKucherdJan-DirkStudteClaraSaccoaAlexiaBertuzzifMaria TeresaSandrigStefanoBarcodhHumanitas COVID-19 Task Force https://doi.org/10.1016/j.thromres.2020.04.024

NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Ying Chen, MD

NItazoxanide for the treatment of cyclosporiasis in a renal transplant patient

Title

NItazoxanide for the treatment of cyclosporiasis in a renal transplant patient

Authors

Ying Chen, MD Vagish Hemmige, MD

Introduction

Cyclospora cayetanensis is an uncommon protozoan parasite that can cause an intestinal infection that presents as copious watery diarrhea. In the United States, where Cyclospora is not endemic, outbreaks of cyclosporiasis are usually linked to fresh produce, such as bagged salad mix. Most immunocompetent individuals are able to recover without treatment. However, immunocompromised patients may have prolonged, severe illness. We present Nitazoxanide as an alternative therapy to TMP-SMX in a renal transplant patient.

Case Presentation

Our patient is a 32-year-old male with ESRD secondary to FSGS s/p LDRT in 2009 and recent admission for AKI and cyclosporiasis who re-presented with diarrhea. The patient was recently admitted for one month of watery diarrhea up to 6 times daily. Stool panel at that time was positive for Cyclospora. Due to concern for renal toxicity, he was started on Nitazoxanide instead of TMP-SMX. He completed 10 days of nitazoxanide at home with resolution of symptoms. Two weeks later, he began having nausea, weakness, lethargy, abdominal cramping, and three episodes of watery diarrhea daily. He denied eating any suspicious foods, sick contacts, and recent travel. At his nephrologist's office, he was found to have elevated creatinine and metabolic acidosis and sent for admission. C.diff and GI PCR panel were sent, and again only positive for Cyclospora. He was started on Nitazoxanide 500mg BID and discharged home to complete a 14-day course, after which he was started on TMP-SMX three times a week. As of this writing four months after discharge, he has not had a recurrence of diarrhea.

Discussion

Since 2015, increased global exchange of goods has led to an increase in outbreaks of cyclosporiasis. In addition to supportive care, TMP-SMX is usually the first-line therapy. Ciprofloxacin is an option for patients with sulfa allergies, though in a small randomized controlled trial with 42 HIV patients it was 25% less effective than TMP-SMX in either treatment or prophylaxis success. Other antibiotics that have been studied and proven ineffective include norfloxacin, metronidazole, tinidazole, and quinacrine. Nitazoxanide has emerged as another treatment option. In vitro studies suggest it impacts anaerobic energy metabolism through inhibition of pyruvate-ferredoxin oxidoreductase. Diaz et al used Nitazoxanide as a single broad-spectrum antiparasitic in 121 pediatric patients infected with several different protozoa and parasites. In patients with cyclosporiasis, 87% achieved three negative fecal samples by the third treatment. Similar success was found in Cohen's three case reports and in one healthy adult woman who failed ciprofloxacin treatment. These studies were completed with immunocompetent patients. For our patient, though symptoms initially resolved with 10 days of treatment, he became re-infected likely due to re-exposure to the same contaminated source. In immunocompromised patients, current guidelines by the American Society of Transplantation recommend indefinite prophylaxis with TMP-SMX three times a week after the initial treatment. His case contributes to the growing literature demonstrating Nitazoxanide's potential as an alternative to TMP-SMX as well as the need for secondary prevention after the resolution of the initial infection.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE
Brendan R Dillon, MD

Digging for the truth: Delayed diagnosis of skull base osteomyelitis in an elderly woman with uncontrolled diabetes

Title

Digging for the truth: Delayed diagnosis of skull base osteomyelitis in an elderly woman with uncontrolled diabetes

Authors

Brendan R Dillon, MD, Lauren M Wessler, MD, Cindy Fang, MD

Introduction

Skull base osteomyelitis is a rare clinical entity typically seen in elderly diabetic and immunocompromised patients. Its presentation can mimic other non-infectious inflammatory and malignant processes so is often misdiagnosed. Clinicians must maintain a high index of suspicion until a definitive diagnosis is made.

Case Presentation

A 64-year-old woman with uncontrolled type 2 diabetes mellitus presented with five months of constant, stabbing left temporal headache radiating to the ear, jaw, and neck. She had associated progressive neurologic deficits, including blurred vision, flashing lights, and subacute left-sided hearing loss. She had presented to another hospital two months prior to the current presentation and was diagnosed with giant cell arteritis despite negative bilateral temporal artery biopsy. She was treated empirically with high-dose steroids, but her symptoms continued to worsen.

On presentation, she was afebrile with normal visual acuity with corrective lenses, diminished left-sided hearing, and mild tenderness to palpation of the left temple, ear, and jaw. Labs revealed glycated hemoglobin exceeding 14% and elevated inflammatory markers with ESR of 111 mm/hr and CRP of 22 mg/L. Computed tomography of the head demonstrated a left retropharyngeal soft tissue lesion with bony erosion of the left lateral clivus and sphenoid sinus opacification. Brain magnetic resonance imaging (MRI) showed an infiltrative enhancing soft tissue lesion centered at the left cranio-cervical junction with bony involvement suggestive of an inflammatory process. The patient underwent left concha bullectomy and left

sphenoidotomy with debridement. Intra-operative cultures were positive for Staphylococcus aureus and Klebsiella pneumoniae, while surgical histopathology showed chronic sino-nasal mucosal inflammation with fungal balls. The patient was treated with broad-spectrum antibiotics and antifungals for polymicrobial skull base osteomyelitis. Her headache and neurologic symptoms completely resolved after six weeks of treatment.

Discussion

Skull base osteomyelitis is a rare and potentially fatal clinical entity caused by invasive fungal or bacterial infection from a sinus or otologic source. Uncontrolled diabetes, as in this patient, is a leading risk factor due to the associated immunosuppression and microangiopathy. Depending on the affected skull bones, symptoms are often vague and non-specific with cranial neuropathies occurring late in disease. MRI is the preferred imaging modality, but biopsy is typically required for definitive diagnosis and to rule out alternative diagnoses. Even then, identification of the causative microorganism can be complicated by false-negative results, particularly in the clivus bone and preclival soft tissues where chronic inflammation can be low-grade and pathogen burden low. Prolonged antimicrobial treatment is the cornerstone of treatment, often with surgical debridement. Timely intervention is needed to prevent the sequelae of untreated disease, namely neuro-invasive disease, such as meningeal or parenchymal involvement. The proper diagnosis and management of skull base osteomyelitis depends on a high degree of clinical suspicion and a well-executed, multidisciplinary approach.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE
Matthew Fanous, MD

Idiopathic Granulomatous Mastitis: When a Breast Mass Raises Suspicion

Title

Idiopathic Granulomatous Mastitis: When a Breast Mass Raises Suspicion

Authors

Matthew M. Fanous, MD

Introduction

Idiopathic granulomatous mastitis (IGM) is a rare breast inflammatory disease that may be difficult to distinguish from malignancy.

Case Presentation

A 31-year-old female gravida 2 para 2 with past medical history notable for iron-deficiency anemia presented to the hospital with complaints of fever, lower extremity rash, and multiple breast masses. The patient described having bilateral breast firmness and tenderness for 3 weeks. The patient had obtained a breast ultrasound, which showed multiple hypoechoic nodules bilaterally, and a mammogram, which was negative for malignancy. The patient also endorsed a 1-week history of lower extremity edema and erythema. On exam, she was febrile to 102.7°F and tachycardic to 110 beats/minute. A firm breast mass was palpable on the left upper inner quadrant whereas scattered firm nodules were noted on the right breast. The patient also had bilateral axillary and inguinal lymphadenopathy in addition to erythematous, tender nodules on her bilateral shins. Labs were notable for white blood cell count of 12,640 cells/µL, hemoglobin of 10.3 g/dL, erythrocyte sedimentation rate of 77 mm/hr, C-reactive protein of 58.7 mg/L, and serum immunoglobulin E level of 265 kU/L. Serum C3 and C4 levels were within normal limits. She tested negative for antinuclear, antineutrophil cytoplasmic, and extractable nuclear antigen antibodies. The patient was started on broad-spectrum antibiotics. A skin biopsy confirmed erythema nodosum while a repeat ultrasound revealed a left breast abscess. A drain was placed, which evacuated purulent fluid. Tissue was taken for culture and biopsy; a gram stain, acid-fast bacilli smear and culture, and Grocott methenamine silver stain were all negative. The breast biopsy revealed benign breast parenchyma with acute and chronic inflammation in addition to multiple noncaseating granulomas containing multinucleated giant

cells. The patient was diagnosed with IGM. Antibiotics were ultimately stopped and she was discharged on prednisone.

Discussion

IGM is a rare, benign breast inflammatory disorder affecting childbearing women with a history of breastfeeding. Median age of onset is 30. It is estimated to occur in less than 0.5 percent of the US population. Hypothesized trigger factors include pregnancy, lactation, autoimmunity, and hyperprolactinemia. Patients often present with an enlarging breast mass with signs of inflammatory changes, such as erythema and tenderness. With no specific radiographic features, it can often mimic a breast abscess or malignancy. Ultrasonography usually shows irregular, hypoechoic masses whereas the most common finding in mammography is focal symmetry without distortions or microcalcifications. Due to these nonspecific findings, diagnosis may be delayed. Core needle biopsy is used for definitive diagnosis. Histology reveals multiple noncaseating epithelioid granulomas, often with multinucleated giant cells. Left untreated, IGM may resolve in 1-2 years. If palliation of symptoms is warranted, multiple treatment options exist, albeit with no standard of care. The most common solution used is wide surgical excision, with or without concomitant corticosteroid therapy. Abscess drainage and expectant management are also utilized. Due to wide variability in treatments offered, the rate of recurrence is estimated to be up to 50 percent. More research is needed to identify the optimal treatment options to be offered for these patients.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE
Matthew Fanous, MD

An Opportunistic Killer: Plasmablastic Lymphoma

Title

An Opportunistic Killer: Plasmablastic Lymphoma

Authors

Matthew M. Fanous, MD

Introduction

Plasmablastic lymphoma is an extremely uncommon manifestation of Non-Hodgkin's lymphoma (NHL), an acquired immunodeficiency syndrome (AIDS)-defining malignancy. Due to its rarity, proper treatment options are uncertain.

Case Presentation

A 34-year-old female with past medical history of stage 3 chronic kidney disease presented with complaints of bilateral arm and leg numbness. She expressed that her symptoms were progressive over the previous 5 months. In addition, she noted a 20-pound weight loss, fatigue, intermittent chills, and shortness of breath. On exam, she was noted to be febrile to 101.5°F and tachycardic to 154 beats per minute. While she had 5/5 strength in her upper and lower extremities, a small amount of pseudomembranous white slough was noted in her mouth in addition to diffuse inguinal lymphadenopathy. Initial tests revealed white blood cell count of 4,740 cells/µL, hemoglobin of 6.9 g/dL, and lactate of 10.4 mmol/L. Due to concern for an immunocompromised state, a human immunodeficiency virus (HIV) antibody test was sent, which was positive. Her CD4 count was 20 cells/µL, with viral load greater than 7 million copies/mL. For her new diagnosis of AIDS, the patient was promptly started on highly active antiretroviral therapy with bictegravir, emtricitabine, and tenofovir alafenamide. An inguinal lymph node biopsy was done, which revealed plasmablastic lymphoma. The patient received intrathecal methotrexate for treatment, but this was complicated by seizure activity. She was intubated for airway protection and started on antiepileptics. Her hospital course was otherwise complicated by the development of cytomegalovirus viremia and varicella zoster virus meningoencephalitis for which she was treated with foscarnet and acyclovir, respectively. The patient also developed severe myelosuppression, with an absolute neutrophil count nadir of 10 cells/µL that was minimally responsive to filgrastim treatment. Due to the patient's

worsening clinical status, the risks of chemotherapy were determined to outweigh any benefits it could offer. As such, a palliative course of treatment was offered, which family agreed to.

Discussion

NHL is considered an AIDS-defining malignancy. Plasmablastic lymphoma is an extremely rare subtype, estimated to occur in only 2.6% of all HIV-related lymphomas. It is named for their resemblance to plasma cells, with large, eccentrically placed nuclei and plentiful basophilic cytoplasm. Like plasma cells, they are often CD138 and MUM1 positive. Although reported in recipients of solid organ transplants and immunocompetent people, the malignancy is primarily a disease of immunocompromised patients, particularly those with HIV/AIDS. Its median age of onset is 40 years old in individuals with HIV, with typical presenting symptoms such as fevers, weight loss, night sweats, and localized mass or swelling. Due to its rarity and highly aggressive nature, there is no standard chemotherapeutic regimen. CHOP (cyclophosphamide, doxorubicin, vincristine, and prednisone) is often considered inadequate. Instead, more aggressive treatment with CODOX-M (cyclophosphamide, vincristine, doxorubicin, high-dose methotrexate) or EPOCH (etoposide, prednisone, vincristine, cyclophosphamide, and doxorubicin) has been suggested to achieve clinical remission. Despite this, median survival is only 6-19 months in HIV positive individuals. There is a lack of standardized treatment and further investigation is needed to determine optimal chemotherapy.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE
Marisabel Hurtado Castillo, MD

Retinopathy after Treatment with Atezolizumab – Paraneoplastic Syndrome or Immune Checkpoint Inhibitor Mediated Side Effect? A Case Report.

Title

Retinopathy after Treatment with Atezolizumab – Paraneoplastic Syndrome or Immune Checkpoint Inhibitor Mediated Side Effect? A Case Report.

Authors

Marisabel Hurtado, MD and Sylvia Kurz, MD, PhD.

Introduction

Immune checkpoint inhibitors have been associated with several side effects secondary to increasing the activity of the immune system by releasing inhibition on T cells. Ocular side effects occur in approximately 1% of patients, typically within weeks to months of starting therapy, and have been reported most frequently with ipilimumab, pembrolizumab, and nivolumab than with programmed death-ligand 1 (PD-L1) inhibitors. In patients with certain types of malignancies, including breast cancer, progressive vision loss could be secondary to cancer-associated retinopathy (CAR), a paraneoplastic disorder mediated by autoantibodies (AAbs) against retinal proteins. The objective of this case report is to discuss the evolving understanding of paraneoplastic disorders in the immunotherapy era by showcasing a breast cancer patient who developed vision loss several weeks after Atezolizumab with transient detection of cancer-associated retinopathy antibodies.

Case Presentation

A 39-year-old female with ER/PR- HER2+ breast cancer complained of bilateral vision loss and leg weakness about four weeks after receiving atezolizumab. Ophthalmological examination revealed reduced visual acuity, macular exudates and intra/pre-retinal hemorrhages in both eyes. A diagnosis of chorioretinitis was made. Cerebrospinal fluid studies (CSF) revealed protein elevation and increased intrathecal Ig synthesis rate but no pleocytosis. Cancer-associated retinopathy (CAR) antibodies against carbonic anhydrase II (CAII) and Rab6, and Purkinje cell/neuronal nuclear antibodies were detected in serum. Atezolizumab was discontinued and the patient experienced progressive visual and neurological improvement with resolution of exam findings. Serum antibodies were no longer detectable on repeat testing.

Discussion

Retinopathies can be seen in patients with cancer and has been associated with checkpoint inhibition (CPI). However, retinopathies can also be immune-mediated paraneoplastic disorders checkpoint, coined cancer-associated retinopathies. Here we present a case in which an immune-mediated CAR may have been precipitated and/or transiently potentiated by the administration of Atezolizumab. Spontaneous recovery after discontinuation of CPI and/or effective cancer therapy is possible.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE
Marisabel Hurtado Castillo, MD

Spontaneous Tumor Lysis Syndrome in B-cell Non-Hodgkin's Lymphoma. A Case Report.

Title

Spontaneous Tumor Lysis Syndrome in B-cell Non-Hodgkin's Lymphoma. A Case Report.

Authors

Marisabel Hurtado, MD, Poy Theprungsirikul, MD, Vickie Nguyen, MD and Daniel Sartori, MD.

Introduction

Spontaneous Tumor Lysis Syndrome (STLS) is characterized by a large release of intracellular components into the systemic circulation causing hyperuricemia, hyperphosphatemia, hypocalcemia, hyperkalemia, and renal failure that occurs as a result of lysis of massive tumor burden in the absence of active chemotherapy. If STLS is left untreated, these electrolyte derangements may lead to multi-organ failure including fatal arrhythmias, neurologic complications, and end-stage renal disease. Tumor Lysis Syndrome (TLS) may be seen in hematological malignancies (including acute leukemias, B-cell non-Hodgkin's lymphoma (BCNHL), and multiple myeloma) and solid tumors with bulky or high tumor burden.

Case Presentation

A 72-year-old woman presented with a 5-day history of worsening dyspnea, dry cough, substernal chest pain at rest, decreased appetite, and subjective weight loss. Initial laboratory findings were notable for marked leukocytosis with lymphocytosis (WBC 77.7 10^3/uL, 81% lymphocytes), macrocytic anemia (HGB 5.4 g/dL, MCV 103.3 fL, reticulocyte count 18.59%), the presence of smudge cells, elevated BUN and creatinine (BUN 112 mg/dL, Cr 2.5 mg/dL), marked hyperuricemia (Uric acid 19.9 mg/dL), hyperphosphatemia (Phos 5.6 mg/dL), normal corrected calcium (Ca 9.3 mg/dL), normal potassium (K 4.6 mmol/L), and normal lactate dehydrogenase (LDH 177 IU/L). CT of the chest, abdomen, and pelvis showed multifocal consolidation, mild mediastinal lymphadenopathy, and splenomegaly. Obstructive uropathy was excluded by the CT scan. The patient met the Cairo-Bishop criteria for TLS. She received supportive packed red blood cell transfusion and broad-spectrum antibiotics for anemia and septic shock secondary to multifocal pneumonia. For presumed STLS, the patient was treated with aggressive intravenous hydration and allopurinol. Her laboratory values improved over the next 24 hours. Flow

cytometry showed an aberrant population of CD5(-)/CD10(-) variable-sized B lymphocytes, and the patient was subsequently diagnosed with B-cell non-Hodgkin's lymphoma.

Discussion

We report a case of an elderly woman who presented with STLS based on the Cairo-Bishop criteria and was later diagnosed with BCNHL. In order to diagnose TLS, two or more laboratory changes within 3 days prior to or 7 days after initiation of chemotherapy are required. Although this patient did not receive chemotherapy, she met the Cairo-Bishop criteria for TLS with uric acid > 8 and phosphorus > 4.5 mg/dL despite having normal LDH. It is important to recognize that non-elevated LDH does not exclude TLS. STLS may be the first manifestation of underlying malignancy. As one of the true oncological emergencies, STLS can lead to significant morbidity and mortality. This case emphasizes the importance of early recognition and treatment of STLS even in the absence of elevated LDH.

NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Neema Jayachamarajapura Onkaramurthy, MBBS

Thrombus in transit detected on point-of-care ultrasound in COVID 19 pneumonia - A cause of refractory hypoxia requiring systemic tPA thrombolysis

Title

Thrombus in transit detected on point-of-care ultrasound in COVID 19 pneumonia - A cause of refractory hypoxia requiring systemic tPA thrombolysis

Authors

Neema Jayachamarajapura Onkaramurthy, Ibrahim Omore, Michelle Ann Sylvina Thomas, Farbod Raiszadeh, Kim Moi Wong Lama

Introduction

COVID-19 is predominantly a pulmonary disease with underlying systemic involvement associated with widespread vascular thrombosis and thromboembolic events. Although thromboprophylaxis and full therapeutic – intensity anticoagulation in patients with clinical indicators have shown to reduce mortality in these patients, there has also been a report of increased incidence of venous thromboembolic events in severe COVID 19 patients placed on early therapeutic anticoagulation associated with refractory hypoxia and poor outcomes. We present the case of a 37-year-old young man who came in with severe hypoxic respiratory failure due to COVID pneumonia placed on therapeutic anticoagulation for elevated d- dimer and left popliteal thrombosis who subsequently developed persistent refractory hypoxia, with a thrombus in transit detected in the right ventricle by routine point-of-care ultrasound (POCUS) requiring systemic thrombolysis.

Case Presentation

37-year-old Hispanic male with no known medical history presented with 3 days history of worsening shortness of breath and a one-week history of dry cough, fatigue, diffuse myalgia, and lightheadedness. At the time of presentation, he was noted to be tachycardic with respiratory distress, use of accessory muscles of respiration, and saturating at 78 % on RA. He was placed on high flow nasal cannula on admission. Labs were significant for D – dimer elevated at 19,898 and a positive COVID 19 swab test. Chest X-ray showed characteristics of typical COVID 19 pneumonia with bilateral patchy reticular interstitial opacities. The patient was commenced on therapeutic enoxaparin at 1mg/kg twice daily due to elevated D – Dimer

>19,000 and confirmed left popliteal vein thrombosis by bedside point-of-care ultrasound on day 2. The patient's oxygen requirement worsened on day 5 with subsequent intubation requiring maximum ventilator settings. Bedside point-of-care ultrasound showed moderately decreased left ventricular function and signs of right ventricular volume and pressure overload with cardiac thrombus in the right ventricle which can be attributed to clinical refractory hypoxia and newly developing shock for which patient received 100 mg IV infusion of alteplase. After systemic thrombolysis, the patient's oxygen requirement reduced markedly and was eventually extubated with subsequent POCUS showing return of the normal RV function and absence of cardiac thrombus. He was discharged on an oral anticoagulant to follow up in the clinic.

Discussion

Although patients with COVID 19 pneumonia are being placed on therapeutic anticoagulation in light of the evidence of thrombosis or elevated d – dimer levels, it is important to identify venous thromboembolic events in critically ill patients that can cause rapid deterioration and refractory hypoxia and to consider systemic thrombolysis for improved outcome. We emphasize the importance of the use of point-of-care ultrasound in such cases of refractory hypoxia to aid management and improve clinical outcomes.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE
Abhishrut Jog, MD

PRIMARY BONE LYMPHOMA – A SKULL AND BONES CASE.

Title

PRIMARY BONE LYMPHOMA – A SKULL AND BONES CASE.

Authors

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Introduction

Lymphomas are neoplastic diseases of lymphocytes that most commonly arise in lymph nodes, but can arise in any organ of the immune system such as the liver, spleen, gastrointestinal mucosa, skin, and bones. Although the involvement of skeletal structures is common in Non-Hodgkin lymphoma (NHL), exclusive involvement of the skeletal tissue, termed as Primary bone lymphoma (PBL), is extremely rare and accounts for less than 2% of all adult lymphomas. Most patients have aggressive disease, diffuse large B-cell lymphoma (DLBCL) being the most common type. Usual prognostic indicators for NHL are not useful due to lack of nodal involvement and depend on age, functional status, and certain molecular markers. We present one such rare case of primary bone DLBCL and describe its diagnosis, clinical course, treatment, and outcome.

Case Presentation

A 63-year-old female presented with new-onset generalized tonic-clonic seizures. MRI of the brain showed a trans-calvarial enhancing mass involving the left frontal and parietal bones. Biopsy of the lesion revealed skeletal muscle and fibrous tissue infiltrated by large atypical lymphocytes. Immunohistochemical staining showed that tumor cells were positive for CD20, BCL6, and PAX5, and negative for CD3, CD5, CD10, CD43, BCL2, and AE1/AE3 antibodies; consistent with a diagnosis of DLBCL. CT of the facial bones, chest, abdomen, and pelvis revealed a mild thoracic vertebral (T10) compression fracture concerning for metastatic disease and spinal cord compression, a pathologic fracture of the left mandible with a permeative lesion, and an osteolytic lesion of the left fourth rib. No lymphadenopathy was seen. PET CT

showed abnormal hypermetabolic activity in upper thoracic and lumbar vertebrae, bilateral hip and pelvic bones consistent with active malignancy. No pathological lymphadenopathy was identified on PET CT. Thus, a diagnosis of Primary Bone Lymphoma was established. The patient received radiation to the thoracic spine for cord compression. She was then started on chemo-immunotherapy using rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone (R-CHOP). Due to the proximity of lymphoma lesions to the brain, she received central nervous system prophylaxis using intrathecal methotrexate. CSF studies did not reveal any lymphoma cells. She completed 6 cycles of R-CHOP with good tolerance and no further episodes of seizures or neurological complications. An MRI of the brain done after 6 months of initiation of treatment showed resolution of trans-calvarial mass. End-of-treatment PET-CT showed a complete response.

Discussion

Lymphoma can rarely present with exclusive involvement of skeletal structures. The diagnosis is established by usual parameters on histopathology and immunohistochemistry. Due to the paucity of randomized trial data on treatment, they are usually treated with similar chemo-immunotherapy regimens that are used for stage IV DLBCL. However, local therapy and monitoring of response differ from case-to-case based on the location and presentation of the disease.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE
Abhishrut Jog, MD

AUSTRIAN SYNDROME- STREPTOCOCCUS AT ITS DEADLIEST.

Title

AUSTRIAN SYNDROME- STREPTOCOCCUS AT ITS DEADLIEST.

Authors

Abhishrut Jog*, Pravish Purmessur*, Miguel-Rodriguez Guerra*, Maham Mehmood*, Yaneidy Santana*^, Muhammad Adrish*^. (*Department of Internal Medicine, BronxCare Health System, Bronx, New York. ^Division of Pulmonary/Critical Care, BronxCare Health System, Bronx, New York.)

Introduction

Streptococcus pneumoniae is implicated in the causation of a variety of clinical manifestations. The concurrent occurrence of three of these manifestations, namely meningitis, pneumonia, and infective endocarditis, is known as Austrian Syndrome, named after Dr. Robert Austrian who first discovered the triad. This rare triad is a conglomeration of serious diseases, has a high mortality if not detected, and is not very well known.

Case Presentation

A 58-year-old male musician with a past history significant for alcohol use disorder presented with altered mental status and fever. On physical exam, he was found to have a temperature of 103.6 F, respiratory rate of 24 breaths per minute, heart rate of 124 beats per minute, and blood pressure of 160/76 mmHg. On physical exam, he was noted to have a GCS of 9, neck rigidity, diminished air entry bilaterally, and occasional crepitations. The remainder of the physical exam was unremarkable. Blood tests revealed a leukocytosis of 16,000 cells with neutrophilia (90%). CT scan of the head was normal. A chest X-ray showed multifocal opacities suggestive of pneumonia. CT scan of the chest correlated with the X-ray findings. The patient was admitted with a diagnosis of meningitis and community-acquired pneumonia. Empiric antibiotics were initiated after acquiring CSF and blood cultures. CSF studies were significant for yellow cloudy fluid with 158 WBC's with neutrophilic predominance, a protein of 267 mg/dl, and glucose of 45 mg/dl. His blood culture grew Streptococcus pneumoniae. An initial echocardiogram was unrevealing. On antibiotics, the patient had initial improvement of symptoms but then started complaining of fatigue and shortness of breath a few days later. He

developed a new diastolic murmur in the aortic area and persisted in having an elevated WBC count. A second echocardiogram was done as a result and revealed the presence of two vegetations on the aortic valve with severe aortic regurgitation. He underwent emergent aortic valve replacement surgery. He was discharged from the hospital after a full recovery from the illness. At follow up after three and six months, he reported being asymptomatic and back to baseline, with a successful resumption of his personal and professional activities.

Discussion

Meningitis, pneumonia, and infective endocarditis caused by Streptococcus pneumoniae can simultaneously present in a single patient (Austrian syndrome). Streptococcal bacteremia should prompt an evaluation with an echocardiogram. Non-resolution of symptoms could be due to a nidus of the infection in the heart and should lead to a re-evaluation. Alcohol use is a strong risk factor for its occurrence. The aortic valve is most commonly involved in Austrian syndrome and surgical intervention may be lifesaving.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Dasol Kang, MD

A Case of Thyroid Storm from Uncontrolled Grave's Disease Precipitated by Amiodarone and Intravenous Iodinated Contrast Complicated by Acute Liver Failure

Title

A Case of Thyroid Storm from Uncontrolled Grave's Disease Precipitated by Amiodarone and Intravenous Iodinated Contrast Complicated by Acute Liver Failure

Authors

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Introduction

Thyroid storm is a rare but potentially life-threatening endocrine emergency which develops from long-standing uncontrolled hyperthyroidism precipitated by acute stress such as infection, trauma, surgery or pharmacologic agents such as amiodarone or iodinated contrast. It is also known that mild liver dysfunction is associated with thyroid storm, but profound liver injury has also been reported.

Case Presentation

A 54-year-old male with history of hyperthyroidism presented to the emergency department with shortness of breath and generalized weakness. On initial vital signs, patient was tachycardic to heart rate of 150 and electrocardiogram revealed a new-onset atrial flutter. Patient underwent CT angiogram with iodinated contrast to rule out pulmonary embolism, which revealed patchy ground glass opacities in bilateral lungs. Patient was started on amiodarone and diltiazem for the atrial flutter and ceftriaxone and doxycycline for pneumonia and got admitted to medical intensive care unit. Initial laboratory tests showed significantly suppressed thyroid stimulating hormone (TSH)

Discussion

This is a case of thyroid storm developed from uncontrolled Grave's disease precipitated by pneumonia and use of amiodarone and intravenous iodinated contrast. As thyroid storm is a potentially life-threatening condition, clinicians should minimize the use of agents that can precipitate thyroid storm in high risk patient, such as those with uncontrolled hyperthyroidism and infection as in this case. Also, it is important to monitor liver function in patients with thyroid storm not only because anti-thyroid medications can be hepatotoxic but also thyroid storm itself can lead to acute liver injury and can be fatal in rare cases.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Azkia Khan

Marantic Endocarditis: A Diagnosis Hidden in Plain Sight

Title

Marantic Endocarditis: A Diagnosis Hidden in Plain Sight

Authors

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Introduction

Marantic Endocarditis is a rare form of noninfectious endocarditis that is associated with conditions such as malignancy, autoimmune and inflammatory diseases. We present an interesting case, wherein the patient presented with non-specific symptoms. During the workup, we observed evidence of rapidly progressing embolic phenomena.

Case Presentation

A 79-year-old male with metastatic pancreatic adenocarcinoma was admitted with one day of incoordination of legs and word finding difficulty, four days of generalized weakness, and 16-pound weight loss over three weeks. Chemotherapy with cisplatin and gemcitabine was given 4 days earlier. He had chronic lymphocytic leukemia (not on treatment) and splenic vein thrombosis (on apixaban). Exam demonstrated stable vital signs, icterus, new holosystolic apical murmur, absence of infective endocarditis stigmata, but presence of dysarthria, dysmetria, bilateral decreased strength (upper extremities 4/5, lower extremities 3/5), generalized areflexia, and impaired bilateral extremity pin prick sensation. Troponin was 654.9 pg/mL (N= 20 pg/mL), peaking at 837.8 pg/mL. Liver testing showed total bilirubin 4.1 mg/dl (N: 0.3-1 mg/dL), direct bilirubin 2.1 mg/dl (N: 0.0-0.2mg/dl), indirect bilirubin 2 mg/dl (N: 0.0-0.9 mg/dl), AST 41 U/L (N: 13-39 U/L), ALT normal, and ALP 248 U/L (N: 34-104U/L). The cholestatic pattern was attributed to liver metastasis since abdominal ultrasound showed no biliary obstruction. CBC showed a leukocyte count of 23.8 x10E3 cells/uL (N: 3.7-10.6 x10E3 cells/uL), normocytic anemia with hemoglobin 6.7 g/dL (N: 11.5-18.0 g/dL), and platelets 55,000 cells/uL (N: 140-425 x10E3 cells/uL). Haptoglobin was less than 14 mg/dl (N: 30-200 mg/dl), d-dimer 6394 ng/ml (N: 215-499 ng/mL), INR 1.4 (N: 0.9-1.1), and PTT 28.2 seconds (N: 26.3-37.4 seconds). Three sets of

blood cultures were collected. ECG showed new onset atrial flutter (CHADSVASC score 5) and chronic 1st degree heart block; repeat 24-hour ECG showed sinus rhythm. Transthoracic echocardiography (TTE) showed new mobile vegetation on the atrial aspect of the anterior mitral leaflet, meeting one Duke's major criterion. MRI brain and MRA brain and neck showed multiple acute infarctions compatible with central embolic source. Troponin elevation was attributed to demand ischemia from anemia; anemia and thrombocytopenia from chemotherapy and CLL. Packed RBCs and platelets were transfused. Empiric vancomycin and ceftriaxone were started. Serum beta-D-glucan, galactomannan, bartonella antibody, kingella PCR, Q fever antibody, urine legionella antigen, and blood cultures were negative. Given a triad of new mitral valve vegetations, negative blood cultures, and advanced metastatic cancer, marantic endocarditis was diagnosed and intravenous unfractionated heparin (UFH) was started with a plan to cease anticoagulation if platelets dipped below 15-20k. Vancomycin and ceftriaxone were stopped after 3 and 7 days, respectively. Repeat TTE showed mitral valve anterior and posterior leaflets 'kissing' verrucous lesions, regurgitation, and leaflet fenestrations, and new small aortic valve vegetation. Clinical status improved and neurological deficits remained stable. UFH was switched to enoxaparin upon discharge to hospice where he expired a few weeks later.

Discussion

Diagnosis of marantic endocarditis requires high index of clinical suspicion. Presence of malignancy, valve vegetations that embolize rapidly, and absence of systemic infection signs should prompt consideration of this diagnosis.

NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Ngoda Manongi, MD

Testosterone Therapy Is Not Always Benign: A rare case of Inferior Mesenteric Vein Thrombosis

Title

Testosterone Therapy Is Not Always Benign: A rare case of Inferior Mesenteric Vein Thrombosis

Authors

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Introduction

Mesenteric vein thrombosis (MVT) is a rare condition that carries high mortality (1,2). Most reported cases involves the superior mesenteric and portal veins. Inferior mesenteric vein thrombosis (IMVT) is extremely rare and constitutes about 1-in-10 of cases of acute mesenteric vein thrombosis (3). The most common risk factors for MVT include prothrombotic states and polycythemia vera. Secondary polycythemia is a known side effect of testosterone, which promotes erythropoeisis by augmenting the action of erythropoietin stimulating erythropoiesis that can lead to thrombosis. Thus, when a patient on testosterone therapy presents with abdominal pain and thrombocytosis, early recognition of IMVT is crucial in successful treatment.

Case Presentation

A 72 year-old man with polycythemia vera (PV) presented to the emergency department for evaluation of left lower quadrant (LLQ) and left flank pain. The patient described the pain, which was sudden, as sharp, constant, non-radiating, and 10/10. The pain was exacerbated by eating and he denied any alleviating factors. His medical history is notable for hypertension, hyperlipidemia, benign prostate hyperplasia, type 2 diabetes mellitus, and nephrolithiasis. The patient endorsed chills and nausea at home but denied hematuria, chest pain, shortness of breath, sick contacts, recent travel, vomiting, or diarrhea. He reported that two months ago he began hormonal therapy with testosterone pellets.. On physical examination, the patient was febrile to 39.2°C, otherwise his vital signs were within normal limits. His abdominal examination

revealed mild LLQ tenderness on palpation without guarding, rebound, or costovertebral angle tenderness. His physical exam was otherwise without abnormality. Laboratory studies revealed a normal basic metabolic panel. Complete blood count was significant for an elevated white blood count to 13,000 per cubic mm, as well as elevated hemoglobin and hematocrit (16.0 g/dL and 50.1%, respectively). CT scan of the abdomen and pelvis was significant for thrombosis of the inferior mesenteric vein extending into the contiguous splenic vein with edema and adenopathy surrounding the IMV concerning for thrombophlebitis.

Discussion

The finding in our case demonstrates the importance of adding IMVT diagnosis to the differential in patients presenting in the appropriate clinical context such as abdominal pain in patients with a prothrombotic state. In addition, the case highlights the importance of reviewing a patient's medications and potential interaction with his or her known diagnoses. To our knowledge, this case is the first known of IMVT caused by testosterone-induced secondary polycythemia in the setting of PV. The treatment for MVT usually involves the discontinuation of potential offending agents and prompt anticoagulation for 3–6 months. In our case, testosterone therapy was discontinued and heparin started promptly. Patient's symptoms resolved within the first 24 h after initiation of anticoagulation. Apixaban was started before discharge for a total of 6 months. Repeat CT imaging revealed resolution of the thrombus. A literature review confirmed the rarity of IMV thromboembolic events caused by clinical history of PV and secondary polycythemia induced by testosterone.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Ngoda Manongi, MD

For the Heart, Diagonal Earlobe Crease May be A Sign of Things to Come

Title

For the Heart, Diagonal Earlobe Crease May be A Sign of Things to Come

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Introduction

Physical examination is an essential diagnostic tool because certain physical signs are useful indicators of underlying diseases. In 1973, Dr. Sanders T. Frank observed that 19 out of 20 of his patients with a bilateral prominent diagonal ear lobe crease (DELC) on the lobe portion of the auricle had 1 or more risk factors for coronary heart disease (1). Almost 40 years later, Dr. Kadam et al demonstrated that prevalence of bilateral DELC was 2.7% and is significantly associated with CAD, DM, and HTN (2). In 2011, a review was published describing Frank's sign as an indicator of ischemic heart disease (3). The use of Frank's sign as a bedside predictor of underlying coronary artery disease is still controversial among clinicians and warrants further studies.

Case Presentation

A 82 year old man with coronary arterial disease, myocardial infarct status post two percutaneous coronary interventions with multiple stents, hypertension, diabetes mellitus type 2, chronic obstructive pulmonary disease, benign prostate hyperplasia, and chronic kidney disease presented with a pressure-like substernal chest pain and exertional dyspnea for a day. He used his asthma rescue inhaler without improvement. He went to his primary medical doctor for an evaluation of his symptoms where an EKG was done and revealed heart rate of 32 with a 2:1 atrioventricular (AV) heart-block. In the emergency department, an examination of a patient's vitals and physical exam were significant for blood pressure of 172/69, heart rate of 32, and otherwise unremarkable physical exam. Chest X-ray showed hyper-inflated lungs. EKG revealed bradycardia to 31 beats per minute, with a new second-degree type II heart block, no ST segment elevation or depressions, and normal axis. Cardiac enzymes were negative. Patient was admitted to the cardiac intensive care unit (CICU) for monitoring and pending pacemaker placement the next day, which was successful without complications. Subsequent physical examination in the CICU revealed the presence of bilateral DELCs. An echocardiogram revealed

a normal left ventricular ejection fraction of greater than 70% without wall motion abnormalities.

Discussion

We live in a time of tremendous technological advancement that continually redefines the practice of medicine with sophisticated diagnostic machines and medical tests. Consequently, several recent studies have documented the decline in physical examination skills among physicians in the setting of such advancements (4,5). Physical signs are useful indicators of underlying diseases. Frank's sign is equally important and should alert a physician upon recognition. Even though the etiology of DELC remains unknown, numerous theories have tried to explain the relationship between DELCs and cardiovascular diseases. The most popular theories suggested that the systemic loss of elastin, collagen, and telomeres could be the culprit (6-8). Elastin and collagen in the vessel wall determine the passive mechanical properties of the large arteries. These elastic fibers are subject to proteolytic degradation and chemical alterations that affect arterial stiffness and blood pressure leading to cardiovascular diseases (9-11). Additionally, a study of Japanese male with DELCs showed shortened telomeres, which correlates with an accelerated cell turnover and premature aging, leading to atherosclerosis (12).

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Anton Mararenko, DO

Large Pericardial Effusion Secondary to Single Infusion of Pembrolizumab: A Case Report

Title

Large Pericardial Effusion Secondary to Single Infusion of Pembrolizumab: A Case Report

Authors

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Introduction

Pembrolizumab is a monoclonal antibody targeted against the programmed death 1 receptor (PD-L1) receptors that are normally expressed on T- Cells but abnormally found on tumor cells attempting to circumvent the immune response. Pembrolizumab has been approved as first line treatment for non-small cell lung cancer (NSCLC) in patients that exhibit PD-1 expression greater than 50% after showing superiority over platinum-based chemotherapy in progression free survival (PFS), estimated rate of survival, response rate, duration of response and infrequency of adverse events. Despite its efficacy, a life-threatening complication that has been rarely described is development of pericardial effusion with potential to result in cardiac tamponade. Large pericardial effusion has rarely been reported secondary to multiple pembrolizumab infusions. We report a case of a large pericardial effusion secondary to only one dose treatment with pembrolizumab.

Case Presentation

A 56-year-old female patient with a new diagnosis of NSCLC presented with worsening shortness of breath and abdominal pain of three weeks duration. The patient had no prior cardiac history. She received one treatment of pembrolizumab four weeks prior to presentation that resulted in severe rash, itching, myalgias, fever, dizziness, nausea, vomiting, abdominal pain, shortness of breath, shaking and chills. Therefore, the treatment was deemed inappropriate in her condition and was discontinued. Echocardiography showed large

pericardial effusion without cardiac tamponade syndrome. A computed tomography scan with intravenous contrast was also performed due to worsening abdominal pain and was significant for bilateral pleural effusions as well as a large pericardial effusion without tamponade physiology. Of note, echocardiography done prior to administration of pembrolizumab showed no pericardial effusion. Patient was admitted for management of chemotherapeutic side effects and had a pericardiocentesis that drained over 1200cc of fluid within the first 24 hours.

Discussion

The case illustrates the importance of being vigilant of a rare however potentially life-threatening complications of pembrolizumab therapy, even after only a single treatment. The pericardial effusion in the case we present is the largest to our knowledge at the time of writing that has been reported in medical literature. Pericardial effusions have a high risk of leading to cardiac tamponade. Recognition of this side effect is crucial to prevent delays in appropriate therapy and management. Our team will discuss the presentation, management as well as overview of the few known cases of pericardial effusion in setting of Pembrolizumab therapy.

NEW YORK POSTER FINALIST - CLINICAL VIGNETTE
Olushola Ogunleye, MBBS

Multiple Splenic Infarcts occurring as a Rare Complication of Babesiosis in an Elderly Patient on Anticoagulation

Title

Multiple Splenic Infarcts Occurring as a Rare Complication of Babesiosis in an Elderly Patient on Anticoagulation

Authors

Olushola Ogunleye, MBBS, MPH; Oluwafemi Ajibola, MD; Nishant Parmar, MD

Introduction

Babesiosis is an emerging tick-borne disease caused by Babesia, a malaria-like parasitic protozoan that invades erythrocytes. Most complications occur in severe illness, which is usually associated with age = 50 years, prior splenectomy, asplenia/hyposplenism, HIV/AIDS, malignancy, or immunosuppressive therapy. Splenic infarction is a rare complication that could occur despite adequate therapy, with risk of splenic rupture, hemorrhagic shock, and death.

Case Presentation

The patient is an 86-year-old Caucasian male resident of New York State with history of atrial fibrillation (on warfarin) presenting to the ED with a 4-day history of generalized weakness, confusion, fever, chills, and dark urine. He had been active outdoors for a few days prior to presentation but denied recent tick bites or out-of-state travel. At presentation, he was febrile (103.1°F) and delirious; without jaundice, rash, abdominal tenderness, or active bleeding. Initial lab results were significant for pancytopenia (WBC 3,400/mcL, hemoglobin 10.7 g/dL, platelets 46,000/mcL), transaminitis (ALT 70 IU/L, AST 137 IU/L, bilirubin 1.5 mg/dL), elevated markers of hemolysis (LDH 611 IU/L, haptoglobin

Discussion

As seen in our patient, ongoing use of anticoagulants might not offer adequate protection against splenic infarction in Babesiosis. Abdominal imaging should be considered even if Babesiosis patients lack obvious risk factors for severe illness. The pathophysiology of splenic infarction in Babesiosis involves RBC lysis with microthrombus formation, non-deformable

infected RBCs with cytoadherence to vascular endothelium, causing obstruction of splenic blood flow, leading to splenic infarction and necrosis. A systematic review of multiple case reports showed that the most common presenting symptoms in patients who developed splenic complications were fever, abdominal pain, chills, malaise, headache, night sweats, and syncope. But, as seen in our patient, studies have also reported that almost half of Babesiosis patients with splenic complications may not have abdominal pain. Similarly, >10% parasitemia and severe anemia (

NEW YORK POSTER FINALIST - CLINICAL VIGNETTE
Madhuri P Patel, DO

Telemedicine And End-Of-Life In Developmentally Disabled Patients: Advocating for Change in New York State Regulations

Title

Telemedicine And End-Of-Life In Developmentally Disabled Patients: Advocating for Change in New York State Regulations

Authors

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Introduction

Developmentally disabled (DD) patients are a vulnerable population. Several patient abuses have happened in the past, such as what occurred at Willowbrook State School where DD children were neglected and subjected to medical experiments without proper consent. In response, New York State (NYS) set comprehensive regulations in which DNR/DNI order have to be approved by NYS, patient's family, medical team, group home agency, and also requiring a mandatory in-person visit by a NYS lawyer.

Case Presentation

Ms. V was a 70-year-old female with DD, stroke, dementia, non-verbal, and bed-bound admitted for acute respiratory failure due to pneumonia. Despite broad spectrum antibiotics and oxygen, patient had worsening respiratory failure. Family meeting was held with primary medical team, Palliative Care team, family, NYS, and group home agency. All were in agreement that prognosis was poor and a DNR/DNI order would be appropriate, but could not be placed until a NYS lawyer completed an in-person visit. Before the evaluation could be done, Ms. V was intubated, causing unnecessary suffering to the patient and distress to all members involved. The DNR/DNI order was granted the following day. Ms. V was palliatively extubated and died soon after.

Discussion

Although the NYS regulations were implemented with the intent to protect vulnerable, DD patients, this case highlights a drawback being that the process becomes burdensome when these individuals reach the end-of-life. The NYS lawyer made her best effort to expedite the visit, but while awaiting evaluation, Ms. V was intubated. The COVID-19 pandemic has changed medicine in an unprecedented way, incorporating telemedicine into patient encounters. NYS lawyers are also now temporarily completing their visits virtually. We advocate for policy change with the continued use of telemedicine, even after the pandemic, in order to provide a streamlined, expeditious system when evaluating patients with DD at end-of-life.

NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Mary Quien, MD

A Case Report of Campylobacter jejuni Colitis Complicated by Myocarditis and Congestive Heart Failure with Preserved Left Ventricular Ejection Fraction

Title

A Case Report of Campylobacter jejuni Colitis Complicated by Myocarditis and Congestive Heart Failure with Preserved Left Ventricular Ejection Fraction

Authors

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Introduction

Campylobacter jejuni is one of the most common organisms causing intestinal infections, with an annual incidence of at least 1 in 1000 in the developed world. While some of the sequelae of the disease, such as reactive arthritis and Guillain-Barré syndrome, are widely recognized, myopericarditis remains a rare phenomenon. Myopericarditis usually requires only symptomatic support and resolves on its own. Occasionally, the myocarditis is manifested by heart failure with reduced left ventricular function. We report a case of Campylobacter-associated myocarditis with acute severe heart failure and normal left ventricular systolic function. To our knowledge, this is the first report of Campylobacter-related myocarditis presenting as heart failure with preserved left ventricular ejection fraction.

Case Presentation

A 19-year-old woman with no past medical history presented to an outside hospital with fever, diarrhea, and abdominal pain, and was diagnosed with Campylobacter jejuni colitis. At discharge, she was noted to have increased extremity edema, chest pain, and progressive shortness of breath, which led her to present to this institution. She was found to have an elevated B-type natriuretic peptide and troponin levels, and a chest x-ray consistent with heart failure. Transthoracic echocardiogram revealed normal left ventricular systolic function. She underwent cardiac magnetic resonance imaging, which showed scattered patchy areas of increased T2-weighted signal. Delayed contrast-enhanced images revealed areas of late gadolinium enhancement consistent with myocarditis . She was treated with diuretics for three

days and then discharged home. At her 2-week outpatient follow-up visit, she reported total resolution of her symptoms and return to normal activities.

Discussion

The pathophysiology of myocarditis secondary to Campylobacter jejuni infection remains unknown. It is unclear if the myocarditis is due to direct attack by the bacterial invasion, injury by bacterial toxin, or an immunologic reaction, specifically a type II hypersensitivity reaction, in which the bacterial toxin or antigen cross-react with the antigens in the body. Direct toxicity is an attractive mechanism since in almost all cases of myocarditis secondary to Campylobacter-associated myocarditis, cardiac and gastrointestinal symptoms occur nearly simultaneously. However, no cardiotoxin has ever been identified. Rarely, myocarditis occurs several weeks after primary intestinal infection, and in those cases, an immunologic mechanism seems more likely. Patients with Campylobacter jejuni myocarditis typically present with elevated serum troponin levels and often have ECG changes concerning for ischemia. In several reported cases imaging (usually by TTE) demonstrated wall motion abnormalities or reduced ejection fraction. Many aspects of our patient's clinical course are similar to those of prior reports (such as concomitant gastrointestinal and cardiac symptoms, elevated cardiac biomarkers, and pulmonary congestion). However, our patient's presentation of acute heart failure with preserved left ventricular systolic function is unlike previously published reports. Patients with Campylobacter-associated myocarditis typically require diuretics and symptomatic support until the disease resolves on its own. Rarely, this disease process may lead to prolonged cardiac dysfunction or profound heart failure. While fluid resuscitation is critical in diarrheal illness, physicians should be aware of the potential of compromised cardiac function and aim to attain and maintain a euvolemic state.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Usama Sakhawat, MD

As doctors, can we see beauty in a blood clot?

Title

As doctors, can we see beauty in a blood clot?

Authors

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Introduction

Infective endocarditis (IE) is an infection of the endocardial surface of the heart, most commonly of the heart valves. It can be devastating and involve complication with septic pulmonary emboli which by themselves can cause a havoc in the lung tissue. We present the case of a 33-year-old male with IE leading to life threatening complications.

Case Presentation

A 33-year-old male with a past medical history of IV drug abuse was brought to the hospital after he was found unconscious. The patient was hypotensive and tachycardic. Blood work demonstrated a leukocytosis with elevated acute phase reactants and thrombocytopenia at 43K/µL. Physical exam revealed an ill, toxic appearing patient with needle track marks present on all extremities. A 2/6 systolic murmur was heard over the left 4th intercostal space. Chest percussion disclosed left lung base dullness. CT Chest showed bilateral pleural effusions and multiple cavitary lesions consistent with septic emboli (Figure 1). This was confirmed by a trans-esophageal echocardiogram revealing a 2x2 cm echo-density attached to the tricuspid valve with severe regurgitation. Blood cultures were positive for Methicillin-sensitive Staphylococcus aureus which was the expected organism given the acute cavitary lesions on the imaging. The patient was started on vancomycin and meropenem with a working diagnosis of IE with septic pulmonary emboli. Unfortunately, on day 2 of admission, the patient developed worsening acute hypoxic respiratory failure requiring intubation and mechanical ventilation. The hospital course included continued ventilation support with no complications until day 13 of admission when he developed hemoptysis. The patient required suctioning of 500 cc of blood from the endotracheal tube, IV fluids and a blood transfusion. Pulmonary auscultation revealed

decreased air entry in the left lung field with low SaO2 (70%) and ventilation pressure requirements were increased. CXR showed a complete left lung atelectasis with left mediastinal shift. (Figure 2) Emergent bronchoscopy was performed showing an organized blood clot with occlusion of the left main stem bronchus. The retrieval of the clot was laborious collecting a 5 cm clot that was molding the left main bronchus with its segmental branches (Figure 3). Repeat auscultation following the procedure disclosed breath sounds re-entry bilaterally with improvement of the SaO2. Repeat CXR revealed expansion of the left lung. Over the next 2 weeks, the patient made a successfully recovery and was discharged to a rehabilitation facility.

Discussion

Staphylococcal IE with pulmonary septic emboli can lead to various devastating complications. The cavitary lesions created by the staphylococcus in the lung parenchyma can erode into a blood vessel wall and cause life-threatening hemoptysis. The blood can clot with subsequent molding into the shape of the bronchial tree, leading to complete obstruction resulting in an interruption of the airflow and lung atelectasis downstream. The consequences can be severe ranging from hypoxic respiratory failure to death if left untreated. In this case, we use emergent bronchoscopy to diagnose and retrieve the thrombus. With this poster, we would like to attract the attention of the readers regarding this life-threatening complication and emphasize the importance of early diagnosis and treatment.

NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Mazin Shaikhoun, MBBS MD

Refractory Cardiogenic Shock Secondary to An Isolated Right Ventricular Failure Requiring A Percutaneous Right Ventricular Assist Device.

Title

Refractory Cardiogenic Shock Secondary to An Isolated Right Ventricular Failure Requiring A Percutaneous Right Ventricular Assist Device.

Authors

Mazin Shaikhoun, MD. Setana Idriss, MD. Gregory Katz, MD, FACC. Matthew Apedo, MD, FCCP, FAASM. Sheikan Elnigomy, MD.

Introduction

83-year-old male patient with a past medical history of hypertension, hyperlipidemia, carotid artery stenosis, and coronary artery disease who presented with an inferior wall ST-elevation myocardial infarction complicated by cardiogenic shock secondary to an isolated right ventricular failure. The shock was refractory to revascularization and inotropic support. The patient improved after placement of a percutaneous right ventricular assist device which has improved his cardiac index and restored end-organ perfusion. After a prolonged hospital stay, he was discharged to an acute rehabilitation facility.

Case Presentation

The patient initially presented complaining of chest pain and was found to have inferior ST-segment elevations along with hypotension and evidence of end-organ hypoperfusion manifested by elevated liver enzymes and creatinine levels suggestive of cardiogenic shock. He was initially treated with thrombolysis and then transferred to a center that performs percutaneous coronary intervention. During the transfer, he received atropine for symptomatic bradycardia and required defibrillation for an episode of ventricular fibrillation. Upon arrival, he was still experiencing chest discomfort and was hypotensive despite treatment with vasopressors and intravenous fluids. Initial lab findings were remarkable for pH of 7.03, PCO2 of 35 mmHg, PO2 of 97 mmHg on 50% FiO2, anion gap of 16, lactic acid of 9.3 mmol/L. Given hemodynamic instability, the patient was intubated and subsequently taken to the cardiac catheterization laboratory for stenting of a 100% occluded proximal right coronary artery. His hemodynamics subsequently worsened, and a pulmonary artery catheter showed elevated

right atrial and ventricular pressures. A cardiac index of 3.53, and a pulmonary artery pulsatility index of 0.83. An echocardiogram demonstrated a dilated, hypokinetic right ventricle, and the decision was made to place a percutaneous right ventricular assist device after which the patient has shown marked improvement in his hemodynamics and end-organ perfusion. He was weaned off of vasopressors on day 4 of admission, and the right ventricular assist device was removed on day 5 with extubation on day 6. Liver and kidney function gradually normalized. A repeat echocardiogram showed normal right ventricular size, contractility, and function. Subsequently, the patient was transferred out of the ICU on day 9 of admission, and he was then discharged to rehabilitation on day 11 of admission. He did not require any additional hospitalizations a year after being discharged.

Discussion

Cardiogenic shock is the most common cause of death for patients hospitalized with acute myocardial infarction. Death in patients with cardiogenic shock can result from one or more of three factors: hemodynamic deterioration, the occurrence of multiorgan dysfunction, and development of the systemic inflammatory response syndrome. Cardiogenic shock is a life-threatening condition with a very high mortality rate. The only proven therapy to improve mortality in cardiogenic shock is revascularization. Compared to initial medical stabilization, early revascularization was associated with a nonsignificant trend towards improved survival at 30 days among patients who developed cardiogenic shock during acute MI. In properly selected patients, temporary mechanical support can be a useful adjunctive therapy to standard treatments for this condition with extremely high mortality.

NEW YORK POSTER FINALIST - CLINICAL VIGNETTE
Abhinaya Sridhar, MBBS

Atypical presentation of COVID-19 : Rhabdomyolysis as the primary manifestation

Title

Atypical presentation of COVID-19 : Rhabdomyolysis as the primary manifestation

Authors

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Introduction

COVID-19, the disease caused by the SARS-COV2 virus, has led to a global pandemic with significant morbidity and mortality. Few studies have been published defining some atypical presentations of the disease. We report one such case where the patient's primary manifestation of COVID-19 was rhabdomyolysis.

Case Presentation

32 year old man with a history of multiple sclerosis, schizophrenia and diabetes presented from a psychiatric facility for evaluation of fever, weakness and elevated creatine kinase (CK) levels (32,000) found while outpatient. He denied recent travel, tobacco use but endorsed occasional marijuana use. Vital signs were notable for tachycardia (110), tachypnea (22) and oxygen saturation 96% on room air. Physical examination revealed a mildly agitated man with normal breath sounds bilaterally and 3/5 strength in all extremities which was at his reported baseline. No stiffness was noted. There was no evidence of strenuous exercise, seizure, or other nontraumatic or exertional causes. Pertinent lab findings : Hemoglobin 19.1, Potassium 6.2, BUN 19, Creatinine 1.4, AST 1415, ALT 225, LDH 18512 and CK 258300. Urinalysis showed 1+ blood with 3 RBCs suggestive of rhabdomyolysis with a myoglobin of >12000. Hepatitis panel was negative. Acetaminophen, salicylate and blood alcohol levels were within normal limits. CT chest showed patchy ground glass opacities. He subsequently tested positive for COVID-19. Patient's hyperkalemia was emergently treated and he was started on aggressive IV fluid repletion due to concerns of rhabdomyolysis. Patient was also started on Unasyn and Doxycycline for atypical pneumonia. CK, liver enzymes and creatinine were monitored daily. CK peaked at 1,277,000 on day 3 and gradually improved with aggressive IV fluid repletion.

Patient's transaminitis also improved with resolution of rhabdomyolysis, however patient continued to have persistent Acute Kidney Injury (AKI). Patient's respiratory status did not decline throughout hospital stay. He was subsequently discharged with outpatient follow up.

Discussion

Acute viral myositis rarely occurs in adults but can be complicated by rhabdomyolysis. Predisposing factors include infection, crush injury, electrolyte abnormalities, substance abuse, alcohol use, mechanical fall, drugs, or autoimmune myopathies(1). Our patient did not have any evidence of substance or alcohol abuse, recent trauma or fall that could explain the elevated CK levels. The rhabdomyolysis was most likely secondary to viral myositis from underlying COVID-19 infection. 4 cases have been reported thus far with rhabdomyolysis as the primary manifestation of COVID-19(1)(2)(3). All patients had CK levels

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Ather Hussain Syed, MD

Dysphagia with Blood Disorder? An Unusual Presentation for Paroxysmal Nocturnal Hemoglobinuria

Title

Dysphagia with Blood Disorder? An Unusual Presentation for Paroxysmal Nocturnal Hemoglobinuria

Authors

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Introduction

Paroxysmal Nocturnal Hemoglobinuria (PNH) is an acquired hemolytic disorder of the multipotent myeloid stem cells, due to under expression of surface complement inhibitory proteins CD55 and CD59, affecting 0.13/100,000 patients per year. Besides anemia and thrombosis, PNH can also cause smooth muscle dystonias owing to various mechanisms in the body. Studies have described smooth muscle dystonias presenting as recurrent abdominal pain, lethargy, erectile dysfunction, and rarely as intermittent dysphagia. We describe a case of dysphagia as an initial presentation of PNH.

Case Presentation

16-year-old female with no significant past medical history presented to the clinic with 1 week of ongoing fatigue and difficulty swallowing. The dysphagia was progressively worsening, initially for solid, then with liquids, accompanied by nausea, vomiting and globus sensation in the chest. No prior psychiatric history, binging-purging behavior, chest pain, shortness of breath, heat/cold intolerance, weight changes, bladder or bowel dysfunction. Initial lab work showed hemoglobin 11.2 g/dL, mean corpuscular volume 80 fL, white cell count 9 x10^3/uL, and platelets 219 x10^3/uL. Metabolic panel, TSH, free T4, troponin, BNP, ANA, rheumatoid factor, lyme serology, vitamin B12, folate and iron studies were within normal limits. Mentzer index was

Discussion

In PNH, RBCs may have varying degree of CD59 and glycosyl phosphatidylinositol (GPI) anchor protein deficiency. PNH RBCs can be classified as type III (complete GPI-deficiency), type II (partial GPI-deficiency), and type I (normal expression) cells. Variability in the severity of the deficiency and the proportion of the cell population affected defines the extent of the clinical manifestations of the disease. Significant hemolysis can lead to decreased nitric oxide (NO) concentrations either by released hemoglobin binding directing to NO in the bloodstream or decreased generation of endogenous NO by conversion of l-arginine to ornithine. NO regulates smooth muscle tone and decreased levels are hypothesized to cause smooth muscle contraction which explains why these patients can sometimes present with as abdominal pain, erectile dysfunction and rarely, dysphagia. These symptoms occur more commonly in patients with large PNH clone sizes and higher hemolytic rates. In this case study, our focus was to recognize PNH among differentials for new onset dysphagia due to complement-mediated intravascular hemolysis causing gastrointestinal dysmotility. In doing so, invasive investigations may be avoided. Advance studies may be needed to completely understand the causes and correlate between PNH, intravascular hemolysis and dysphagia.

NEW YORK POSTER FINALIST - CLINICAL VIGNETTE
Rodrigo N Taniguchi, MD

A CASE OF SICKLE CELL DISEASE COMPLICATED BY THROMBOTIC MICROANGIOPATHY.

Title

A CASE OF SICKLE CELL DISEASE COMPLICATED BY THROMBOTIC MICROANGIOPATHY.

Authors

Taniguchi RN, Swedish KA

Introduction

Thrombotic Microangiopathy (TMA) is characterized by the presence of thrombocytopenia, Microangiopathic Hemolytic Anemia (MAHA), and microthrombi formation leading to ischemic tissue injury. MAHA is non-immune hemolysis accompanied by thrombocytopenia caused by platelet activation and consumption(1). We present a rare case of Sickle Cell disease complicated by TMA.

Case Presentation

A 45-year-old woman with sickle cell disease presented with lethargy and generalized pain for one day. Past medical history was significant for recurrent admissions for acute pain crises, two prior strokes, deep venous thrombosis of right lower extremity, and chronic thrombocytopenia. She was afebrile, not tachycardic, hypotensive or dyspneic. She was, however, minimally interactive on exam, with dry oral mucosa. Her labs were significant for Hemoglobin 6.5 g/dL (normocytic and normochromic with schistocytes), platelets 41 k/µL, Reticulocyte count 9%, lactic dehydrogenase 641 U/L, Total Bilirubin 1.3 mg/dL, Direct Bilirubin 1.0 mg/dL, Creatinine 1.5 mg/dL (baseline 0.5 mg/dL). Urinalysis revealed >300 protein, large blood, but 0-3 Red Blood Cells on microscopy. She was treated for acute vaso-occlusive crisis with 1 unit of packed red blood cells, intravenous fluids, and opioids. Her renal function continued to deteriorate and she remained lethargic, prompting consideration of MAHA with TMA. Plasma exchange was not pursued due to relative stability of disease; she improved gradually and was discharged home on hospital day six.

Discussion

Sickle cell disease is the most common inherited blood disorder in the United States(2). It is a condition every hospitalist will encounter in their daily practice making correct management of its complications paramount. TMA is a rare, little known, and potentially life threatening complication of Sickle Cell disease(3). Sickle cell patients with TMA present with multiorgan failure syndrome, and laboratory findings consistent with MAHA. Our patient presented with altered mental status and acute kidney injury not otherwise explained by sepsis or dehydration alone. She also had an extensive history of thrombotic events and chronic thrombocytopenia that worsened during hospitalization. Laboratory findings were consistent with microangiopathic hemolysis with worsening thrombocytopenia, prompting consideration for TMA. The underlying pathophysiology of this entity is not well understood. One hypothesis is that ADAMTS13 depletion may play a role(4). The best treatment strategy for TMA in sickle cell disease is also uncertain. There are a handful of case reports and case series that have used plasma exchange transfusion with good results in select patients with this complication(5). Our patient's clinical status stabilized after red blood cell transfusion and then gradually improved, so exchange transfusion was deemed not necessary. In short, TMA is a rare, poorly understood, and potentially life threatening complication of sickle cell disease internists should consider when treating a patient with sickle cell anemia who develops multiorgan failure.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE
Shireen J Usman

Post-Pericardiotomy Syndrome that Takes the Breath Away

Title

Post-Pericardiotomy Syndrome that Takes the Breath Away

Authors

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Introduction

Post-pericardiotomy syndrome (PPS) is reported in 10 to 40 percent of patients who undergo cardiothoracic surgery [1]. It usually presents one to six weeks after a procedure involving pericardiotomy with low grade fever, pleuritic chest pain, elevated c-reactive protein (CRP) and pericardial/pleural effusions. Unilateral pleural effusions are reported in a minority of patients and the incidence of complicated effusions requiring therapeutic drainage is rare [2, 3]. Here, we discuss an unusual case of PPS that presented with primarily pulmonary symptoms and a large right-sided pleural effusion which was refractory to initial treatment.

Case Presentation

A 65-year-old man with a history significant for tobacco use and severe aortic stenosis developed dyspnea, productive cough, fever, and night sweats two weeks after bioprosthetic aortic valve replacement performed via minimally invasive anterior thoracotomy. He was treated as an outpatient for suspected pneumonia with no improvement. Outpatient CT chest obtained six weeks after surgery showed a large pericardial effusion with mild to moderate bilateral pleural effusions (right greater than left). His cardiologist initiated colchicine and ibuprofen for suspected PPS. The patient rapidly improved in the week following treatment but then had recurrence of fevers with worsening cough and dyspnea leading to hospitalization. Two weeks after starting therapy, he was admitted with repeat CT chest showing improving pericardial effusion but increasing right sided pleural effusion. Laboratory studies were notable for leukocytosis to 11.8, elevated CRP 167, and elevated ESR 126. He was started on empiric antibiotic therapy and underwent right-sided thoracentesis with 800cc of cloudy serous fluid removed. Pleural fluid analysis was consistent with exudative effusion. Final bacterial cultures and medical cytology were negative. His right-sided pleural effusion was determined to be

secondary to PPS. He was started on a prednisone taper and reported resolution of symptoms at post-hospital follow up visit. Repeat chest x-ray showed no evidence of pleural effusion three weeks after discharge. However, his dyspnea reemerged after he discontinued steroids and his condition ultimately improved with a prolonged five month course of corticosteroids. CRP and ESR returned to normal range with symptomatic improvement.

Discussion

PPS, post-myocardial infarction syndrome (Dressler's), and post-traumatic pericarditis constitute post-cardiac injury syndromes. These conditions are characterized by pericarditis and typically present with pleuritic chest pain in the majority of patients. They are important to recognize due to the life-threatening complication of cardiac tamponade. Exudative pleural effusions have been observed in PPS, but are primarily small and left-sided in 85 percent of patients [3, 4]. Symptoms usually resolve with treatment with nonsteroidal anti-inflammatory drugs (NSAIDs) after four weeks. This is a unique case of PPS in a patient who presented without chest pain and was found to have a large, predominantly right-sided pleural effusion which was refractory to first-line treatment. Diagnosis was complicated by a clinical picture suspicious for possible pneumonia versus malignancy. Symptomatic improvement was ultimately achieved with prolonged systemic glucocorticoid therapy and therapeutic thoracentesis.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE
Dhiviyan Valentine, MD

Brain, Blood, and B12: A Case of Subacute Combined Degeneration and Megaloblastic Anemia from Autoimmune and Infectious Vitamin B12 Deficiency in Addition to Acute Meat Aversion

Title

Brain, Blood, and B12: A Case of Subacute Combined Degeneration and Megaloblastic Anemia from Autoimmune and Infectious Vitamin B12 Deficiency in Addition to Acute Meat Aversion

Authors

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Introduction

Subacute combined degeneration and megaloblastic anemia are common consequences of vitamin B12 deficiency. B12 absorption involves a complex interplay of ingested B12, intrinsic factor produced from gastric parietal cells, and an acidic metabolic setting (1). B12 deficiency commonly manifests by impairing one of these three variables. We report a rare case of B12 deficiency produced by pernicious anemia, celiac disease, Helicobacter pylori infection, and meat aversion working in synergy to effectively impair all three of the aforementioned variables. This case report serves to highlight the need for a holistic evaluation of B12 deficiency in patients presenting with neurologic and hematologic pathology.

Case Presentation

A 54 year old Dominican woman with no past medical history presented with progressively worsening weakness in her bilateral arms and legs for one year. She also reported a 40 lb weight loss, fatigue, numbness and tingling in her hands and feet, and an aversion to meat, which led her to adopt a vegetarian diet within the last two months. Labs were significant for Hgb 9.6 g/dL (12-14 g/dL), Hct 29.2% (36-48%) and MCV 121 fL (80-100 fL). Vitamin B12 177 pg/mL (232-1245 pg/mL) with MMA 9950 nmol/L (243-350 nmol/L) and homocysteine 138.7 mcmol/L (5-15 mcmol/L). Antiparietal cell antibodies were negative, but intrinsic factor and anti-tissue transglutaminase antibodies were positive. A thoracic spine and brain MRI showed an increase in T2 signal intensity in the dorsal columns consistent with subacute combined

degeneration. An endoscopy revealed Helicobacter pylori colonization with atrophic gastritis and flattened mucosa in the duodenum suspicious for celiac disease. Duodenal biopsy revealed blunting of villi and increased intraepithelial lymphocytes in the duodenum. Gastric biopsy showed inflammation and lymphoid aggregates. The patient was started on intramuscular Vitamin B12 supplementation which resulted in markedly improved strength in all extremities within 4 days of aggressive supplementation. Furthermore, the patient's meat aversion resolved with B12 supplementation and triple therapy.

Discussion

The presentation of concurrent subacute combined degeneration and megaloblastic anemia represents a severe presentation of B12 deficiency. While fatigue, progressive weakness, and paresthesia are commonly documented symptoms of B12 deficiency, spontaneous meat aversion is a unique addition to this semiology, which may be considered exclusive to this combination of etiologies. Once more, the presentation of meat aversion after the onset of progressive weakness was likely secondary to newly acquired H. pylori colonization in the setting of gastric acid suppression. The presence of pernicious anemia and H. pylori colonization in this patient produced a setting of achlorhydria; gastric acid suppression has been posited to limit protein absorption and digestion kinetics, likely producing an acute meat aversion (2,3). This subsequent loss of dietary B12 substantiated ongoing symptoms. Overall, the combination of these causative factors created a fulminant disease state requiring acute management. Likewise, in the setting of spontaneous meat aversion, progressive bilateral ascending weakness, and paresthesia, it is imperative to consider multifactorial vitamin B12 deficiency and its consequent sequelae, subacute combined degeneration and megaloblastic anemia, in the differential diagnosis.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE
Jianxiang Xia

EOSINOPHILIA - A CASE OF HICKAM'S DICTUM VERSUS OCCAM'S RAZOR

Title

EOSINOPHILIA - A CASE OF HICKAM'S DICTUM VERSUS OCCAM'S RAZOR

Authors

(1) Jianxiang Xia, MD (2) Manile Dastagir, DO

Introduction

Blastocystis hominis (BH) is a parasite found in the gastrointestinal tract, most commonly in developing countries. It is spread via fecal-oral transmission and is unclear if BH causes disease. Here, we present a patient with diarrhea, significant eosinophilia, and its complications due to BH.

Case Presentation

A 30-year-old M truck driver with a history of a herniated disc was referred to the emergency room (ER) by an infectious disease specialist for elevated eosinophils (12.96 K/uL), chest pain (CP), and tachycardia. The patient complained of pleuritic left-sided CP without shortness of breath or hemoptysis. Six weeks prior to presentation, he had traveled to the Dominican Republic where he stayed at a resort and ate various food. He reported watery diarrhea (6x/day) without fevers, chills, or abdominal pain. He also started to experience throbbing bitemporal headaches associated with intermittent blurry vision without nausea or vomiting. Upon presentation to the ER, he was afebrile, HR 102 bpm, BP 120/80 mmHg, O2 sat 99% on room air. Labs were significant for leukocytosis (32.49 K/uL) with 50% eosinophils (16.25 K/uL), elevated IgE (351 KU/L) and transaminitis (peak AST/ALT (U/L): 287/718). CT angiogram of the chest showed acute pulmonary embolism (PE) in the left upper lobe artery. The patient was started on therapeutic anticoagulation. Infectious workup for Schistosomiasis (Ab), Coccidioides (Ab), Histoplasma (Ag), Strongyloides (Ab), and Trichinella (Ab) were negative. GI PCR revealed Enteroaggregative Escherichia Coli (EAEC). Autoimmune workup was negative. MRI/MRA of head, orbits, and neck was unrevealing. CT abdomen/pelvis showed prominent bilateral inguinal lymph nodes (largest: 1.6x1.3cm). Bone marrow biopsy was negative for JAK-2 and was consistent with trilineage hematopoiesis with eosinophilia. Ten days after admission and after five repeat ova and parasites (O&P), his fifth O&P was positive for BH. The patient was treated

with a seven-day course of metronidazole and six months later his eosinophilia completely resolved.

Discussion

This patient's PE, headaches, and periodic blurry vision were initially attributed to eosinophilia causing a hypercoagulable state from a presumed primary hematological disorder, and diarrhea due to EAEC. Given the patient's travel history and diarrhea, a parasitic infection was most likely, however, an initial extensive infectious workup including four O&P was negative. Subsequent flow cytometry and bone marrow biopsy were unremarkable for any primary hematological disorders. His diarrhea resolved on day four of hospitalization. However, when his diarrhea re-occurred with persisting eosinophilia, a fifth O&P was sent and revealed BH. A negative O&P result does not rule out parasitic infection. Some parasites, including BH, shed periodically and a single O&P only gives ~60% detection rate, while three O&P increases the probability to > 95%. In light of four negative O&P, the patient's travel history, persistent diarrhea, and eosinophilia should keep a parasitic infection high on the differential and should not deter clinicians from repeating multiple O&P. Although many diseases can occur in a patient at once, this case highlights the importance of tying together all signs and symptoms to reach a unifying diagnosis.

NORTH CAROLINA POSTER FINALIST - CLINICAL VIGNETTE
Amy Amornmarn

Cranial Nerve Deficits as a Manifestation of CNS-Only AML

Title

Cranial Nerve Deficits as a Manifestation of CNS-Only AML

Authors

Amy Amornmarn

Introduction

Acute Myeloid Leukemia (AML) is a disorder characterized by abnormal cell growth in the bone marrow and does not commonly involve the central nervous system (CNS). As such, evaluation of the CNS through lumbar puncture is not typically recommended in AML in the absence of neurologic findings. This case report explores a case of AML with CNS involvement and no involvement in the bone marrow.

Case Presentation

Our patient is a 75 year old gentleman who presents with several months of confusion, gait disturbances, and vision and hearing changes. He was previously living independently but began experiencing short-term memory difficulties for the preceding year. A few months later, he began endorsing headaches and dizziness. He presented to the emergency department where CT head and labwork were unrevealing. He continued to have frequent headaches, along with worsening confusion and hallucinations. One hallucination involved believing there were intruders in the house and led him to call the police. ED workup was again unrevealing. A few weeks later, he began experiencing bilateral blurry vision and hearing loss, left ear worse than right. He was evaluated by ophthalmology with no findings to explain his vision loss. He began requiring a walker for ambulation, and his adult son moved in with him due to concerns for his safety. The patient additionally was experiencing fatigue, loss of appetite, and weight loss. At this point he was then referred to neurology for presumed dementia. MRI of the brain with and without contrast was obtained which demonstrated enhancement of the left oculomotor and right trigeminal nerves. He then underwent lumbar puncture which showed an elevated opening pressure of 39 cm H2O and fluid studies which were not consistent with infectious etiology but rather were significant for cytometry showing 90% myeloblasts and concerning for Acute Myeloid Leukemia. The patient was referred to oncology for further workup, including

bone marrow biopsy which was negative for AML. He underwent 2 cycles of intrathecal chemotherapy, but due to worsening encephalopathy, he was admitted to the inpatient leukemia service. Exam was notable for left-sided facial droop and hearing loss. He underwent whole brain radiation and repeat lumbar puncture, with eventual and gradual improvement in mental status.

Discussion

This patient presented with several months of increasing confusion and falls, which progressed to vision and hearing losses as a result of cranial nerve impairment. Along with these neurologic findings, he was also experiencing fatigue, decreased appetite, and weight loss concerning for a malignant process. MRI demonstrated cranial nerve enhancement, and lumbar puncture was significant for myeloblasts. Ultimately this patient's confusion and cranial nerve deficits were found to be secondary to CNS AML, but without evidence of AML involvement in the bone marrow.

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NORTH CAROLINA POSTER FINALIST - CLINICAL VIGNETTE
Thomas Crilley

A New paradigm, making the diagnosis in the COVID-19 pandemic era

Title

A New paradigm, making the diagnosis in the COVID-19 pandemic era

Authors

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Introduction

In an era with a new illness not completely understood like SARS-CoV-2, making an accurate diagnosis can be difficult and challenging. This reinforces the importance of continued clinical evaluation and assessment, reviewing alternative diagnoses, and obtaining pertinent history, exam, and laboratory testing.

Case Presentation

An 18-year-old African American female with past medical history only notable for iron deficiency anemia presented to the emergency department with nausea, vomiting, acute back pain and generalized diffuse abdominal pain. Shortly after arrival, the patient then developed profuse watery diarrhea. Initial assessment noted for tachycardia but otherwise hemodynamically stable a substantial leukocytosis with neutrophil predominance, a stable microcytic anemia and a suspected AKI. On initial exam, the patient was ill-appearing with increased bowel sounds and generalized diffuse abdominal pain without rebound or rigidity. She was initially treated with fluid resuscitation, anti-emetics, and analgesics with close observation. Patient ultimately became febrile to 101.4F. An infectious work-up performed was noted for negative C. diff and GIP testing, a CT abdomen pelvis only notable for liquid stool and subtle possible left kidney hypo-enhancement and ultimately a positive COVID-19 testing. The patient was then admitted to medicine service with suspected dehydration secondary to gastroenteritis from COVID-19 infection without any oxygen requirements. Upon arrival to the floor, the patient continued to have nausea, vomiting, and moderate to severe abdominal pain without rebound but with possible CVA tenderness. Due to the patient's fever, leukocytosis, imaging findings, and persistent pain, the patient was started on ceftriaxone for possible pyelonephritis and urine culture was obtained which ultimately was negative. The patient's

pain continued to persist despite improving diarrhea and nausea with a persistent leukocytosis. A further focused history and repeat exam obtained and notable for recent unprotected sexual activity prior to admission, history of prior trichomonas infection, and abdominal exam with pain now localizing in the lower abdominal regions and right lower quadrant. A beside pelvic exam was performed showing a friable cervix with moderate cervical motion tenderness. Testing was positive for both chlamydia and gonorrhea consistent with pelvic inflammatory disease. The patient was started on antibiotic therapy with cefoxitin and doxycycline and continued supportive care with hydration and anti-emetics. The patient clinically improved, and ultimately at time of discharge, was transitioned to finish out an oral antibiotic course. With regards to her COVID-19 infection, her gastroenteritis symptomatology resolved during her hospital course, and she never developed oxygen requirements therefore was not indicated for corticosteroids or remdesivir treatment.

Discussion

This case illustrates the diagnostic challenges faced in the COVID-19 era; a new virus not completely understood with a wide spectrum of presentations now with increasing rates of community prevalence. A COVID-19 infection can present as the underlying diagnosis, may play only a contributory role, or could be an incidental finding in an asymptomatic patient. Ultimately an accurate diagnosis depends on a comprehensive history of the illness presentation, understanding of physical exam findings, and continued reevaluation of the clinical data and course with considerations for an alternative diagnosis when clinical improvement is not seen.

NORTH CAROLINA POSTER FINALIST - CLINICAL VIGNETTE
Andrew Faucheux

Missed case of Heparin Induced Thrombocytopenia in the setting of LVAD and ECMO

Title

Missed case of Heparin Induced Thrombocytopenia in the setting of LVAD and ECMO

Authors

Andrew Faucheux MD, Justin Cheng MD, Bharathi Upadhya MD

Introduction

Thrombocytopenia is a common complication observed in critically ill patients, especially in the setting of left ventricular assist device (LVAD) implantation and extracorporeal membrane oxygenation (ECMO). Conversely, heparin induced thrombocytopenia (HIT) is a rare occurrence in the intensive care setting, as recent studies report an incidence of 0.5-1%. In this case, we demonstrate the importance of maintaining a high degree of suspicion for HIT in patients receiving ECMO and LVAD support, despite the rare occurrence of HIT.

Case Presentation

A 61-year-old female with a history of chronic obstructive lung disease presented with community acquired pneumonia and elevated troponin. She was intubated for acute hypoxic respiratory failure, and subsequent echocardiogram revealed a newly reduced ejection fraction with wall motion abnormalities. Further evaluation with left heart catheterization revealed multiverse disease, warranting transfer to the cardiac intensive care unit. She was incidentally noted to have blood pressure discrepancies in her upper extremities, and CT angiography revealed bilateral segmental pulmonary emboli and a left subclavian filling defect. Bilateral upper extremity arterial duplex revealed bilateral subclavian stenosis with occlusion of the proximal left subclavian artery She was transitioned to continuous heparin infusion. During pre-coronary artery bypass coronary angiography, she developed PEA arrest, requiring ECMO and Impella placement for LV support. Subsequently she was revascularized. She underwent successful Decannulation from ECMO, and remained on Impella for approximately one week. During this time period, she developed occlusive thrombi in her left external iliac artery, left common iliac artery, and distal abdominal aorta around the Impella sheath. Upon admission, she was noted to have a baseline platelet count of 500K, which steadily declined to a nadir of

39K in 21 days. She received heparin DVT prophylaxis on admission and transitioned to heparin infusion two weeks into her hospital course due to pulmonary emboli. 4 T score for HIT was 5, indicating a moderate risk. Heparin induced platelet antibody assay was markedly positive at 2.5, consistent with the diagnosis of HIT. Argatroban was initiated with subsequent improvement in platelet count. She was later transitioned to Coumadin once medically stable.

Discussion

Given the common occurrence of thrombocytopenia in patients supported with LVAD and ECMO, a diagnosis of HIT can be easily overlooked. Additionally, thrombosis is a complication seen in both HIT and in the setting of ECMO, which may further delay a diagnosis of HIT. In this case, we demonstrate the importance of screening for HIT in these patients, as misdiagnosis is associated with high and potentially life threatening morbidity and mortality.

NORTH CAROLINA POSTER FINALIST - CLINICAL VIGNETTE
Andrew Faucheux

Arterial Embolization as an Unusual Etiology of Digital Ischemia

Title

Arterial Embolization as an Unusual Etiology of Digital Ischemia

Authors

Andrew Faucheux MD, Karl Richardson MD, Padageshwar Rao Sunkara MBBS

Introduction

Upper extremity digital ischemia has many etiologies, including autoimmune connective tissue disease, vasculitis, cardiac or arterial embolism, thrombosis, and traumatic injury. Digital cyanosis is a unique clinical presentation with a broad differential requiring a particularly diligent work-up.

Case Presentation

A 45 year-old female with a history of tobacco use and family history of protein C deficiency presented with progressively worsening cyanosis, pain, and paresthesias of two digits on her left hand. Symptoms began two days prior to presentation following a right shoulder barbotage procedure for tendonitis. Symptoms were initially confined to the left third and fourth distal phalanxes, with eventual progression to all five distal phalanxes. Physical exam revealed full range of motion and intact sensation of the left hand and digits. Left digits were cool, tender to palpation, and without digital ulcerations. Left radial and ulnar pulses were 1+. Work-up, including lupus anticoagulant, factor V leiden, beta-2 glycoprotein antibodies, cardiolipin antibodies, ANA, Rheumatoid factor, anti-centromere antibody, anti-SCL-70 antibody, ESR and CRP was unremarkable. CT angiogram of the left upper extremity revealed no occlusion or stenosis from the distal left subclavian artery to the proximal radial and ulnar arteries. Suface echocardiogram revealed no vegetations or left sided thrombi. Vascular arterial duplex revealed monophasic, low velocity flow in the distal ulnar and radial arteries. She was prescribed aspirin and nifedipine for suspected Raynaud's and discharged home with Rheumatology follow up. Upon presentation to the clinic one week later, her symptoms had not resolved. Due to concern for small vessel occlusive disease, she was readmitted. Vasculitis labs, including anti-PR3 antibody, anti-MPO antibody, and cryoglobulins were negative. Repeat CT angiogram of the left upper extremity was also unremarkable. An arterial digit study revealed

abnormal PVR waveforms of the left wrist and digits compared to the right. Due to concern for a more proximal embolic source, CT angiogram of the chest was obtained. Results revealed an acute subsegmental pulmonary embolism and a mural filling defect involving the left subclavian artery resulting in moderate stenosis, thought to reflect a mural thrombus and the possible etiology of her symptoms. Given the distal location of ischemia, it was felt that atheroemboli were possibly more likely culprit than thromboemboli. The patient was started on aggressive statin therapy, counseled to cease smoking, and continued on aspirin. Given the concomitant PE and possible component of thromboembolism leading to her ischemic symptoms, the patient was anticoagulated with heparin and transitioned to Eliquis upon discharge. Due to her family history of Protein C deficiency, follow up with hematology was scheduled for outpatient thrombophilia work-up.

Discussion

In this case, we present a rare presentation of unilateral digital ischemia secondary to complications of subclavian arterial disease. Initial work-up was unrevealing but a thorough work-up motivated by ongoing symptoms and the atypical presentation lead to further diagnostic clarity. Although it is reasonable to attribute isolated hand symptoms to vasospastic or small vessel occlusive disease, one must consider all possible etiologies, especially in the setting of unilateral presentation and unmitigated risk factors.

NORTH CAROLINA POSTER FINALIST - CLINICAL VIGNETTE
Juan C Ferre Martinez, MD

Scleroderma Renal Crisis Masquerading as Cardiorenal Syndrome

Title

Scleroderma Renal Crisis Masquerading as Cardiorenal Syndrome

Authors

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Introduction

Scleroderma renal crisis (SRC) is a rare but serious manifestation of systemic sclerosis (SSc) typically characterized by abrupt onset of hypertension and acute renal injury with often bland urinalysis. Although SRC is characterized by multiple classic findings, it has a wide range of variety in presentation, which makes it very challenging to diagnose. Prompt diagnosis is essential given delay in treatment can lead to irreversible renal injury.

Case Presentation

A 72-year-old male with past medical history of moderate aortic stenosis, heart failure with preserved ejection fraction and alcohol abuse presented to care with two months of progressive dyspnea and weight gain. Initial evaluation in clinic raised concern for worsening heart failure and led to up-titration of his furosemide. This change resulted in only slight improvement in symptoms but worsening creatinine and oliguria over three weeks. He presented to the ED at the urging of his cardiologist given poor response to oral furosemide with plan for intravenous diuretics. Upon evaluation, he was not in distress but reported ongoing dyspnea and orthopnea. He was afebrile, with BP 142/71 mmHg, HR 104 bpm with SaO2 94% on room air. Physical exam was notable for known grade III/IV systolic murmur and crackles to the mid lungs bilaterally without peripheral extremity edema. He had a darkened, red-hue of extremities with swelling and tightening of the skin in his hands and legs bilaterally. Lab work was notable for creatinine of 3.32 mg/dL, pro-BNP of 26,000 pg/mL and a bland urinalysis with moderate amount of blood. A presumed diagnosis of cardiorenal syndrome was made and he was diuresed aggressively, which only led to worsening acute renal injury and oliguria. His UPC ratio and renal ultrasound were normal. Echocardiogram was unchanged from one month prior demonstrating grade II diastolic dysfunction, normal EF and unchanged aortic

stenosis. Although the patient and his wife insistent the skin changes had been present for years, the patient's unexplained acute kidney injury and bizarre skin findings lead the medical team to perform an autoimmune evaluation and skin biopsy. Further lab work showed ANA >=1:640 in a speckled pattern with Anti-SS elevated at 20. Skin biopsy showed dermal sclerosis consistent with systemic scleroderma. Renal biopsy demonstrated acute thrombotic microangiopathy involving the small arteries and glomeruli; findings concerning for scleroderma renal crisis (SRC). The patient was immediately started on an ace-inhibitor and cellcept but unfortunately had already progressed to ESRD requiring hemodialysis.

Discussion

Roughly 10% of patients with SRC do not present with marked increase in blood pressure. Although the patient had classic findings of SRC including sclerodactyly, elevated ANA and dermal sclerosis, the patient's absence of hypertension and the fact that he presented from the diuresis clinic for cardiorenal syndrome made SRC a less sought after diagnosis. This phenomenon resulted in anchoring bias that delayed autoimmune evaluation despite the team's initial concern for unusual skin finings. This unique case of pre-existing, undiagnosed systemic scleroderma and resultant SRC and renal failure in the absence of hypertension highlights the importance of being aware of cognitive bias in medicine.

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NORTH CAROLINA POSTER FINALIST - CLINICAL VIGNETTE
Erin M Finn

THE TUBULE DID IT: A UNIQUE CAUSE OF HYPERCALCEMIA IN AN INFANT

Title

THE TUBULE DID IT: A UNIQUE CAUSE OF HYPERCALCEMIA IN AN INFANT

Authors

Erin Finn, MD Dale Iglesia, MD Torie Bender, MD Duy Vuy, MD

Introduction

Hypercalcemia is rarely seen in congenital distal RTA and it is unclear what predisposes patients to develop hypercalcemia compared to others. As pathologic mutations are uncovered, it will be interesting to see if specific mutations are more associated with hypercalcemia. Electrolyte abnormalities should resolve with correction of acidosis, and medications to lower calcium are not typically needed; severe hypocalcemia can develop with use of these medications. This case emphasizes that dRTA can be associated with hypercalcemia and should be considered in the differential of patients with a compatible clinical course.

Case Presentation

A 6mo with GERD presented with poor weight gain. She was born full-term with a normal newborn screen. Family history was non-contributory. Since birth, she had poor weight gain despite medical therapy. She had large spit-ups shortly after eating, prompting GI evaluation. She was developmentally delayed, unable to sit without support or roll from front to back. She was dehydrated and at the 1st percentile for weight, head circumference, and length. Labs included Na 157, K 2.8, Cl 135, CO2 10, BUN 23, Cr 0.53mg/dL, Ca 15.4, phos 3.1, albumin 4.7g/dL, lipase 25,537U/L, ALP 143U/L, WBC 18.4, Hgb 13.1g/dL, plts 485, PTH

Discussion

Many of the patient's symptoms supported the diagnosis of congenital dRTA, including poor growth and osteoporosis, normal anion gap metabolic acidosis, positive urine anion gap, hypokalemia, and nephrocalcinosis. However, congenital dRTA is more commonly associated with hypocalcemia rather than hypercalcemia. There are case reports of hypercalcemia in dRTAs in patients less than one. The cause of hypercalcemia is believed to be acidosis-induced

bone resorption. The immature renal tubules are unable to handle the increased calcium load due to decreased GFR. Calcium reabsorption may increase in the proximal tubule in cases of dehydration, compounding hypercalcemia. Correction of the acidosis typically resolves the hypercalcemia. The ATP6V0A4 gene encodes the a4 subunit of the H+-ATPase located in cells of the distal tubule. Mutations in this gene have been associated with dRTA and sensorineural hearing loss. There are few case reports of patients with ATP6V0A4 mutations and dRTA associated with hypercalcemia.

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NORTH CAROLINA POSTER FINALIST - CLINICAL VIGNETTE
Jeremy Hess

Recurrence of Hepatocellular Carcinoma Presenting as Anti-Yo Antibody Positive Mixed Neurological Paraneoplastic Syndrome

Title

Recurrence of Hepatocellular Carcinoma Presenting as Anti-Yo Antibody Positive Mixed Neurological Paraneoplastic Syndrome

Authors

Jeremy Hess, DO; Michael Pietrangelo, DO

Introduction

Neurological paraneoplastic syndromes (NPS) are a varied group of disorders which include paraneoplastic cerebellar degeneration (PCD) and chronic inflammatory demyelinating polyneuropathy (1). PCD, characterized in part by anti-Yo antibody positivity, is typically seen in women with pelvic or breast cancers. Less than 20 cases of PCD have been reported in males, rarely in esophageal and gastric adenocarcinomas (2)

Case Presentation

A 51-year-old African American male with a history of hepatocellular carcinoma (HCC) diagnosed 5 years prior and deemed to be in remission 2 years prior status-post ablation, cirrhosis, prior alcohol abuse and polysubstance use disorder, and hepatitis C status-post treatment presented to the emergency department with complaints of worsening bilateral lower extremity weakness for the past 5 days. The patient was employed as a landscaper and had been physically exerting himself outdoors per usual but states he was not able to recover and now could not stand on his own. Upon presentation the patient was nontoxic in appearance, well-developed, and had a grossly normal neurologic exam besides 4/5 strength to bilateral lower extremities with the inability to stand upright secondary to this. Initial labs were significant for aspartate transaminase (AST) 243 U/L, alanine transaminase (ALT) 272 U/L, alkaline phosphatase 135 mg/dL, direct bilirubin 2.5 mg/dL, and indirect bilirubin 1.5mg/dL. Computerized tomography (CT) chest, abdomen, and pelvis was ordered and revealed numerous new masses including a 5.5x4.6 cm mass to the right hepatic lobe and 3.7 cm mass to the left hepatic lobe consistent with HCC and multiple bilateral pulmonary and pleural nodules. The patient was admitted for recurrence of HCC, evaluated by oncology, arranged for

outpatient positron emission tomography scan, and discharged to a skilled nursing facility for acute rehab after his weakness symptoms were attributed to frailty of cancer and peripheral neuropathy. The patient returned to the hospital one week later due to worsening extremity and facial weakness, slurred speech, and progressive dysphagia. CT head showed no acute intracranial abnormality and extensive autoantibody testing, including an NPS (neurological paraneoplastic syndrome) panel was negative except for anti-Yo antibody (=>1:10 titer) and rheumatoid factor. Electromyogram showed peripheral motor and sensory deficits consistent with severe, generalized, demyelinating polyneuropathy. He was subsequently treated with a 5 day course of plasma exchange however dysphagia, difficulty speaking, and facial numbness worsened. His exam exhibited continued marked extremity weakness and findings suggestive of Horner's syndrome so was given a 2 day course of intravenous immunoglobulin. Given concerns for continued neurologic decline despite best efforts, palliative care was consulted, and arranged for outpatient follow-up with neurology and oncology which are pending.

Discussion

This is the first reported case of an anti-yo antibody positive neurological paraneoplastic syndrome associated with HCC and highlights a new potential presentation for HCC, once thought to only occur in those with esophageal or gastric adenocarcinoma. Also emphasized are the importance of close follow-up for all cancer patients, as this individual had been lost to follow-up for multiple years before permanent physical decline, and the value of maintaining broad differential diagnoses.

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NORTH CAROLINA POSTER FINALIST - CLINICAL VIGNETTE
Rahim Jiwani

Cold Agglutinin Autoimmune Hemolytic Anemia in a Covid-19 Patient

Title

Cold Agglutinin Autoimmune Hemolytic Anemia in a Covid-19 Patient

Authors

Ahmed Younes, MD, Rahim Jiwani, MD

Introduction

Novel coronavirus 2019 (COVID-19) has caused a rapidly evolving global pandemic. Although most commonly thought to cause pulmonary complications; gastrointestinal disease, neurologic consequences and thrombotic disease have been widely reported. Despite multiple reports, the relationship between cold agglutinin hemolytic anemia and COVID-19 is not well understood.

Case Presentation

A 58-year-old African-American male with a past medical history of schizophrenia, presented to his PCP with a complaint of cough and upper respiratory tract infection symptoms. He was tested for and diagnosed with COVID-19. Days later, the patient presented to the hospital where he was found to have a new oxygen requirement and worsening shortness of breath for which he was admitted. The first few days of admission were complicated by type II myocardial infarction and neuroleptic malignant syndrome. Of the fifth night of the admission, the patient was noticed to have an acute drop of his hemoglobin from 9.1 g/dl to 5.6 g/dl. Repeat hemoglobin was 5.7 g/dl without an obvious source of bleeding. Further workup revealed an LDH of 3545 U/L (increased from 2528 U/L on the day of admission) and haptoglobin less than 8 mg/dl. Direct bilirubin was 3.7 mg/dl and indirect bilirubin was 1 mg/dl. Ferritin was greater than 40,000 ng/ml and D-dimer 14,968 ng/ml. Expanded hemolysis workup revealed that the patient was DAT C3 positive and negative IgG. Peripheral smear showed RBC clumping with no evidence of microspherocytosis or schistocytes. At this point, conservative management was pursued with warming extremities and transfusion of warmed pRBCs, as cold agglutinins was suspected. On the ninth day of admission, cold agglutinin antibodies titer returned positive confirming the diagnosis of cold agglutinin disease. IgM titer was drawn and came back normal indicating no need for plasma exchange therapy. The patient's hemoglobin remained relatively

stable throughout the following few days. In total, the patient was transfused 4 units of packed RBCs: 2 units on the sixth day of admission (or after the onset of his hemolytic anemia), 1 unit on the ninth day of admission, and 1 unit on the 12th day of admission. On the 13th day of admission, hemoglobin started to improve and was maintained above 7 gm/dl without need for further transfusion. However, the patient was transferred to the ICU due worsening encephalopathy of unclear etiology.. The etiology of the cold agglutinin hemolytic anemia was suspected to be secondary to COVID-19.

Discussion

Despite there being strong evidence of thrombogenic state induced by infection with COVID-19 and the association between thrombotic event and cold agglutinin, the relationship between cold agglutinin disease and COVID-19 is poorly described. Although cold agglutinin disease may not be immediately considered when faced with acute drops in hemoglobin, in COVID-19 patients a broad differential diagnosis must be entertained.

NORTH CAROLINA POSTER FINALIST - CLINICAL VIGNETTE
Shruthi Kumar, MBBS

RIDING OUT THE ARRHYTHMIC STORM: MANAGEMENT OF ELECTRICAL STORM IN A COVID 19 PATIENT

Title

RIDING OUT THE ARRHYTHMIC STORM: MANAGEMENT OF ELECTRICAL STORM IN A COVID 19 PATIENT

Authors

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Introduction

Of the several reported cardiovascular manifestations associated with Coronavirus disease 2019 (COVID-19), cardiac arrhythmias are more commonly seen in critically ill patients. There have been several proposed mechanisms of arrhythmogenesis. Malignant ventricular arrhythmias and electrical storm are rare and mostly seen in individuals with pre-existing structural heart disease. Management of electrical storm is complex and often requires a multi-disciplinary approach.

Case Presentation

A 68 year old female with a history of left ventricular systolic dysfunction, occlusive coronary artery disease, and implantable pacemaker in the setting of tachy-brady syndrome, presented with shortness of breath and respiratory distress. Covid-19 pneumonia was diagnosed via nasopharyngeal swabs. Pulseless ventricular tachycardia (VT) arrest was the initial cardiac manifestation of Covid-19. She was defibrillated once with 200 joules and the return of spontaneous circulation (ROSC) was achieved in 2 minutes without neurological deficit. She was found to have hypokalemia (3.3 meq/L) which was corrected .Trans thoracic echo showed a reduced ejection fraction of 35%. EKG showed QTc of 440 ms, serial troponin I peaked at 0.2 ng/mL and BNP was 769 pg/mL. She was transferred to the medical ICU and started on amiodarone infusion. Despite being on an amiodarone infusion she developed multiple episodes of sustained VT and two more episodes of Ventricular Fibrillation arrest and

Ventricular Tachycardia arrest within 24 hours. She was defibrillated with 200 joules and ROSC was achieved within 5 minutes with good neurological recovery during both incidents. The diagnosis of electrical storm was made as the patient had multiple episodes of VT and VFib arrest within 24 hours. The electrical storm was terminated successfully with medical management using amiodarone and lidocaine infusion, propranolol every 6 hours, and sedation with propofol. Electrolytes were aggressively monitored and repleted. After 48 hours the lidocaine and propofol infusion was stopped and she was switched from intravenous to oral amiodarone for maintenance. She remained hemodynamically stable and did not develop any further arrhythmias

Discussion

This case discusses ventricular arrhythmias associated with Covid-19 in correlation with patient's who have pre-existing systolic dysfunction and sick sinus syndrome. Cardiac arrhythmias occur not only as a result of direct viral injury and abnormal host immune response, but also due to underlying systemic illness and drug interactions. The exact pathophysiology of mechanisms leading to increased arrhythmogenic risk in Covid 19 is still under study. We highlight the importance of awareness of such mechanisms in order to guide future management and preventative strategies in the critically ill.

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NORTH CAROLINA POSTER FINALIST - CLINICAL VIGNETTE
Jonathan J Labbe, MD

Thrombotic Storm – A Complication of Reinfection with SARS-Coronavirus-2

Title

Thrombotic Storm – A Complication of Reinfection with SARS-Coronavirus-2

Authors

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Introduction

Thrombotic storm is a rare but serious clotting disorder, with predisposing factors ranging from cancer, infections, and pregnancy. More infrequent is the association of the condition with SARS-Coronavirus-2 (SARS-CoV-2) infection. Previously reported literature displays up to 50% of critically ill Coronavirus Disease 2019 (COVID-19) patients may develop thromboembolic complications regardless of prophylaxis. However, the risk of serious thromboembolic events in asymptomatic COVID-19 patients and/or those with reinfection is poorly understood or recognized.

Case Presentation

A 25-year-old male with no past medical history but a strong family history of clotting disorders initially presented to the hospital complaining of bilateral leg pain and weakness as well as inguinal lymphadenopathy. Duplex ultrasound of the lower extremities demonstrated extensive occlusive disease of his deep veins bilaterally. He was managed with heparin drip, with eventual transition on to apixaban prior to home discharged. Several months prior to his initial presentation, the patient tested positive for SARS-CoV-2, with a negative PCR results recorded a month later. A week later from his discharged the patient had worsening clotting symptoms which prompted him to return to the emergency department. Serology testing for SARS-CoV-2 revealed positive IgG. A repeat duplex ultrasound showed worsening occlusive disease of the lower extremities, apixaban was held and heparin drip started again. A CT abdomen and pelvis with IV contrast showed extension of the bilateral lower extremity occlusive deep venous thrombosis throughout the bilateral external and common iliac veins to the level of the lower IVC with diminutive IVC above the level of the thrombus with numerous retroperitoneal venous collaterals (see Fig. 1). Vascular surgery was consulted, the patient was taken to the operating

room where he underwent thrombolysis of the right and left iliofemoral system. Pre-operative workup revealed a positive SARS-Coronavirus-2 PCR once again. The hypercoagulability work-up showed a normal hepatitis panel, HIV, ANA screen, Anti-DNA Ab, protein S antigen, anti-thrombin 3, Factor V Leiden and DRVVT. Lupus anticoagulant (LA) was abnormally elevated with positive LA hexagonal phase but antiphospholipid antibody screen was negative. The patient was transitioned to therapeutic enoxaparin and discharged home.

Discussion

We present a case of severe thrombosis following a suspected COVID-19 reinfection. Our patient who initially tested positive for COVID-19, then negative on retest 4 weeks later, presented with worsening thrombotic illness and was found to be again PCR positive. The patient had a strong family history of clotting disease but his hypercoagulable work up was negative besides his Lupus anticoagulant. Abnormal Lupus anticoagulant can be seen in the setting of heparin use (J Thromb Thrombolysis 2015), and the false positive was further confirmed with negative antiphospholipid antibody panel. The worsening clotting event seen in this patient was likely secondary to COVID-19 reinfection. This case highlights the sever complication that can develop with COVID-19 reinfection, especially in patients who may be genetically predisposed. Further research on thrombotic events in COVID-19 reinfection is paramount.

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NORTH CAROLINA POSTER FINALIST - CLINICAL VIGNETTE
Tanner Slayden, MD

S. gordonii causing endocarditis, ruptured mycotic aneurysms, and diskitis

Title

S. gordonii causing endocarditis, ruptured mycotic aneurysms, and diskitis

Authors

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Introduction

Streptococcus gordonii is thought to be a rare cause of endocarditis, mycotic aneurysms, and diskitis. This immunocompetent patient with a native heart valve developed all three after a dental procedure led to S. gordonii bacteremia. Primarily found in the oral cavity, this bacteria produces six-core virulence genes involved in adherence. Additionally, two of the bacteria's surface proteins directly promote firm bacterium-platelet adhesions and ultimately platelet aggregation.

Case Presentation

78-year-old gentleman with history of bileaflet mitral valve prolapse, mitral regurgitation, and coronary artery disease presented following six months of progressive fatigue, anorexia, weakness, and intermittent fevers. Symptoms started following an invasive dental procedure six months prior. Blood cultures quickly returned positive for an alpha hemolytic streptococcus species – with further speciation showing S. gordonii. Due to a new murmur in setting of a leukocytosis on initial work up, transthoracic echocardiogram was completed and showed two large mitral valve vegetations. Transesophageal echocardiogram confirmed the results. Skull to mid-thigh PET scan then demonstrated trace metabolic activity around the mitral valves, further elucidating possible endocarditis. There was also moderate hypermetabolism surrounding T12-L1 intervertebral disc, which likely represented diskitis. MRI and MRA of head, which was ordered due to variety of nonspecific neurologic deficits on physical exam, showed two small cortically based enhancing foci concerning for septic emboli. Due to above MRI findings, digital subtraction angiography demonstrated three ruptured mycotic aneurysms,

which were subsequently embolized with improvement in the patient's neurologic function. Later in the hospitalization, the patient underwent open mitral valve replacement and an extended antibiotic course for the multiple sites of infection.

Discussion

Although beneficial in the oral cavity for alkalization and protective biofilm formation, streptococcus gordonii is pathogenic in the bloodstream with a high propensity for platelet aggregation, even in immunocompetent hosts. Although the above case presented with neurologic symptoms that led to early imaging and intervention, other cases have not been as fortunate – with S. gordonii mycotic aneurysm ruptures leading to intracranial bleeding and neurologic collapse. This case is important as it highlights an understudied bacteria's potential pathogenicity, the possible need to reevaluate dental prophylaxis guidelines, and the need to have a high index of suspicion for inflammation and infection when S. gordonii bacteremia is diagnosed.

NORTH CAROLINA POSTER FINALIST - CLINICAL VIGNETTE
Hillary Spangler

To drain or not to drain

Title

To drain or not to drain

Authors

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Introduction

Tularemia is an infection caused by the bacterium, Francisella tularensis. Rodents, rabbits, and hares are common reservoirs and humans acquire the infection through contact with an infected animal, via ingestion, or vector bite (particularly ticks) (1). The ulceroglandular form is the most common presentation in the USA, with glandular, oculoglandular, oropharyngeal, pneumonic, and typhoidal forms as well. These forms can be hard to differentiate by physical exam, making the decision about whether or not to incise and drain at bedside a difficult one. This case highlights the diagnostic reasoning pathway for undifferentiated lymphadenopathy and the role of bedside ultrasound (US) in guidance of appropriate procedural interventions for tularemia-associated lesions.

Case Presentation

A 22yo woman with no PMH presented with 2 days of right axillary swelling. She endorsed a 5lb unintentional weight loss and a vague 2 year history of night sweats, but no fevers. She denied paraffin wax use. She works on a farm with rabbits, goats, and cats and reported tick exposures. Her exam revealed a 1.5in tender mass in the right axilla with overlying redness. Differential included lymphadenitis, reactive lymphadenopathy, a cystic lesion, abscess, atypical mycobacterial infection, and malignancy. A bedside US revealed a well-circumscribed, heterogeneously hypoechoic mass in the superficial soft tissues with surrounding hyperemia. While not consistent with an abscess, it raised concerns for an inflamed or malignant lymph node, so bedside drainage was not attempted. Formal US confirmed the findings. She was started on empiric clindamycin for 14 days. Labs included CBC with WBC 11.9 10*9/L and absolute neutrophils 9.1 10*9/L, normal LDH, and negative HIV, bartonella, and quant gold testing. Despite antibiotics, she had persistent pain and swelling and subsequently had a core

biopsy 12 days into her course. Spontaneous drainage of serous fluid resulted in reduction of the mass size on repeat exam. Tularemia serologies returned with “borderline IgM, negative IgG,” prompting treatment with a 10 day course of ciprofloxacin. Surgical pathology showed mixed chronic and granulomatous inflammation, negative Fite, Gram, and Warthin-Starry stains for organisms and no evidence of malignancy. Repeat tularemia serologies again showed borderline IgM and negative IgG, suggesting the final diagnosis of glandular tularemia.

Discussion

Tularemia should be considered in the differential of lymphadenopathy in patients with the appropriate clinical presentation and risk factors, and empiric treatment should be initiated due to the delayed presence of antibodies. Because glandular tularemia can present as lymphadenitis, an abscess, or an undifferentiated fluid collection (most commonly in the cervical region), bedside US provides additional information that can prevent unnecessary procedural attempts at the bedside (1). There is increasing evidence that US increases diagnostic accuracy in skin and soft tissue infections and often changes management (2,3). There are no clear recommendations as to whether fine needle aspiration or excision of the mass is superior, as a portion of those FNAs require full excision (4). More studies are needed to provide guidance on when drainage is needed in patients with glandular/ulceroglandular tularemia.

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OHIO POSTER FINALIST - CLINICAL VIGNETTE Abdul Rahman Al Armashi, MD

Pyopneumothorax, sepsis, and acute heart failure in a patient with infective endocarditis: A case report

Title

Pyopneumothorax, sepsis, and acute heart failure in a patient with infective endocarditis: A case report

Authors

Abdul Al Armashi MD, Francisco J. Somoza-Cano MD, Keyvan Ravakhah MD

Introduction

Right-sided infective endocarditis (IE) is a condition especially prevalent among intravenous drug users (IVDU). The repetitive drug injections produce cumulative subclinical damage to the endocardium, making bacterial adherence much more feasible. Once a vegetation has been established, the infected valve's embolizing septic products migrate towards the pulmonary circulation, disrupting the lung parenchyma's normal architecture. The events that follow this phenomenon can lead to catastrophic multi-systemic organ failure, as seen in our patient.

Case Presentation

A 31-year-old woman with a past medical history of polysubstance abuse presented with a one-week history of altered mental status and sudden-onset dyspnea. Physical examination revealed tachycardia, hypotension, diminished breath sounds on the right pulmonary base, and a holosystolic murmur at the left lower sternal border. Chest x-ray showed right-sided pneumothorax. Chest CT scan revealed numerous cavitating septic emboli in both lungs with a left-sided pleural effusion. She was admitted to the Intensive Care Unit as a septic shock where fluids and antibiotics were given, and a chest tube was placed on the right hemithorax, draining purulent material. Transthoracic echocardiogram (TTE) found a 2.5 cm mobile vegetation on the tricuspid valve and an ejection fraction of 50%. The patient was stabilized and transferred to a regular nursing floor, but 24 hours later, she rapidly decompensated, prompting intubation and vasopressors. Repeat TTE noted ejection fraction of 20- 25%. Assessment by cardiothoracic surgery for emergent valve repair was made, but due to the immediate high mortality risk, the procedure was deferred. The patient was transferred to a long-term acute care facility for

pathogen-directed intravenous antibiotics. She expired thereafter as a consequence of two consecutive cardiac arrests.

Discussion

This case illustrates rare potential life-ending complications such as pyopneumothorax and multiple cavitary infiltrates of a late-presenting infective endocarditis. Prompt evaluation by a cardiothoracic surgeon might be life-saving; unfortunately, our patient's perioperative risk was too high for surgery to be considered. Additional research is warranted to establish standard practices in this type of patient.

OHIO POSTER FINALIST - CLINICAL VIGNETTE Abdul Rahman Al Armashi, MD

Asymptomatic mantle cell lymphoma and COVID-19: The perfect storm?

Title

Asymptomatic mantle cell lymphoma and COVID-19: The perfect storm?

Authors

Abdul Al Armashi MD, Francisco J. Somoza-Cano MD, Poornanand Palaparty MD, Keyvan Ravakhah MD

Introduction

Mantle cell lymphoma (MCL) is a rare subtype of B-cell non-Hodgkin lymphoma (NHL) with a unique pathogenesis and distinctive clinical manifestations. While it is often grouped with the clinically indolent forms of NHL, its behavior is that of aggressive disease. It usually presents with diffuse lymphadenopathy, commonly in the lymph nodes, spleen and below 30% in the gastrointestinal tract.

Case Presentation

A 55-year-old gentleman with a past medical history of atrial fibrillation on apixaban presented to the gastroenterologist's office for a screening colonoscopy. Physical examination was unremarkable and his work-up was notable for mild chronic anemia with a hemoglobin level at baseline. Colonoscopy uncovered multiple, benign-appearing polyps in all anatomical segments of the colon. Computed tomography was significant for lymphadenopathy in the mediastinum, abdomen, and pelvis. Consequently, pathological sample analysis displayed monomorphous, small to medium-sized B lymphocytes with irregular nuclei and flow cytometry identified predominant CD5+ cells. Positron emission tomography scan showed hypermetabolic cervical, thoracic, and abdominopelvic lymphadenopathy. Additional histopathological work-up confirmed stage IV MCL and the patient was started on bendamustine/rituximab. However, after only one chemotherapy cycle, the patient started complaining of shortness of breath and fever. COVID-19 (coronavirus disease 19) PCR was positive. He received five days of remdesivir and ten days of dexamethasone, which he completed as an outpatient. Furthermore, after completing the initial treatment, worsening shortness of breath and bilateral pulmonary infiltrates were observed. He was hospitalized at the Respiratory Intensive Care Unit, where he is currently recovering.

Discussion

This case highlights the unusual presentation of an asymptomatic MCL discovered incidentally on a routine appointment. MCL should be assessed as a differential diagnosis if multiple polypoid lesions are observed in an endoscopic study. Moreover, balancing the risk from treatment versus harm from COVID-19 proves the increasing challenges this type of patient faces in today's medical scenario.

OHIO POSTER FINALIST - CLINICAL VIGNETTE Hazem Ayesh, MD

Acquired Hemophilia A in an Elderly Patient Complicated With Deep Venous Thrombosis: A Case Study

Title

Acquired Hemophilia A in an Elderly Patient Complicated With Deep Venous Thrombosis: A Case Study

Authors

Hazem Ayesh, MD, MPH Cameron Burmeister, MD, MS Azizullah Beran, MD Waleed Abdulsattar, MD Mohammed Mhanna, MD Dr. Sandeep Kukreja, MD

Introduction

Acquired hemophilia A (AHA) is an autoimmune disorder associated with spontaneous production of IgG autoantibodies targeting internal factor VIII. The incidence of AHA is 1.3 to 1.5 cases per million population per year. AHA is common in elderly males and females aged 64-78. In this case report, we will discuss the diagnosis, treatment, and medical complexity of managing DVT in the presence of actively bleeding patients with AHA.

Case Presentation

A 78-year-old Caucasian male patient with a past medical history significant for alcohol use disorder and essential hypertension presented to the hospital with a two-week history of left lower extremity swelling involving the left knee and ankle. Associated symptoms included shortness of breath, subjective stool darkening which was presumed to be melena. Review of systems otherwise unremarkable. On presentation, vital signs included heart rate 82, blood pressure 139/66, saturating 96% on 2 L oxygen. On physical examination, the patient had hematoma with ecchymosis over the scrotal area and inner thigh. Notable labs included the following: hemoglobin 6.9 [normal 12.6 – 17.4 g/dL], platelet 299 [normal 150 – 450 X 10E9/L], D-dimer 418 [normal < 0.6 BU/mL] and Factor VIII assay was 5% [normal 50 – 150 %] which is consistent with AHA. Vascular Surgery placed inferior vena cava (IVC) filter. Hematology started the patient on prednisone, cyclophosphamide, and recombinant factor VIII due to the increased risk of thrombosis with factor VII. The patient was successfully discharged on prednisone/cyclophosphamide taper; at time of discharge, the patient's aPTT was 37, factor VIII level of 38%, inhibitor 6.4 BU.

Discussion

Management of AHA consists of replacement of consumed coagulation factors and elimination of the coagulation factor inhibitor. For replacement, Factor VIII is employed in cases with low inhibitor titers, and activated prothrombin complex concentrate or activated factor VII is utilized for severe bleeding. Prednisone and cyclophosphamide are most often used to neutralize coagulation factor inhibitor activity. AHA should be considered in patients with an isolated elevation in aPTT, a normal INR and PT, and a high Factor VIII inhibitor level. Association with DVT is uncommon but provides a medical challenge. In the setting of both severe active bleeding and deep venous thrombosis, systemic anticoagulation should be avoided; rather, IVC filter may be a safer alternative.

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OHIO POSTER FINALIST - CLINICAL VIGNETTE Hazem Ayesh, MD

Pembrolizumab-induced thyroiditis

Title

Pembrolizumab-induced thyroiditis

Authors

Hazem Ayesh, MD, MPH Cameron Burmeister, MD, MS Jeremy C. Tomcho, MD Rawish Fatima, MD Dr. Srini K. Hejeebu, DO, FACOI

Introduction

Pembrolizumab is a humanized monoclonal antibody that acts on T cell programmed death receptor-1 (PD-1) resulting in activation of T-cell mediated response and destruction of malignant cells. This immunotherapy is implemented alone or in combination with other medicines to treat certain cancers, such as melanoma, lung, cervical, esophageal, and others. Administration of pembrolizumab is associated with immune-related adverse events (irAEs). Thyroid irAEs have a reported incidence of 3.2-10.1 % in patients receiving pembrolizumab. We present a case of pembrolizumab-induced thyroiditis in a patient with esophageal adenocarcinoma.

Case Presentation

A 54-year-old Caucasian female with past medical history of nicotine dependence, ulcerative colitis, hypothyroidism on levothyroxine, and stage IV poorly-differentiated distal esophageal adenocarcinoma presented to the emergency department with generalized weakness and confusion. On presentation, she was lethargic and oriented to person and place but not time. Review of symptoms was positive for dizziness, lightheadedness, nausea, and anxiety. Physical exam was notable for cachexia and bilateral upper extremity resting tremor. No exophthalmos, thyromegaly, thyroid nodules, or thyroid tenderness noted on thyroid exam. Vital signs were BP 116/79, pulse 133, RR 20, temperature 98.2° F, SpO2 99% on room air. Labs showed WBC 3.3, TSH 0.01 [0.49-4.67], free T4 3.01 [0.61-1.60], thyroglobulin 229.1 [0-35 ng/ml], free T3 3.01 [2.50 - 3.90 pg/mL], cortisol 21.2 (normal). EKG showed sinus tachycardia with nonspecific T-wave changes and QTC 432. CT chest showed esophageal stent with esophageal dilation, a 6-7mm pulmonary nodule in the right upper lobe, and multiple densely calcified nodules in the left lower lung. CT brain and CT abdomen/pelvis showed no acute pathology. She was admitted

to the Internal Medicine service and Endocrinology was consulted. Thyroid ultrasound showed diffuse heterogeneous echotexture consistent with thyroiditis. Thyroid-stimulating hormone receptor (TSH-R), thyroid peroxidase (TPO), thyroglobulin, and thyroid-stimulating antibodies (TSI) were normal. T4 down trended as levothyroxine was held throughout the hospital stay.

Discussion

The patient's elevated T4 with elevated thyroglobulin makes iatrogenic hyperthyroidism unlikely; patient's family also reported appropriate levothyroxine compliance. Total T3:T4 ratio was >20 and free T3: free T4 ratio > 0.3, which is consistent with Graves' disease however, TSHR Ab was negative, and the thyroid ultrasound did not show hyperemia, instead supported destructive thyroiditis. The downtrend of T4 during hospital stay favors acute thyroiditis. As the patient was hypothyroid prior to admission and presented with hyperthyroidism in the setting of pembrolizumab use, Endocrinology attributed the hyperthyroidism to pembrolizumab-induced thyroiditis. The patient was treated symptomatically with metoprolol tartrate for tachycardia, and levothyroxine was held until outpatient Endocrinology follow-up. The patient was discharged in stable condition. Pembrolizumab is known to have secondary side effects including thyroiditis. Active surveillance will help in the prevention, early detection, and treatment of future thyroid-related irAEs.

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OHIO POSTER FINALIST - CLINICAL VIGNETTE Azizullah Beran, MBBCH

Acute Pericarditis as Initial Presentation of SARS-CoV-2 Infection

Title

Acute Pericarditis as Initial Presentation of SARS-CoV-2 Infection

Authors

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Introduction

Coronavirus disease 2019 (COVID-19), caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), is a challenging global pandemic. There is growing data in the literature regarding cardiac involvement due to SARS-CoV-2, but data regarding pericardial involvement is scarce. We report a rare case that tested positive for SARS-CoV-2 infection presenting with acute pericarditis in the absence of pulmonary disease or myocarditis. We reviewed the available literature to better understand the prevalence, mechanism, clinical presentation, diagnosis, and management of SARS-CoV-2-associated acute pericarditis.

Case Presentation

A 25-year-old African American male with no significant past medical history presented with a 2-day history of fever, tachycardia, and chest discomfort. The patient denied any cough or shortness of breath. Initial lab work revealed ferritin 891 ng/mL, C-reactive protein 16.6 mg/dL, D-dimer 734 ng/mL, LDH 269 U/L, mild transaminitis, mild leukocytosis, normal troponin levels, negative respiratory pathogen panel, and a negative Monospot test. Computed tomography (CT) angiogram of the chest did not show pulmonary embolism or any significant lung pathology. Chest x-ray was unremarkable. The electrocardiogram showed widespread ST elevation with PR depression consistent with acute pericarditis. The patient was ultimately started on colchicine and ibuprofen. On day 2 of admission, he was found to be positive for SARS-CoV-2. Transthoracic echocardiogram showed a small to moderate pericardial effusion. The patient was discharged on colchicine and ibuprofen after the fever resolved and a repeat swab for COVID-19 was negative.

Discussion

COVID-19 can rarely manifest as acute pericarditis on initial presentation in the absence of associated pulmonary illness or myocarditis, which may lead to under-diagnosis during this pandemic. We describe a rare case of acute pericarditis associated with SARS-CoV-2 infection. Physicians should be familiar with atypical presentations of COVID-19, such as acute pericarditis, to rapidly detect and isolate patients with COVID-19 early.

OHIO POSTER FINALIST - CLINICAL VIGNETTE Bo Cheng

Consequence of Untreated Diabetes: Superior Mesenteric Artery Syndrome

Title

Consequence of Untreated Diabetes: Superior Mesenteric Artery Syndrome

Authors

Bo Cheng, DO, PharmD, Ohiohealth Riverside Internal Medicine Resident PGY1 Kim Jordan, MD, FACP, Ohiohealth Riverside Internal Medicine Residency Program Director

Introduction

Superior mesenteric artery (SMA) syndrome is characterized by the narrowing of the angle between the superior mesenteric artery and aorta which results in compression of the 3rd portion of duodenum and subsequent duodenal obstruction. SMA syndrome is most commonly associated with extreme weight loss from a medical condition. Rarely it can present as a complication in untreated or poorly controlled diabetes. The rarity of this condition presents a diagnostic challenge in this patient population.

Case Presentation

A 37-year-old male presented with sudden onset nausea, vomiting, diarrhea, and abdominal pain. He was diagnosed with diabetes 2 years prior and was treated with metformin and insulin. However, he did not believe in the diagnosis and stopped his treatment very shortly. He reported chronic polyuria and polydipsia, and weight loss of 80 lbs. over 2 years. At presentation, he measured 74 inches tall and weighed 100 lbs., with BMI of 12.8. His blood glucose was significantly elevated at 605 with HbA1C of 17.2, but no ketoacidosis. Physical examination was positive for a tympanic, distended abdomen. Computed tomography (CT) of the abdomen demonstrated significant distention of stomach and duodenal sweep to the level of SMA/aorta, suggestive of SMA syndrome. A nasogastric tube was inserted for decompression and 2L of gastric content were suctioned. Subsequent CT angiogram of the abdomen demonstrated normal caliber and patency of the SMA, and diminished caliber of distal abdominal aorta. Significant abdominal distention persisted, and an esophagogastroduodenoscopy was performed, demonstrating a large amount of food residual in the gastric body and an extrinsic moderate stenosis in the third portion of the duodenum. A nasojejunal tube was advanced through the scope over the guidewire into the jejunum and the

patient's symptoms improved. He tolerated tube feed and was discharged on insulin regimen and nocturnal tube feed to correct severe malnutrition.

Discussion

This case illustrates the potential for a rare but severe diabetic complication. Although nausea and vomiting are common complaints in diabetic patients, they are typically associated with gastrointestinal motility pathology; however, SMA syndrome should be considered in the differential diagnosis of a diabetic patient who presents with gastrointestinal symptoms and severe weight loss. This syndrome is thought to occur secondary to loss of the mesenteric fat pad, which maintains the angle and distance between the SMA and aorta. It has been reported as a complication of acute catabolic states, poorly controlled diabetes, anorexia nervosa, chronic wasting diseases, and rapid weight loss following bariatric surgery. Recent report of SMA syndrome report association with use of SGLT2 therapy in lean diabetic patients. Treatment includes nutritional support, gastrointestinal decompression, and surgical management for patients who do not respond to conservative treatment.

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OHIO POSTER FINALIST - CLINICAL VIGNETTE Ahmed Elzanaty, MBChB

Prolonged Glucosuria with Euglycemic Diabetic Keto-Acidosis in Patient with a History of Empagliflozin Use.

Title

Prolonged Glucosuria with Euglycemic Diabetic Keto-Acidosis in Patient with a History of Empagliflozin Use.

Authors

Elzanaty, Ahmed MD. Mhanna, Mohammed MD. Elshiekh, Eman MD. Sabbagh, Ebrahim DO. Ghazaleh, Sami MD, Beran, Azizullah MD

Introduction

Sodium-glucose cotransporter 2 (SGLT-2) Inhibitors are a novelty drug class for management of Diabetes Mellitus type II (DMII). SGLT-2 inhibitors have been increasingly prescribed given their favorable cardiovascular and renal outcomes. On the other hand, they also have been linked to the development of euglycemeic diabetic keto-acidosis (eDKA). Empagliflozin half-life is reported to be around 12.4 hours. Here we present a case of delayed euglycemic diabetic ketoacidosis that occurred 5 days after discontinuation with persisted glucosuria till day thirteen beyond the expected effect of SGLT-2 Inhibitors.

Case Presentation

A 63-year-old woman with a history of DMII on glimepiride, empagliflozin and pre-meal lispro insulin who presented with fatigue and altered mentation. Point of care glucose check done in the emergency department showed hypoglycemia with blood glucose of 40 mg/dl that was treated with D50% pushes followed by D10% infusion. Patient was intubated to protect her airway and was admitted to the ICU. On day 5 of admission, patient was persistently altered with blood workup showed evidence of high anion gap metabolic acidosis with elevated Beta-hydroxybutyrate, and normal serum lactate as well as normal blood glucose albeit with increased urine glucose. Patient was diagnosed to have eDKA and was started on insulin drip, IV fluids and electrolyte replacement protocol. On day 6, anion gap closed, insulin drip was discontinued, and patient was transitioned to subcutaneous insulin therapy. Despite that, the patient continued to have significant isolated glycosuria with normal blood glucose for a total of 13 days

Discussion

Given empagliflozin's reported mean half-life of 12.4 hours, it is expected that the body will clear about 96.9% of the drug in about 2.5 days. For the drug to cause such prolonged glycosuria even after its discontinuation might imply that the clinical effects can persist much longer than the reported half-life and even longer than 5 half-lives. This should raise questions whether this effect is related only to the pharmacokinetics of the SGLT-2 inhibitors or could be related to the pharmacodynamic characteristics including genetic factors that may lead to a longer than expected effect. Reviewing the literature showed some case reports linking other various SGLT-2 inhibitors highlighting the possibility of this being a class rather than individual drug effect. In conclusion, the increased use of SGLT-2 inhibitors in the current practice among diabetics and cardiac patients, clinician should be aware about the potential prolonged effect of those medications. Further studies are warranted to better understand the pharmacokinetics of this medication class.

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OHIO POSTER FINALIST - CLINICAL VIGNETTE Faris Hammad

Generalized lymphadenopathy after Dupilumab Therapy for a rare case of Spongiotic Eczematous Dermatitis. Who is to be blamed?

Title

Generalized lymphadenopathy after Dupilumab Therapy for a rare case of Spongiotic Eczematous Dermatitis. Who is to be blamed?

Authors

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Introduction

Dupilumab is a human monoclonal anti-Interleukin-4 (IL4) antibody blocking both the IL-4 and IL-13 signaling pathways. It's a new evolving medication approved by FDA in 2017 for resistant allergic conditions, including dermatitis, asthma, and chronic rhinosinusitis with nasal polyposis. However, trials are presently still ongoing to address its side effects. Review of the literature showed cases of Dupilumab attributed lymphadenopathy that may be an alarming sign for unmasking or progression of Cutaneous T cell lymphoma CTCL. This observation was warranted by generalized lymphadenopathy, appearance of new skin lesions in locations different locations than original and severe pruritus. In Our case, we are reporting lymphadenopathy as a benign complication of Dupilumab.

Case Presentation

Our patient is a 45-year-old African American woman with a PMH significant for asthma and chronic spongiotic eczematous dermatitis who had atypical dermatitis since childhood, with a positive family history of a similar skin condition. She was started on Dupilumab Bi-monthly injections by her dermatologist. She was not compliant with the use of steroid cream as her entire body was covered with erythematous eczematous patches and lichenification. The patient presented to the ED for nonspecific symptoms and evaluation of a possible hypertensive emergency. A Computed Tomography (CT) incidentally revealed generalized lymphadenopathy involving axillary, mediastinal abdominal, inguinal, and pelvic lymph nodes, with no characteristics that favor malignancy. Flow cytometry and blood smear were done to

rule out sézary syndrome and mycosis fungoides, both were negative. Skin biopsies before and after using Dupilumab showed hyperkeratosis and focal parakeratosis overlying an acantholytic epidermis with hypergranulosis and mild spondylosis. Overall, these histologic findings are those of a spongiotic eczematous dermatitis with features suggestive of co-existent lichen simplex chronicus, with no evidence of CTCL. Other possible causes for Lymphadenopathy were also ruled out. These conclusions warranted no further workup and attributed the condition to be reactive lymphadenopathy due to Dupilumab. The patient was discharged home. A follow-up CT of the chest, abdomen and pelvis showed persistent lymphadenopathy which was improved from the prior study while she was off Dupilumab for a total of six months.

Discussion

Our case illustrates that Dupilumab can cause generalized lymphadenopathy with benign appearance that might persist for a long period of time. However, we should be cautious when we start a patient on Dupilumab, basic work up to rule out CTCL are highly recommended until the trials reveal solid guidelines.

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OHIO POSTER FINALIST - CLINICAL VIGNETTE Elizabeth Howcroft

Utility of Nucleic Acid Amplification Testing for Tuberculosis in an Equivocal Chest Wall Mass

Title

Utility of Nucleic Acid Amplification Testing for Tuberculosis in an Equivocal Chest Wall Mass

Authors

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Introduction

Extrapulmonary tuberculosis (TB) comprised 20% of all new TB cases in the United States in 2019. The chest wall is a very rare site of musculoskeletal TB, which itself only accounts for 8% of all extrapulmonary TB. We herein report a case of tuberculosis abscess of the chest wall as the initial presentation of tuberculosis. Diagnosis should be based off of history and physical examination findings and supported by microbiologic and histologic analysis of fluid from the abscess. Although culture is still the standard for diagnosis, nucleic acid amplification test (NAAT) is perhaps the most useful test when clinical suspicion is high as results can be obtained in 48 hours and it has high sensitivity.

Case Presentation

A 33 year old Ethiopian male presented to the hospital after progressive worsening right chest wall swelling. He denied fever, hemoptysis, cough, and night sweats. Before immigrating to the United States, he worked as a nurse in Ethiopia. He denied a history of tuberculosis, although stated that he tests positive on PPD tests and contributes this to receiving the BCG vaccination. A quantiFERON Gold TB test was negative one year ago, but was positive a few days ago and he was advised to present to the hospital for further evaluation. Examination showed two soft, mobile masses each measuring approximately 6 x 3 cm in the right anterior and posterior axillary line of the chest wall. There was no adenopathy. There were no open areas of drainage. A CT of the chest showed extension through the ribs into the pleural space. There was also scarring within the right middle lobe and ill-defined areas of interstitial thickening in the right apical region. There was mild adenopathy in the precarinal and subcarinal region and right hilum. The patient underwent incision and drainage of the abscesses with collection of fluid for

analysis. The fluid was sent for cytologic analysis, smear microscopy, NAAT, and mycobacterial culture. Cytology was benign with inflammatory cells. Smear microscopy was negative for acid fast bacilli (AFB). NAAT returned in 6 days and was positive. A mycobacterial culture took nearly one month to turn positive for AFB growth. The patient was initiated on a long duration antituberculous regimen of ethambutol, isoniazid, pyrazinamide, and rifampin.

Discussion

Diagnosis of primary TB of the chest wall is often difficult and delayed due to low sensitivity and slow turnaround time of tests, leading to a delay in initiation of treatment. Perhaps the earliest opportunity for diagnosis is direct detection of mycobacterium tuberculosis by NAAT, which has a rapid turnaround time of 48 hours. NAAT has an overall sensitivity of 83% and a specificity of 98% for the diagnosis of extrapulmonary TB. When used in conjunction with smear microscopy, mycobacterial culture, and body fluid analysis, it can increase the likelihood of diagnosis. However, the diagnosis should be based on history of TB exposure, clinical features, and typical radiologic findings. Treatment should not be delayed for bacteriological or histological confirmation in the setting of high clinical suspicion.

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OHIO POSTER FINALIST - CLINICAL VIGNETTE Aditi Lele

Spontaneous lung herniation: a case for medical management

Title

Spontaneous lung herniation: a case for medical management

Authors

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Introduction

Lung herniation is a condition that is infrequently encountered and seldom managed medically even in the absence of significant trauma. There have only been around 300 reported cases of chest wall hernias. Management of this in a patient with hypoxia and a possible underlying infection can be challenging and requires a multidisciplinary approach.

Case Presentation

A 71 year old male with a history of well-controlled asthma and gastroesophageal reflux disease who denied any recent trauma presented with 3 to 4 weeks of severe paroxysmal coughing and right rib pain. Initial chest imaging showed a displaced right sided 11th rib fracture. He was diagnosed with influenza A and completed a course of oseltamivir during his hospitalization. There were further opacities on his chest CT scan concerning for a secondary underlying infection. His initial supplemental oxygen requirements were low and he was treated with supportive care and antibiotics as indicated. His cough persisted and he experienced hemoptysis on hospital day 2. A repeat CT scan of his chest was obtained which showed “herniation of a portion of the basilar right lower lobe through new splaying of the 7th and 8th right ribs” with significant subcutaneous emphysema. On exam, a non-reducible portion of his right lung was palpable beneath edematous layers of skin and soft tissue. The cardiothoracic surgery team attributed the herniation to his significant and intractable coughing and recommended medical management given the risk of infection and mesh repair failure that would come with surgery. He would also likely suffer from complications with wound healing given the degree of chest wall edema. He was kept under close observation in the ICU. After the administration of antibiotics, steroids and aggressive pulmonary hygiene measures, he improved significantly and was eventually discharged on minimal supplemental oxygen. A

follow-up CT scan of his chest 3 months later showed complete resolution of the herniation and he was able to be weaned off of oxygen therapy.

Discussion

This case illustrates a rare occurrence of lung herniation likely caused by an intractable cough. According to limited literature and case reports on this phenomenon, surgical repair is the preferred option of management, especially if there is a high risk of incarceration. Providers are, however, encouraged to consider an individualized approach. In this case, the risk of incarceration appeared to be low due to the size of the hernia and the risks of surgery, including wound healing complications, outweighed the benefits for this patient. The nature of this case highlights a rare condition which had never before been encountered by our cardiothoracic surgery team. Their recommendation for conservative management was successful with complete resolution of his hernia.

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OHIO POSTER FINALIST - CLINICAL VIGNETTE Lex Leonhardt

A Case Report of Autonomic Dysfunction in ALS: Labetalol Makes Me Nervous

Title

A Case Report of Autonomic Dysfunction in ALS: Labetalol Makes Me Nervous

Authors

Lex Leonhardt, DO. Aamir Pervez, DO. Ryan Stuart, MD. Charles Abreu, MD. Harold Duarte, MD. Hemant Shah, MD, DSM, FCCP, FACP.

Introduction

First described in 1874, Amyotrophic lateral sclerosis (ALS) is a progressive neuromuscular disorder associated with high mortality rates. ALS involves rapidly progressive degeneration of upper and lower motor neurons with related muscular dysfunction. There are rare case reports describing ALS associated dysautonomia. Herein, we present a case of rapidly progressive bulbar ALS with severe dysautonomia, resulting in cardiac arrest associated with intravenous labetalol administration.

Case Presentation

61 year old African American male with hypertension, COPD, and tobacco dependence presented to the emergency department complaining of a one month history of fatigue, unintentional weight loss, generalized weakness, and acutely worsening dyspnea. Vital signs demonstrated hypertensive crisis with blood pressure (BP) 250/140 mmHg, heart rate (HR) 70 bpm, oxygen saturation 95% on room air. Patient received intravenous labetalol 10 mg with resultant BP 180/110 mmHg. Within one hour, patient was encephalopathic, diaphoretic, bradycardic, HR 30 bpm with BP 90/60 mmHg. Epinephrine 1 mg was administered with rapid rise in BP to 220/130 mmHg, HR 130 bpm. Patient required intubation due to encephalopathy and acute hypercapnia evidenced by pH 7.2, PCO2 91 on ABG. Hematologic and chemistry parameters were normal. No acute findings noted on CT head and CXR. Patient was transferred to ICU and treated for presumed COPD exacerbation. He tolerated extubation on hospital day one, briefly requiring BiPAP. Patient was transferred out of the ICU the following day, but developed hypertensive crisis with BP 230/140 mmHg. IV labetalol 10 mg was administered and within 25 minutes patient developed severe bradycardia followed by asystole. ACLS protocol was initiated with ROSC after two minutes of CPR. Patient was intubated and transferred back

to ICU. Circulatory collapse was attributed to IV labetalol with concern for underlying neurologic disorder causing persistent hypercapnic respiratory failure. Patient was extubated the following day but required reintubation within hours. EMG demonstrated widespread denervation and fasciculations, consistent with ALS. Patient remained ventilator dependent and underwent terminal wean after a prolonged ICU course. Hypertensive episodes were treated with IV lorazepam and hydralazine with no further circulatory collapse.

Discussion

Although primarily a degenerative disease of motor neurons, recent studies have found evidence of dysautonomia in select ALS patients. Retrospective reviews identify patterns of autonomic dysfunction in these patients, noting significant parasympathetic dysfunction, with sympathetic predominance and alpha receptor hyperactivity. Understanding this pattern is vital, as medication-exacerbated autonomic dysfunction can serve as cause for circulatory collapse. Labetalol is a non-selective alpha and beta adrenergic antagonist with estimated alpha to beta blockade ratio 1:7 in IV preparations. Previous reports illustrate similar presentations of severe hypotension following labetalol administration in patients with ALS, likely secondary to beta blockade. Benzodiazepines have been theorized to decrease blood pressure without causing life threatening hypotension due to GABAergic effects on the CNS. Additional reports support use of alpha blocking agents including phentolamine, doxasozin, and tamsulosin for management of dysautonomia. However, formal recommendations are unavailable. Clinicians must be aware of severe autonomic dysfunction that can accompany ALS, as selection of non-selective beta blockers may result in life threatening complications.

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OHIO POSTER FINALIST - CLINICAL VIGNETTE Scott McLemore

Spontaneous Renal Infarctions in Vascular Subtype Ehlers-Danlos

Title

Spontaneous Renal Infarctions in Vascular Subtype Ehlers-Danlos

Authors

Monika Marcinkevicius, DO; Scott McLemore, DO; Kyle Hopkins, MS3; Kamil Salam, MS4; Sanjay Patel, MD.

Introduction

Ehlers-Danlos Syndrome vascular subtype IV (vEDS) is rare, affecting 0.1-0.5% of the population—approximately 4% of all cases of EDS. This phenotype is caused by a type III procollagen deficiency due to a COL3A1 gene mutation that confers an increased risk of spontaneous arterial, uterine and intestinal rupture. It is inherited in an autosomal dominant manner. Median survival is 48 years, with arterial rupture being the most common cause of mortality. We report a case of spontaneous renal infarction in vEDS.

Case Presentation

A 35-year-old woman presented with sudden-onset abdominal, back, and left flank pain. She had vEDS with a prior spontaneous colonic perforation necessitating sigmoid colectomy with end colostomy, degenerative mitral valve regurgitation, and recent bilateral renal infarctions. Her medications included warfarin and enoxaparin. On physical examination, her BP was 101/63 mmHg and RR was 23. She had a III/VI systolic murmur. She had left costo-vertebral tenderness without peritoneal signs, palpable masses, or organomegaly. Her labs revealed a creatinine of 0.91 mg/dL [0.40-1.10 mg/dL], INR 1.7, AST 144 U/L [0-45 U/L], ALT 233 U/L [0-40 u/L], lipase 42 U/L [15-65 U/L], HCG negative, Urinalysis showed moderate blood & RBCs, and hemoglobin was 11.2 g/dL [12-16 g/dL]. Computed tomography angiography (CTA) of the chest, abdomen, and pelvis showed a new 3.8 cm left inferior pole renal infarction. Given re-occurrence of infarction, a MRA abdomen was obtained showing occlusion of segmental branches of the left renal artery, right renal artery stenosis with severe stenosis of intra-renal branches supplying the area of prior infarct. Workup for other etiologies, including vasculitis and thromboembolic disease was unrevealing. She remained clinically stable and was discharged home with close follow-up for her anticoagulation.

Discussion

The distribution of type III procollagen is found in the skin, walls of blood vessels, and hollow organs. Deficiency of this protein predisposes to clinical manifestations and complications of vEDS. Our patient had a spontaneous colonic perforation which elucidated the initial diagnosis of vEDS, and was key in evaluating her new renal infarctions. In the absence of an alternate etiology, vascular complications in known vEDS should be considered. Our patient had thromboembolic evaluation for occult atrial fibrillation given her history of degenerative MVR with left atrial enlargement, adding to diagnostic complexity. Spontaneous renal artery dissection, and aneurysms leading to renal infarction is well documented in vEDS. While renal artery stenoses were noted, no obvious arterial aneurysm or dissection was noted radiographically in our patient. Revealing the underlying thrombotic etiology is paramount as long-term anticoagulation is relatively contraindicated in vEDS due to its increased risk of arterial rupture. Due to the rarity of vEDS, optimal management is yet to be determined, but beta-blockers have shown mortality benefit in small cohort studies. This case highlights a potential complication of vEDS, a rare disorder. Though reported in other case studies, renal infarctions in vEDS present rarely and nonspecifically. The lack of knowledge and consensus in management of this complication calls for further investigation into the vEDS disease process, along with targeted screening and therapy to improve outcomes and longevity.

OHIO POSTER FINALIST - CLINICAL VIGNETTE Dipen Patel, MD

Unusual Presentation of Adult-Onset IgA Vasculitis as Upper Gastrointestinal Bleeding due to Vasculitis

Title

Unusual Presentation of Adult-Onset IgA Vasculitis as Upper Gastrointestinal Bleeding due to Vasculitis

Authors

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Introduction

IgA vasculitis, also known as Henoch-Schoenlein purpura (HSP), is a multi-system small vessel autoimmune disease. In adult HSP, systemic manifestations include non-destructive arthritis, renal derangement, abdominal pain, and a classic lower extremity palpable purpura. Rarely, life-threatening gastrointestinal side effects may occur, such as intussusception, bowel necrosis, bowel perforation, or destruction of the gastric mucosa. This may lead to significant hematemesis. Here, we present a case of an adult male with recurrent hematemesis as the initial presenting symptom of IgA vasculitis.

Case Presentation

An 18-year-old Caucasian male without any significant past medical history presented with a one-day history of hematemesis; Symptoms included meal-independent centralized, constant, non-radiating abdominal pain, diarrhea, fever (T-max 101 F), and chills. Two weeks prior to presentation, the patient had symptoms consistent with a viral upper respiratory infection (URI). One week after the URI, the patient noticed bilateral knee and ankle arthralgias which limited weight-bearing and ambulation. This was followed by a painless, purpuric, non-blanchable rash on the left ankle that extended proximally and bilaterally. The patient presented to the emergency department after experiencing recurrent hematemesis. In the emergency department, patient was afebrile and hemodynamically stable; physical exam was notable for anterior cervical lymphadenopathy, oropharyngeal edema, uvular petechiae, and

the palpable purpuric bilateral lower extremity rash. Notable labs on admission included WBC 10.8, hemoglobin 15.8, hematocrit 46.5%, platelets 243, creatinine 0.97, CRP 4.8. Urine dipstick was positive for trace hemoglobin and proteinuria. The following labs were within normal limits: ANA, cANCA, pANCA, C3, C4, HIV screen, and serum electrophoresis. Upper endoscopy showed non-bleeding erosive gastropathy, duodenal erosions, and erosive mucosal changes. Skin biopsy of the left leg showed leukocytoclastic vasculitis and deposition of IgA and fibrin within the walls of the superficial dermal vessels. This confirmed the diagnosis of IgA vasculitis. The patient received IV methylprednisolone 500mg daily for three days. He then required two outpatient methylprednisolone infusions and was transitioned to prednisone taper in tandem with mycophenolate mofetil 1000mg BID due to relapse after initial treatment with steroids only. This regimen was maintained for three months, then it was tapered off gradually, and the patient remained in remission.

Discussion

IgA vasculitis should be included as a rare but significant differential diagnosis in adult patients who present with hematemesis. While HSP is often self-limited in pediatric populations, adults with HSP may suffer devastating, irreversible consequences if their symptoms are not properly identified or promptly treated. Adults with HSP should be screened for renal involvement and evaluated for serious GI manifestations. Here, we present an unusual presentation of IgA vasculitis with upper Gastrointestinal bleeding.

OHIO POSTER FINALIST - CLINICAL VIGNETTE Srinivasa C Potla, MD

Cannot breath, too many Eosinophils! A rare case of Immune Checkpoint Inhibitor induced Acute Eosinophilic Pneumonia

Title

Cannot breath, too many Eosinophils! A rare case of Immune Checkpoint Inhibitor induced Acute Eosinophilic Pneumonia

Authors

Srinivasa Potla MD, Ishan Lilani MD, Akram Alkrekshi MD

Introduction

Immune checkpoint inhibitors (ICI) like ipilimumab and nivolumab lead the way in the treatment of various advanced and metastatic malignancies. These medications significantly affect progression-free and overall survival with better tolerability compared to conventional chemotherapy. With the future widespread use of these medications, clinicians need to be vigilant of the toxicities related to their use.

Case Presentation

Mr. M is a 63-year-old male with metastatic renal cell carcinoma treated with ipilimumab and nivolumab who presented to the emergency department with shortness of air and rash. The patient was recently admitted for pneumonia; he was hypoxic on room air with oxygen saturation of 70% and was started on four liters supplemental oxygen via nasal cannula. Physical examination showed rales in bilateral lung fields and maculo-reticular, non-pruritic erythematous rash on the entire trunk. He was found to have a leukocytosis with severe eosinophilia (absolute eosinophil count of 5.5 cells/uL), hyponatremia, and lactic acidosis. Chest x-ray showed bilateral interstitial perihilar densities with abnormal extensive pleural based density in the left hemithorax. CT chest with contrast showed extensive diffuse bilateral ground-glass opacities and consolidation ,right greater than left, with mediastinal and hilar lymphadenopathy. An echocardiogram showed moderate pulmonary hypertension with pulmonary artery systolic pressure of 50 mmHg. Treatment with broad spectrum antibiotics and 1mg/kg IV methylprednisolone was started. Bronchoscopy performed on hospital day 2 showed thick white secretions in the airway. Cell count from BAL fluid had eosinophil percent of 25%. Acid-fast stain, bacterial, mycobacterial, and fungal cultures were all negative. The patient was

continued on prednisone taper with the ultimate resolution of hypoxemia. Due to the temporal relation with drug administration along with clinical (rash, hypoxia, rales on physical exam), radiographic features (bilateral interstitial and ground-glass opacities) and eosinophilia (=25%) on BAL fluid and prompt resolution of symptoms with systemic corticosteroids support the diagnosis of eosinophilic pneumonitis due to ICI in the absence of other known drugs to cause eosinophilic lung disease.

Discussion

ICIs ipilimumab (cytotoxic T-lymphocyte-associated protein 4 inhibitor) in combination with nivolumab (programmed cell death protein 1) has recently been FDA approved for advanced/ metastatic renal cell carcinoma as an alternative first line therapy other than VEGFR tyrosine kinase inhibitor that was the primary treatment. However, the use of these medications is not without risk. They have a seven percent incidence of pneumonitis and a 30% incidence of rash. While immune-mediated pneumonitis is not uncommon, acute eosinophilic pneumonia is rare, with only a few case reports. It is prudent to entertain possibilities other than pneumonia in patients on ICI presenting with acute respiratory failure, consider BAL, and involve radiologist, oncologist, and pulmonologist in managing such patients as delay in treatment may have grave consequences. While the combination of ipilimumab and nivolumab has led to higher overall survival and response rate, treatment mediated toxicity should not be overlooked. Clinicians need to remain vigilant of the toxicities related to the use of checkpoint inhibitors as their use may become more widespread. 1,2

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OHIO POSTER FINALIST - CLINICAL VIGNETTE Balaj Rai

Spontaneous celiac artery aneurysm in a healthy young male

Title

Spontaneous celiac artery aneurysm in a healthy young male

Authors

Balaj Rai, MD; Spencer Wade DO; Joshua Peck MD

Introduction

Celiac artery aneurysms (CAA) are an uncommon form of splanchnic aneurysms, accounting for about 5.1% of cases, and typically effect older males with atherosclerotic disease. Aneurysmal rupture carries a mortality rate of 25-70% with a risk of rupture of 5% with aneurysms 15 mm-22 mm in diameter and a risk of rupture of 50-70% when an aneurysm is greater than 30mm. Etiology of CAA include atherosclerosis, infectious, trauma, segmental arterial mediolysis (SAM), etc. Below we present an unusual case of a spontaneous CAA in healthy young male with a negative rheumatologic workup and no history of atherosclerosis.

Case Presentation

A 39-year-old male without significant past medical history presented to the ED with five days of bilateral upper quadrant abdominal pain. Initial labs were unremarkable. A computerized tomography (CT) scan of the abdomen and pelvis with contrast was ordered, which showed a 1.1cm fusiform CAA with a short segment dissection flap, and abnormal wall thickening of the celiac, splenic and proximal common hepatic arteries suggestive of vasculitis. Labs showed mildly elevated C-reactive protein of 15.2 mg/L, erythrocyte sedimentation rate of 44 mm/hr, and total complement level >60 U/mL. With the presumptive diagnosis of vasculitis, the patient was started on bowel rest, intravenous methylprednisone and a heparin drip with resolution of his symptoms. The follow-up rheumatological workup for antibodies including antineutrophil cytoplasmic, proteinase 3, myeloperoxidase, anti-nuclear, mitochondrial, and smooth muscle were negative. The patient was started on aspirin 81mg daily, clopidogrel 75mg daily and a prednisone taper on discharge. The aneurysm was stable on repeat imaging one month later.

Discussion

This is an unusual case of a spontaneous CAA with dissection in an otherwise healthy young male. He was successfully treated with antiplatelet agents and steroids for an underlying vasculitis. CAAs can rupture into the peritoneal cavity thus urgent CT imaging with contrast enhancement in the arterial phase is essential if suspected. Furthermore, CAA can cause extrinsic compression of splenic vessels and hepatic or portal obstruction which can lead to end-organ infarction. Elective endovascular or surgical repair should be considered in low-risk patients with greater than 2 cm or rapidly expanding aneurysms. It is important to keep visceral artery aneurysm on the differential with patients presenting with abdominal pain as the consequences can be grave.

OHIO POSTER FINALIST - CLINICAL VIGNETTE Taha Sheikh, MBBS

Cannon Ball appearance that disappeared? a novel case of COVID-19 presentation with cannon ball appearance on imaging

Title

Cannon Ball appearance that disappeared? a novel case of COVID-19 presentation with cannon ball appearance on imaging

Authors

Taha Sheikh MD, Luke Tsai MD, Cameron Burmeister MD, Hina Shuja MBBS, Shamis Hasan MD, Praful Tewari MD, Ragheb Assaly MD

Introduction

COVID-19 diagnosis requires high suspicion with clinical presentation & imaging, where imaging plays key role in early decision-making before serology returns. The characteristic findings on CT include ground glass opacities, consolidation, crazy-paving pattern, and air bronchogram sign. We present a case of COVID-19 which misleadingly presented with cannon-ball appearance on imaging, causing a management dilemma.

Case Presentation

35-year-old with past medical history of type 1 Diabetes mellitus, Factor V Leiden deficiency, history of DVT (on warfarin) and recently treated osteomyelitis 3 months prior. He presented with altered mental status and respiratory distress. Denied fever, chills, cough, sore throat, recent travel or sick contacts. Non-alcoholic and non-smoker. He was treated 2 months prior for sepsis secondary to osteomyelitis of the foot. He did not have any respiratory problems and his chest xray was clear. On presentation patient was obese, afebrile, tachycardic, hypotensive 80/50mmHg, tachypneic, saturating 89% on room air. Chest exam revealed rhonchi and decreased breath sounds bilaterally. Labs showed leukocytosis 15,000, creatinine of 1.45, lactate 4.0. Troponin & BNP were negative while EKG showed sinus tachycardia. Oxygen saturation did not improve with oxygen. ABG showed worsening acidosis, PaO2 70, PaCO2 50. He developed grunting respirations and was intubated for airway protection and respiratory distress. Chest xray showed cannon-ball appearance in all lung fields bilaterally which was new compared to xray from prior admission. CT chest revealed prominent diffuse bilateral and rounded soft tissue densities, displayed throughout all lobes, but most prominent in the right

middle lobe and upper lobes. Patient was transferred to ICU. Procalcitonin was elevated, respiratory pathogen panel, streptococcus and legionella urine antigen were negative. However, patient tested positive for COVID-19. Pulmonary and Infectious disease services were consulted. Echo done for suspected septic emboli but was normal. TB, fungal cultures, autoimmune panel was also negative. ARDS was suspected secondary to COVID-19. He received Hydroxychloroquine for 5 days however little improvement was seen. Supportive therapy was continued with high PEEP 12 and FiO2 100%. Subsequent chest xrays showed gradual improvement with clearing of cannon ball opacities. Patient was extubated and follow-up chest xray showed near complete resolution. The patient continues to be in the hospital, recovering slowly but doing well.

Discussion

Cannon-ball appearance in radiology describes the presentation of multiple round, nodular opacities with well-defined borders, usually bilaterally. The most common cause of cannon-ball appearance is metastatic malignancy; however, other infectious diseases such as pulmonary tuberculosis, histoplasmosis, cryptococcosis, and nocardiosis can also present with granulomas that match this finding. Our case is the first to be reported with this finding and adds to the literature to identify this as a potential presentation to be cognizant of for COVID-19.

OHIO POSTER FINALIST - CLINICAL VIGNETTE Kaitlyn Spinella, DO

Patient with MEN1 and three co-occurring malignancies uncharacteristic of tumor syndrome

Title

Patient with MEN1 and three co-occurring malignancies uncharacteristic of tumor syndrome

Authors

Kaitlyn Spinella, DO; Resident, Department of Internal Medicine, The Christ Hospital, Cincinnati OH. Julie Specht, MD; Attending, Department of Hematology/Oncology, The Christ Hospital, Cincinnati OH.

Introduction

Multiple endocrine neoplasia type 1 (MEN1) is a genetic tumor syndrome classically associated with hyperparathyroidism, pancreatic neuroendocrine tumors, and pituitary adenomas. Patients also may present with thymic neuroendocrine tumors, fibroangiomas, and collagenomas. This case describes a patient with MEN1 who presented with three simultaneously occurring primary tumors, none of which are commonly associated with MEN1.

Case Presentation

A 68-year-old male was found to have elevated chromogranin A, glucagon, and gastrin levels after a routine annual follow-up appointment with his endocrinologist for MEN1. Past manifestations of MEN1 in this patient had been limited to hyperparathyroidism, which resolved after parathyroidectomy (23 years prior to this presentation). Patient was asymptomatic. Due to concern for a pancreatic neuroendocrine tumor as the source of the patient's abnormal labs, an abdominal CT with contrast, as well as an MRI with and without contrast were obtained. On this imaging, patient was found to have a 6-cm mass on the upper pole of the right kidney, concerning for a renal cell carcinoma. A chest CT with contrast was then obtained due to concern for lung metastases, a common site of metastases for renal cell carcinoma. A 1.2-cm pulmonary nodule with central gas-filled cavitation was identified in the right lower lobe. The kidney mass was first biopsied and was found to be a renal oncocytoma. Next, the pulmonary nodule was biopsied, revealing a lung adenocarcinoma. It was decided that treatment would be initiated for the adenocarcinoma. The patient's chromogranin A, glucagon, and gastrin levels continued to increase, despite no neuroendocrine tumor being

identified. Patient continued to be asymptomatic. A bronchoscopy was then performed primarily to biopsy lymph nodes to stage patient's adenocarcinoma. During the procedure a right upper lobe endobronchial lesion was identified. Biopsy of this confirmed a low-grade neuroendocrine tumor, providing explanation for patient's lab findings. Pathological studies found that the renal oncocytoma, lung adenocarcinoma, and lung neuroendocrine tumor all had differing morphology and immuno-profiles, confirming three primary tumors.

Discussion

This case illustrates the importance of complete investigation of tumors found, especially when approaching patients with genetic tumor syndromes. Although lung neuroendocrine tumors can rarely be found in patients with MEN1, lung adenocarcinoma and renal oncocytoma are both not known to be associated with MEN1. Prior to biopsy, the imaging obtained indicated a likely metastatic renal cell carcinoma; however, biopsy was able to identify three separate primaries that were all benign or early-stage, providing a drastically different prognosis for the patient.

OHIO POSTER FINALIST - CLINICAL VIGNETTE Ryan Stuart

COVID-19 Induced Stress (Takotsubo) Cardiomyopathy

Title

COVID-19 Induced Stress (Takotsubo) Cardiomyopathy

Authors

Ryan Stuart, MD, Aamir Pervez, DO, Lex Leonhardt, DO, Harold Duarte, MD Department of Internal Medicine, Kettering Medical Center, Kettering, OH

Introduction

Takotsubo Syndrome (TTS), first described in literature as early as 1982, is an acute reduction in left ventricular ejection fraction (LVEF) with apical ballooning and hypokinesis. This reduction usually is correlated with psychological or physiological stress, due to likely exaggerated sympathetic stimulation. During the recent pandemic there have been an estimated 64 million individuals infected with the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), which leads to coronavirus disease-19 (COVID-19). Globally there has been an estimated 1.5 million associated deaths. Symptoms typically include dyspnea, fever, chills, nausea, anosmia and patients can undergo respiratory decompensation acutely. Given the novelty of the disease there is currently limited data regarding subsequent sequela of the disease, however, recent case reports are emerging correlating TTS and patients with COVID-19.

Case Presentation

Our patient is a 72 y.o. female who presented to the hospital with a one week history of nausea, fatigue, dry nonproductive cough, bilateral pedal edema and generalized weakness. She had no known past medical history. On initial evaluation she presented with shock of unknown origin. EKG demonstrated anterior Q waves with incomplete left bundle branch block, newly diagnosed, with secondary changes. Initial high sensitivity troponin was significantly elevated. Bedside echocardiogram demonstrated apical ballooning and hypokinesis/akinesis with severely reduced LVEF (28%), consistent with Takotsubo cardiomyopathy. She denied any significant life stressors, recent deaths, or recent known illnesses. She was transferred to the ICU, initiated on pressors, anticoagulated and prepared for cardiac catheterization the following day. Per hospital protocol given the ongoing pandemic a SARS-CoV-2 screening PCR was obtained. She was subsequently found to be COVID-19 positive and transferred to an isolated unit. She was treated medically and improved over the course of her ten day hospitalization.

Two weeks following discharge she underwent left heart catheterization which demonstrated normalized LVEF (55%). She reported resolution of all symptoms that were present on admission.

Discussion

Prior to the COVID-19 pandemic it was well established that individuals under stress, individuals with hormonal dysregulation, and post-menopausal women were at higher risk of developing TTS. Although the mechanism is not well characterized, it is currently hypothesized that TTS is caused by an acute catecholamine surge associated with emotional and physical stress. It is thought that direct toxicity by catecholamines is responsible for myocardial stunning and dysfunction. Individuals infected with SARS-CoV-2 who develop COVID-19 have been shown to have increased cytokines and systemic inflammation. These inflammatory markers include elevated CRP, ESR, Procalcitonin, IL-6, and ferritin. Given the correlation between COVID-19, elevated inflammatory markers, and catecholamines, it is likely that the SARS-CoV-2 infection was the driving force behind the development of TTS in our patient. This is corroborated by multiple recently published reports with similar findings.

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OHIO POSTER FINALIST - CLINICAL VIGNETTE Nataly V Torrejon

Granulicatella Abiotropha endocarditis presenting as a late diagnosis in a patient with Hypertrophic Cardiomyopathy

Title

Granulicatella Abiotropha endocarditis presenting as a late diagnosis in a patient with Hypertrophic Cardiomyopathy

Authors

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Introduction

Nutritionally variant streptococci (NVS) are responsible for 3-5% of all streptococci endocarditis [1], its indolent course can pose a diagnostic challenge. Here, we report a case of infectious endocarditis (IE) due to Granulicatella Abiotropha in a patient with Hypertrophic Cardiomyopathy (HCM)

Case Presentation

A 75-year-old female with a past medical history significant for hypertension, hyperlipidemia, hypertrophic cardiomyopathy (HCM) with LVOT (left ventricular outflow tract) obstruction, mitral valve regurgitation, and iron deficiency anemia presented as a transfer from an outside hospital due to 2 months of progressive dyspnea on exertion, fatigue and lower extremity edema. Before transfer, she was found to be anemic with a hemoglobin of 7.2 g/dL. Patient underwent upper and lower endoscopy, which revealed erosive gastritis and diverticulosis. After receiving transfusions and intravenous (IV) iron, her anemia improved but she continued to deteriorate with worsening shortness of breath and worsening lower extremity edema. Upon admission to our institution, the patient was afebrile and normotensive. Physical exam was significant for jugular venous pressure 2-3 cm above the sternal notch, bibasilar crackles, diastolic murmur in the aortic area, holosytolic murmur in the apex and bilateral pitting edema up to knees. Laboratory work-up revealed a hemoglobin 8.7 g/dL, platelets of 98 k/uL, white blood cell count of 8.9 K/uL. NT proBNP of 9787 pg/mL. Chest X-ray revealed patchy reticular opacities at the lung bases and mild enlargement of the cardiac silhouette. Transthoracic echocardiogram showed new severe acute aortic valve regurgitation with an echo density (not

present in echocardiogram 1 month prior), severe septal asymmetric left ventricular hypertrophy, and severe mitral valve regurgitation. In the setting of newly diagnosed severe aortic insufficiency, blood cultures were obtained and grew Granulicatella Abiotropha. CT abdomen showed splenic infarct. The patient underwent aortic and mitral valve repair along with septal myomectomy, she also received IV Vancomycin for 6 weeks (was found to be resistant to Ceftriaxone). Pathology revealed fibrinous vegetations in both mitral and aortic valves. Tissue culture confirmed IE due to Granulicatella.

Discussion

IE due to NVS carries higher rates of complications compared to other streptococci (heart failure rate 30%, embolism rate 30%[2], treatment failure in 40% of cases[1], 17% mortality rate[3]). This is due to its indolent nature and sub-acute presentation[1], which leads to delays in diagnosis and therapy initiation[1]. Classical peripheral findings of IE are absent[3] and the most commonly affected valves are the aortic and mitral valves[4]. In our case, new acute aortic insufficiency led us to the diagnosis of endocarditis given that IE is the most common cause of acute aortic insufficiency. However, the patient had nonspecific symptoms for over 2 months; her diagnosis was delayed due to other comorbidities and low index of suspicion given lack of signs of infection. It is also important to recognize that patients with HCM are at risk of IE due to endocardial disruption by turbulent blood flow[5]. It is important to keep IE on the differential in patients with HCM with new valvular abnormalities and changes in clinical condition.

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OHIO POSTER FINALIST - CLINICAL VIGNETTE Naveen Vuppuluri

Aerococcus urinae: A Unique Case of Infective Endocarditis with Multiple Adverse Sequelae

Title

Aerococcus urinae: A Unique Case of Infective Endocarditis with Multiple Adverse Sequelae

Authors

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Introduction

Aerococcus urinae is a rare cause of urinary tract infections in elderly males with urinary tract pathology. Recently, A. urinae has been associated with infections such as bacteremia and infective endocarditis (IE). We describe a case of a middle-aged male with A. urinae urosepsis, complicated by aortic valve endocarditis, resulting in complete heart block and multi-territory strokes.

Case Presentation

A 58-year-old male with history of BPH and penicillin anaphylaxis presented with fevers, chills, weakness, headaches and blurry vision. Physical exam revealed a new 3/6 murmur, left homonymous hemianopia, and 3/5 strength in left upper and lower extremities. Labs revealed

leukocytosis of 19,300, elevated procalcitonin, and urinalysis consistent with UTI. CT abdomen showed right hydronephrosis and a right renal pelvic stone (16mm). Empiric IV meropenem, vancomycin and gentamicin were initiated for urosepsis. EKG revealed first degree AV block (figure 1). MRI brain indicated scattered acute to subacute infarcts throughout bilateral cerebral hemispheres (figure 2). TTE revealed a bicuspid aortic valve vegetation with non-coronary cusp perforation causing an aortic root abscess and severe aortic stenosis. After several hours, EKG revealed complete AV dissociation (figure 3). TEE revealed an aortic root abscess with a fistula through the abscess cavity located near the membranous septum (figures 4, 5). He underwent aortic root replacement with coronary reimplantation and aortic valve replacement. Blood cultures and aortic valve tissue grew A. urinae. IV vancomycin and gentamicin were continued for six weeks. A permanent dual-chamber pacemaker was inserted for persistent complete heart block.

1.

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5.

Discussion

This case highlights the pathogenesis of A. urinae and its ability to act opportunistically to cause multiple systemic pathology. This case is unique because we describe the first case of A. urinae aortic valve vegetation with aortic root abscess and cerebral septic embolization. It is believed that native cardiac valves are targeted by A. urinae as in-vivo fluorescence in-situ hybridization studies have identified its ability to form extensive biofilms in this setting[5,9]. These

biofilms can trigger platelet aggregation and increase the risk for thrombosis. These factors contributed to valvular destruction and septic emboli in our patient. This pathogenesis is likely enhanced in those with valvular pathology and we believe our patient's bicuspid aortic valve made him highly susceptible to A. urinae IE.

Furthermore, no prior case describes the development of first degree AV block with progression to complete heart block. This stems from direct invasion of the abscess into the atrial septum, interrupting the native conduction system[2]. Unfortunately, our patient did not recover AV synchrony post-operatively and required a permanent dual chamber pacemaker.

Our case highlights the risks of A. urinae IE. Patients with known valvular dysfunction and urinary pathology should be observed for fevers, new murmurs, focal deficits, etc. It is important we keep this pathogen on the differential should any warning symptoms arise as prompt recognition and escalated therapy are prudent. This case reveals the infectious potential of Aeroccocus urinae and highlights the array of systemic disease it can present with.

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OHIO POSTER FINALIST - CLINICAL VIGNETTE Spencer Wade, DO

Hemophagocytic lymphohistiocytosis caused by Acute Legionella Infection

Title

Hemophagocytic lymphohistiocytosis caused by Acute Legionella Infection

Authors

Spencer Wade DO, Balaj Rai MD

Introduction

Hemophagocytic lymphohistiocytosis (HLH) is a life-threatening condition which can be triggered by infections and present with multiorgan failure due to overactive immune responses. HLH diagnosis is made by fulfilling five out of eight of the following criteria: fever; splenomegaly; bicytopenia; hypertriglyceridemia and/or fibrinogen 500 ng/mL (but typically >3000 ng/mL); elevated CD25 (soluble 1L-2 receptor). Below we present an atypical case of HLH associated with an acute legionella infection.

Case Presentation

A 34-year-old male without any significant past medical history presented with five days of weakness, diarrhea, body aches, and low-grade fevers. Physical exam was benign. Labs were significant for sodium 127 mmol/L, creatinine 13.67 mg/dL(baseline creatinine 0.8mg/dL), WBC 31000 10x3/uL, procalcitonin 4.67 ng/mL, haptoglobin 48 mg/dL, lactate dehydrogenase (LDH) 1483 U/L, ferritin > 25000 ng/mL(Reference range 20-250 ng/mL). Initial computerized topography (CT) scan of the chest revealed left upper lung and lingular dense infiltrate. Empiric antibiotics were started. The patient's renal failure was likely due to volume depletion and nonsteroidal anti-inflammatory use with resulting hyponatremia. Initial treatment was lactated ringers. A kidney biopsy was obtained and exhibited infiltrative plasma cells in the interstitium concerning for a lymphoproliferative disorder. Labs indicated ongoing hemolysis with low haptoglobin, high LDH, and down-trending hemoglobin to 7.5 g/dL. Ferritin remained elevated > 25000. Coombs test was negative. Due to the kidney biopsy showing plasma cells and his continued hemolysis, the patient was worked-up for HLH. HLH labs were significant for Soluble IL2 receptor 6502 pg/mL (Reference range 532-1891pg/mL). Absolute NK cell level was normal at 171 cells/uL(Reference range 70-760 cells/uL). A subsequent bone marrow biopsy showed normocellular bone marrow and rare hemophagocytic cells. A legionella antigen was positive.

The antibiotics were switched to ciprofloxacin and the patient was started dexamethasone. Malignancy labs including serum protein electrophoresis and serum immunofixation exhibited no evidence of monoclonal gammopathy/myeloma. The combination of steroids and antibiotics resulted in improvement of his kidney function, leukocytosis and hemolysis labs. The patient was discharged on a long steroid taper and oral antibiotics with resolution and remission of symptoms.

Discussion

HLH caused by infections is well documented in the literature however, there is very little information on legionella causing HLH. Common infections that cause HLH include Epstein-Barr virus, cytomegalovirus, parvovirus, herpes simplex virus, human immunodeficiency virus. While the mechanism of acquired HLH is not well understood its believed in the setting of certain infections that activated macrophages release excessive cytokines and natural killer cells/cytotoxic lymphocytes do not eliminate those macrophages(1). Activation of toll like receptors by intracellular pathogens that persist in histiocytes may give some explanation of infection associated HLH. A patient must meet 5/8 criteria to be diagnosed with HLH. The HLH-94 protocol guides treatment, which includes dexamethasone and etoposide with the addition of intrathecal methotrexate and hydrocortisone if there is central nervous system disease(2). Treatment goal is to prevent multi-organ failure from cytokine storm. HLH should be considered in the differential of patients with legionella if they are not improving on antibiotics, have prolonged fevers or cytopenia without cause.

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OHIO POSTER FINALIST - CLINICAL VIGNETTE Spencer Wade, DO

Elevated Anti-Factor Xa in a Patient with COVID19

Title

Elevated Anti-Factor Xa in a Patient with COVID19

Authors

Spencer Wade DO, Kirtan Patel DO, Eugene Chung MD, Balaj Rai MD

Introduction

COVID19 is associated with a hypercoagulable state, and may be treated with heparin, which can be monitored via anti-factor Xa level or activated partial thromboplastin time (aPTT). While there does not appear to be significant differences between the two methods regarding heparin dosing(1), our case suggests that with COVID19, aPTT rather than anti-factor Xa could be used to monitor anticoagulation.

Case Presentation

A 73-year-old male with a significant past medical history of ischemic cardiomyopathy status post CABG, heart failure with reduced ejection fraction of 35-40%, paroxysmal atrial fibrillation s/p cryoablation, presented to the emergency department with intermittent chest pain and shortness of breath. After being admitted he was found to be COVID19 positive. His troponin series was abnormal, rising from 3.95 ng/mL(reference range 0.00-0.03ng/mL) to an eventual peak of 32.28ng/mL. Because of COVID positive status, known complex coronary disease and high risk associated with any intervention, renal insufficiency, no clear ischemia on EKG, lack of new wall motion abnormality on echocardiogram, and intermittent nature of CAD relieved with nitroglycerine; angiography was deferred and patient started on heparin. Per protocol at our hospital, anti-factor Xa levels were followed. However, despite no treatment with heparin, anti-factor Xa levels continued to be > 2 IU/mL (reference range 0.30-0.70 IU/mL). Therefore, patient remained un-anticoagulated. While the patient was working with physical therapy, he became unresponsive and progressed to pulseless electrical activity arrest. During resuscitation attempt, due to concern for hypercoagulability from COVID19, tissue plasminogen activator (tPA) 100 mg was given, with return of spontaneous circulation (ROSC) shortly thereafter. Subsequent testing showed that despite very high anti-factor Xa levels, aPTT was only 45.5 seconds (reference range 23.1-37.6 seconds), indicating the patient was not adequately

anticoagulated. He was supported with multiple vasopressors and hypothermia protocol, but eventually succumbed to multiorgan failure and died < 12 hours later.

Discussion

COVID19 can cause a hypercoagulable state, possibly secondary to rapid development of cytokine storm. For hospitalized patients with COVID19, some form of anticoagulation should be initiated, with heparin drip being the preferred method in critically ill patients(2). In our case, the patient's anti-factor Xa level remained falsely elevated throughout hospitalization, resulting in withholding of anticoagulation. Considering the temporal relationship between tPA administration and return of ROSC, a pulmonary embolus or intracoronary thrombus remain high on the list of differential diagnoses. Based on the totality of this patient's clinical and laboratory picture, we recommend that COVID19 patients being treated with heparin should be monitored with both an aPTT and anti-factor Xa level for the first few days of admission. After 1-2 days, one may emerge as a more reliable measure of heparin effect and should be used to guide further medical management.

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Oregon Clinical Vignette Poster Finalist - Ayesha Khader

Title

Another Doxy-Deficient State

Authors

Ayesha Khader, BS; Rachel Westwood, MD; Jina Makadia, MD

Introduction

In the 1930s there were thought to be two spotted fever rickettsioses in southern Africa, one caused by Rickettsia conorii and the other unknown. Pijper was able to isolate the cause of the unknown rickettsial disease, however the isolate was lost. The idea of two rickettsioses fell out of favor and tick-bite fever became one entity[1,2]. In 1992 a patient presented in Zimbabwe, and PCR identified the isolate that Pijper had lost, confirming the presence of two pathogenic rickettsioses: *Rickettsia conorii*, the cause of Mediterranean spotted fever, and *Rickettsia africae*, the cause of African tick bite fever (ATBF)[2]. ATBF is an acute febrile illness transmitted by Amblyomma genus ticks (variegatum and habraeum) endemic to Sub-Saharan Africa and the eastern Caribbean[1].

Case Presentation

A 63-year-old male presented with three days of worsening left foot pain, redness and swelling, and two days of fevers, chills, night sweats, and nausea. He had returned the day prior from southern Africa. He had an erythematous, violaceous, and exquisitely tender left first metatarsal, with significant left lower extremity (LLE) edema. Laboratories were normal with a slightly elevated C-reactive protein (CRP) of 8.8. Plain films and venous ultrasound were unremarkable, and he was admitted for cellulitis and intravenous (IV) antibiotics. The erythema, swelling, and tenderness progressed and there was concern for arterio-embolic phenomena. So, he was anti-coagulated, transferred and admitted to the vascular surgery service at OHSU. There he was started on cefazolin and a heparin drip, and underwent extensive workup including a chest computed tomography (CT) angiography, transthoracic echocardiogram, LLE arterial duplex, pelvis CT angiography with run-off, and LLE CT, all of which were unremarkable. The erythematous and bullous rash continued to spread proximally. On day three of admission the CRP was 114 and therapy was broadened to IV Vancomycin, Zosyn, and Clindamycin. Blood, wound, and tissue cultures continued to show no growth. On day five doxycycline was started, and repeat CRP was 85. CRP downtrended to 40 and then 28 by day eight. Broad range PCR came back weeks later positive for *Rickettsia africae.*

Discussion

A number of zoonotic and atypical infections must be considered in the returning traveler with febrile illness and rash, such as malaria, trypanosomiasis, dengue, schistosomiasis, and Mediterranean spotted fever[1,2]. Estimates are that 13.7% of healthcare-seeking travelers returning from southern Africa have a diagnosis of spotted fever group rickettsia, with more than 99% of those caused by *Rickettsia africae* which results in ATBF[4]. Most patients will have single or multiple inoculation eschars[1,3], accompanied by headaches, myalgias, and regional lymphadenopathy[1]. Less common symptoms include a maculopapular or vesicular rash, subacute or chronic neuropathy, myocarditis, and aphthous stomatitis[3]. Elevated CRP, moderate lymphopenia, transaminitis, and thrombocytopenia are also associated with *Rickettsia africae*[4]. Diagnosis is best confirmed by PCR of an eschar biopsy, and treatment is doxycycline 100 mg twice daily for seven to ten days[1]. Clinicians should consider rickettsia in skin and soft tissue infections that do not respond to empiric therapy, especially in the returning traveler.

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OREGON POSTER FINALIST - CLINICAL VIGNETTE Julie Byler, DO

A Case of Rhabdomyolysis Following Recovery from Severe Covid-19 Infection

Title

A Case of Rhabdomyolysis Following Recovery from Severe Covid-19 Infection

Authors

Julie Byler, D.O. Rebecca Harrison, M.D., F.A.C.P.

Introduction

Rhabdomyolysis occurs when muscle injury leads to the release of muscle cell constituents into circulation, often leading to significant systemic complications including acute kidney injury. There are many different causes of rhabdomyolysis, and the etiology is often multifactorial or unclear. Determining the cause of rhabdomyolysis and identifying factors associated with it is vital for early recognition and treatment of this important clinical entity. It has been hypothesized that Covid-19 may cause both an acute viral myositis and a delayed muscle injury that have the potential to cause rhabdomyolysis, but there is still little known about the long term effects of Covid-19 on the musculoskeletal system.

Case Presentation

We present a case of a 67 year old woman with generalized weakness one week following her discharge from the hospital after a month long admission for severe Covid-19 infection requiring ICU admission and prolonged intubation. Her physical exam was notable for mild anterior thigh tenderness, symmetric weakness greatest in the proximal muscles of her lower extremities and normal sensation and reflexes. Labs showed an elevated CK (1775) and an acute kidney injury (Creatinine 8.1 from 1.59 a week prior) secondary to rhabdomyolysis. There was no history of trauma or of a non-traumatic exertional etiology of her rhabdomyolysis. The patient's home medications including her statin were held, but her CK continued to rise and she developed renal failure necessitating renal replacement therapy. She was treated empirically for autoimmune myositis with 60 mg of prednisone followed by 1,000 mg IV methylprednisolone but her CK remained elevated, peaking at 15,085. An autoimmune myositis panel was obtained and was negative. HMGCR antibody was also negative, ruling out statin associated necrotizing autoimmune myositis. MRI of her bilateral thighs showed diffuse myositis, and muscle biopsy demonstrated non-specific, pauci-immune muscle necrosis.

Ultimately, the patient's rhabdomyolysis was determined to be secondary to either a delayed critical illness myopathy from her recent prolonged hospitalization, a post viral myopathy from Covid-19, or a toxic myopathy from statin use. Her CK eventually down trended with supportive care, but she unfortunately continued to require hemodialysis on discharge.

Discussion

This case highlights the wide differential diagnosis of rhabdomyolysis and the work up of rhabdomyolysis of unclear etiology. It raises the possibility that rhabdomyolysis may be associated with severe Covid-19 infection and could potentially represent a late complication of infection that has not yet been fully described in the literature. A few case reports have been published that suggest this association, but more data is needed. Clinicians should be aware of the possibility that severe Covid-19 infection may be associated with both an acute muscle injury and a post viral myopathy and should therefore be part of the clinician's differential diagnoses of these presentations.

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OREGON POSTER FINALIST - CLINICAL VIGNETTE Olesya Petrenko, DO

Double the Battle: Checkpoint Inhibitor Associated Endocrine Toxicities – 2 Cases of Irreversible Endocrinopathies in Patients Already Fighting Metastatic Cancer.

Title

Double the Battle: Checkpoint Inhibitor Associated Endocrine Toxicities – 2 Cases of Irreversible Endocrinopathies in Patients Already Fighting Metastatic Cancer.

Authors

Olesya Petrenko, D.O., & Nicholas L. Stucky, M.D.

Introduction

The emergence of cancer immunotherapy has revolutionized treatment of cancer and initiated a new era in the field of oncology. Since 2011, Immune Checkpoint Inhibitors (ICI) have been approved to treat patients with advanced solid and hematological malignancies and have had remarkable results. However, case reports of endocrine adverse events are increasingly reported and are negatively affecting patient's lives especially in the setting of cancer. Here we present two unique cases of rare endocrinopathies after the use of ICIs.

Case Presentation

A 47 year old male with metastatic melanoma presented with nausea, vomiting, polyuria, polydipsia of 5 days. Three weeks prior, he was started on nivolumab and ipilimumab. On presentation, he was tachycardic and tachypneic. Lab work was remarkable for a glucose of 676, Na 129, K 6.2, CO2 6, Cr 2.43 (baseline of 1.1) and beta-hydroxybutyrate of 11.7 with elevated HgA1c of 7.1%. DKA was diagnosed and fluids and insulin drip were started. Further work up revealed a normal cortisol level, TFTs and C-peptide

Discussion

ICIs are categorized as target programmed death-1 receptor inhibitors (PD-1) nivolumab, pembrolizumab, cemiplimab, programmed death-ligand 1 inhibitors (PDL1) atezolizumab, avelumab, durvalumab and cytotoxic T-lymphocyte associated protein-4 (CTLA-4) iplimumab. Immune checkpoint proteins are T-cell surface receptors that cause inhibition when they bind to their ligands to limit the immune response. Tumors manipulate these inhibitory pathways to

evade rejection. ICIs no longer halt the immune response and result in effective cancer treatment. However, a robust immune response can go on to attack healthy tissue resulting in endocrinopathies such as hypophysitis, hypo-or hyperthyroidism, DM or adrenal insufficiency. Overall, CTLA-4 Inhibitors caused the highest incidence of endocrine AEs. Pembrolizumab had the broadest spectrum of endocrine adverse events – most commonly hypothyroidism and hyperthyroidism and adrenal insufficiency. Thyroid dysfunction was the most common – often presenting as hyper or hypothyroidism, associated with anti-PD1 therapy or combination of anti-PD1 and anti CTLA-4. Adrenal insufficiency was associated with all agents but slightly more prevalent with ipilimumab alone or combined with nivolimab. Hypophysitis is more frequently seen on anti-CTLA4 therapy, affects 10% of patients, especially combination of ipilimumab and nivolimab. Acute hypocortisolemia or thyroid storm can be fatal if not identified acutely. Current guidelines recommend baseline screening with TFTs, morning cortisol and ACTH and screening monthly thereafter in patients on ICIs.

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OREGON POSTER FINALIST - CLINICAL VIGNETTE Tuan Pham

Takotsubo Cardiomyopathy as a Complication of COVID-19 Infection

Title

Takotsubo Cardiomyopathy as a Complication of COVID-19 Infection

Authors

Tuan Pham, MD, Jeffrey Youker, MD

Introduction

Takotsubo cardiomyopathy (TCM) is characterized by transient left ventricular dysfunction in the absence of significant obstructive coronary artery disease (CAD). It is thought to be due to a catecholamine surge leading to myocardial stunning and hyperdynamic contractility. In this case, TCM is potentially linked to coronavirus disease (COVID-19) as a cardiovascular complication.

Case Presentation

An 83-year-old woman with a past medical history of type 2 diabetes, chronic kidney disease stage 3, hypertension, and complete heart block status post pacemaker placement initially presented to us with a 3-day history of dyspnea, cough, and hemoptysis. Upon arrival, the patient was significantly hypoxic and required mechanical ventilation. Chest x-ray showed bilateral interstitial opacities. The patient tested positive for COVID-19. She was subsequently transferred to the intensive care unit for further management of shock and respiratory failure. Her initial troponin was 4.71 and EKG was significant for sinus tachycardia and left bundle branch block. Transthoracic echocardiogram (TTE) showed left ventricular ejection fraction (LVEF) of 25%, with akinetic mid and apical walls and hypercontractile basal walls. This pattern on TTE is classic for TCM, therefore a diagnosis of TCM was made. A coronary angiogram was considered to rule out obstructive CAD, but it was not completed due to the patient's tenuous condition. Her repeat TTE on day 5 of hospitalization showed modest improvement in LVEF to 30% which suggested a reversible process. Due to her significant apical hypokinesis, the patient was started on heparin to decrease the risk of left ventricular thrombus formation.

Over the course of this admission, the patient was started on remdesivir and dexamethasone. However, due to her worsening renal insufficiency, remdesivir was discontinued. Additionally,

she received convalescent plasma for her COVID-19 infection. Unfortunately, despite treatment, the patient continued to decompensate with evidence of multiorgan failure. She was transitioned to comfort care and passed away shortly after.

Discussion

Cardiovascular manifestations of COVID-19 include myocarditis, pericarditis, arrhythmia, ischemia, and heart failure. Current proposed mechanisms of action for COVID-19's cardiovascular complications include direct myocardial cell viral entry through the angiotensin converting enzyme 2 (ACE-2) receptor, myocardial oxygen mismatch, microangiopathy and notably, severe systemic inflammatory response (SIRS) and cytokine storm.

In this patient, TCM was a potential cardiac complication of COVID-19. Recent reports have suggested that patients with COVID-19 are associated with an increased level of inflammatory markers and cytokines resulting in a cytokine storm; most recent studies postulate that an IL-6 amplifier plays a significant role in this process. Additionally, reports have shown that patients with COVID-19 have markedly elevated levels of cortisol when compared to the general population. Since SIRS is commonly found in patients with TCM, it is reasonable to hypothesize that the resulting cytokine storm led to this patient's catecholamine surge and cortisol release. The combined effect of cortisol and catecholamine may exert a direct toxic effect to the myocardium leading to myocardial stunning and dysfunction, resulting in TCM. Therefore, even though further investigation is still needed, TCM should be considered a potential cardiac COVID-19 complication as it can lead to significant clinical deterioration.

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OREGON POSTER FINALIST - CLINICAL VIGNETTE Tuan Pham

A Rare Case of Spontaneous Coronary Artery Dissection in a Male Patient with Fibromuscular Dysplasia

Title

A Rare Case of Spontaneous Coronary Artery Dissection in a Male Patient with Fibromuscular Dysplasia

Authors

Tuan Pham, MD, Jeffrey Youker, MD

Introduction

Spontaneous coronary artery dissection (SCAD) is often an underdiagnosed cause of acute coronary syndrome and myocardial infarction and most often occurs in patients with few or no cardiovascular risk factors such as hypertension, hyperlipidemia, diabetes, and smoking. Additionally, SCAD is strongly associated with fibromuscular dysplasia (FMD) in the female population.

Case Presentation

A 55-year-old man with a past medical history of NSTEMI in 2005 and 2012 presented with chest pressure radiating to his left and right arm. Labs were significant for an elevated troponin of 1.35. Physical exam was normal. EKG was otherwise unremarkable. A transthoracic echocardiogram showed a left ventricular ejection fraction of 55% with apical hypokinesis. Coronary angiography showed diffuse severe stenosis (95%) of the right posterior descending artery with findings consistent with SCAD. Lesions in the left anterior descending and the obtuse marginal arteries from his previous NSTEMIs in 2005 and 2012 were consistent with SCAD and appeared to have resolved. Patient recovered well and was discharged on conservative medical management with aspirin and diltiazem. Patient previously reported an inability to tolerate beta-blockers and was substituted with diltiazem for its AV nodal blockade and vasodilator effect. Due to the patient's history of three NSTEMIs secondary to SCAD with no cardiovascular risk factors, FMD was considered in our differential. A full body CT angiogram was completed and showed a greater than 50% proximal stenosis of the celiac trunk and a small dissection flap of the distal right common iliac and proximal right external iliac artery. These

findings are consistent with FMD, based on criteria from the First International Consensus on the diagnosis and management of FMD.

Discussion

FMD-associated SCAD is a complication most commonly found in young women without significant CAD or risk factors and is often related to states of increased estrogen such as the peri-partum period or those undergoing hormone replacement therapy. Additionally, FMD has been shown to be associated with an increased risk for SCAD. Although the prevalence of SCAD in proportion to acute coronary syndrome cases is exceedingly low in men (0.07%), this is a rare case of a middle-aged man with radiographic evidence of FMD manifesting as SCAD. Typical management of SCAD includes the use of beta blockers, aspirin, and other anti-anginal therapy. Most experts suggest the use of aspirin for antiplatelet therapy; currently no data has shown to support the use of glycoprotein IIb/IIIa inhibitors in SCAD. Additionally, statin therapy is not recommended, as there is no association between statin use and the prevention of SCAD recurrence. Interventional managements such as percutaneous coronary intervention are associated with increased risks for complications and suboptimal outcomes. Therefore, conservative medical management is recommended in patients with SCAD as lesions spontaneously resolve in the majority of patients.

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OREGON POSTER FINALIST - CLINICAL VIGNETTE Brandon Temte

Navigating Uncertainty in a Critically Ill Patient

Title

Navigating Uncertainty in a Critically Ill Patient

Authors

Brandon Temte, DO and Amy Dechet, MD

Introduction

Aspergillus is a genus of mold species which is ubiquitous in nature and spores are routinely aerosolized and inhaled. Innate and cellular immune defenses prevent fungal growth and disease in immunocompetent individuals. However, immunocompromised patients are at risk of developing invasive aspergillosis which most commonly affects the pulmonary system but can disseminate to multiple organs. Diagnosis of invasive aspergillus is often difficult and frequently relies on the interpretation of non-invasive testing modalities. Early recognition and initiation of therapy is paramount due to the high rate of mortality.

Case Presentation

Patient is a 59 year old female with a history of alcohol abuse. She was recently admitted three weeks earlier for acute alcoholic hepatitis and was started on prednisolone. On the day of admission, she was found to have acute encephalopathy followed by a new onset seizure. In the ER, vital signs were stable, and the patient was jaundiced and obtunded. Chest X-ray showed patchy infiltrates bilaterally. Head CT showed multiple small white matter foci in the left frontal lobe and parietal lobe. She was admitted to the ICU and required intubation for airway protection. Broad spectrum antibiotics were initiated. MRI showed T2/FLAIR hyperintense lesions in the frontal and parietal regions in a scattered distribution. TTE and TEE were negative for vegetations. Blood cultures had no growth. Respiratory cultures eventually grew aspergillus. CT of the chest showed worsening multifocal opacities with a small left lower lobe abscess. Repeat MRI showed increase size and number of cerebral lesions. IV voriconazole was initiated following repeat imaging findings. Serum galactomannan and beta-D-glucan were obtained following sputum culture results and returned positive. Due to patient's poor prognosis she was transitioned to comfort care after discussion with family. Autopsy later

revealed multiple CNS fungal abscesses with leptomeningeal extension, consistent with disseminated aspergillosis involving the CNS.

Discussion

Invasive aspergillosis is characterized by invasion of hyphae across tissue planes and tends to occur in individuals with prolonged neutropenia, transplant recipients, and severe immunocompromise. Steroid use and liver disease are less well recognized risk factors for aspergillosis. Steroids can predispose patients to invasive disease by interfering with macrophage function, even during a short course. Pulmonary manifestations are most common, although disseminated disease can occur following angioinvasion of hyphae and involve multiple organ systems such as the CNS, which carries a high mortality rate. CNS Aspergillosis often presents with non-specific neurologic findings and definitive diagnosis is difficult as biopsy is not typically feasible thus treatment is often delayed. Knowledge of how to effectively utilize non-invasive testing modalities such as serum biomarkers (beta-D-glucan and galactomannan), radiographic characteristics, and cultures is vital to prescribing appropriate therapy with voriconazole in a timely fashion.

PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Smriti Bhatia, MBBS

Papillary Fibroelastoma: A Cause of Cardioembolic Stroke

Title

Papillary Fibroelastoma: A Cause of Cardioembolic Stroke

Authors

Smriti Bhatia Sonela Skenderi Stanislav Naydin Charles Geller

Introduction

Primary tumors of the heart are rare. Based upon the data of 22 large autopsy series, the frequency of primary cardiac tumors is approximately 0.02%--corresponding to 200 tumors in 1 million autopsies [1]. Papillary fibroelastoma is the second most common primary tumor of the heart and most commonly involves the cardiac valves. Multiple papillary fibroelastomas are extremely rare[2]. We report a case with multiple papillary fibroelastomas which caused multiple strokes.

Case Presentation

A 53 year old Hispanic male with past medical history of diverticulitis, dyslipidemia, non-insulin-dependent diabetes mellitus was admitted with left-sided facial and upper extremity numbness for 3 days. He mentioned similar symptoms 1 month prior with left-sided weakness for 30 minutes with spontaneous resolution. Neurology was consulted. CT scan of the brain revealed subtle 10 mm focus of hypodensity at the right frontal convexity. MRI of the brain revealed mild periventricular hypodensity representing small ischemic change with tiny subcortical lacunar infarcts and areas of increased T2 and flair signal in the cortex of the right fronto-parietal convexity which showed restricted diffusion- indicative of several previous ischemic events in multiple vascular distributions, concerning for central etiology of stroke. Transesophageal echocardiogram(TEE) was obtained for central etiology of stroke per cardiology recommendations. TEE revealed multiple aortic masses, largest being 1 cm with differential of vegetation or myxoma. While inpatient, he had 2 additional episodes of TIA. The patient needed to be heparinized until surgical resection by cardiothoracic surgery. Intraoperatively, he was found to have a 7 x 7 mm soft friable mass on the right coronary leaflet and another approximately 1 mm similar-appearing masses found on the undersurface of the right leaflet, the surface of the non-coronary leaflet, and the underside of the non-coronary leaflet, total of 6

masses. On pathology report 4/6 aortic valve masses were diagnosed as papillary fibroelastoma, 1 was diagnosed as valve tissue with fibromyxoid change, and 1 insufficient for diagnosis.

Discussion

The frequency of embolism is equivalent even if papillary fibroelastoma is attached to the frequency of to either side of the Aortic Valve [3]. Surgical treatment is usually indicated especially for aortic fibroelastoma because of the high associated risk of cerebrovascular and chest diseases[4]. The recent evolution of echocardiography will promote the chance of establishing a preoperative diagnosis of this lesion. However, it is not possible to differentiate fibroelastoma from other lesions, including malignancies, by echocardiography alone. Surgery is recommended for patients who have had embolic events or complications directly related to tumor mobility and those with highly mobile or large (=1 cm) tumors. Recurrence of cardiac papillary fibroelastoma following surgical resection has not been reported[5]. In this case, there were no reported symptoms even 18 months after surgical intervention. This case also emphasizes the importance of multidisciplinary approach for the diagnosis and management of papillary fibroelastoma.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Jesse A Calestine

The Strength of Clinical Judgement; Discerning Cardiac Tamponade in a Case of Purulent Pericarditis

Title

The Strength of Clinical Judgement; Discerning Cardiac Tamponade in a Case of Purulent Pericarditis

Authors

Jesse A. Calestine, D.O., Geisinger Medical Center Steven A. Jacobs, D.O., Geisinger Medical Center Gregory Yost, D.O., Geisinger Medical Center

Introduction

The association between Streptococcus anguinosus (S. anguinosus) and purulent pericarditis is rare and can lead to cardiac tamponade. The presence of S. anguinosus as a primary organism causing purulent pericarditis is scarce in the literature. Delayed diagnosis and time to treatment can lead to a fibrinous network forging constrictive pericarditis and ultimately increased mortality.

Case Presentation

A 59-year-old male with newly diagnosed Metastatic Squamous Cell Carcinoma (SCC) of the left maxillary gingiva presented with sudden sharp chest pain one week post endobronchial ultrasound (EBUS). Electrocardiogram showed diffuse ST-segment elevations. He underwent emergent cardiac catheterization with no obstructive coronary disease. CT Angiogram showed no aortic dissection but revealed diffuse pericardial enhancement suggesting pericarditis. Bedside transthoracic echocardiogram (TTE) showed no definitive signs of cardiac tamponade physiology. The patient continued to decompensate despite conservative management (Aspirin and fluids), becoming profoundly hypotensive on maximum pressor support. Urgent pericardiocentesis was performed and yielded 550 mL of purulent fluid. Blood and pericardial fluid cultures yielded S. anginosus. Extensive imaging failed to show an additional source and it was determined that purulent pericarditis leading to clinical cardiac tamponade was the primary source.

Discussion

Despite pericardial effusion without obvious echocardiographic evidence of tamponade, the patient's clinical condition deteriorated with critical hypotension and lactic acidosis. An interdisciplinary judgement was made to perform urgent pericardiocentesis despite lack of definitive imaging evidence of tamponade. Pericardial drainage resulted in improvement of symptoms, hemodynamics, lactic acid levels and thus stabilizing the patient.

PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Jesse A Calestine

Investigations of a Metastatic Pancreatic Lesion

Title

Investigations of a Metastatic Pancreatic Lesion

Authors

Jesse A. Calestine, D.O., Geisinger Medical Center, Rajesh Kuppuraju, D.O., Geisinger Medical Center, Jamie Hood, D.O., Geisinger Medical Center

Introduction

Small cell lung cancer metastases to the pancreas, excluding direct invasion from close organs, are uncommon, accounting for fewer than 2% of cases of SCLC. The literature regarding jaundice as the initial presentation of a small cell lung carcinoma is limited

Case Presentation

An 85 year old gentleman with a 75 pack year smoking history initially presented to an outside hospital when his neighbor told him he looked "yellow". A CT scan of his abdomen showed a pancreatic head mass with marked intra- and extra-hepatic biliary ductal dilatation. . Patient had persistent and diffuse abdominal pain without peritoneal signs as well as pruritus of his back and shoulders. His total bilirubin level was 23, with persistently elevated direct bilirubin. CT of his chest, abdomen and pelvis demonstrated a 6 cm irregular soft tissue mass at the head of the pancreas, vascular abutment and ductal dilation. Also demonstrated were bulky retroperitoneal lymphadenopathy, a large 7 cm pleural based irregular soft tissue mass in the right upper lobe of the lung, and an additional satellite lesion in the right middle lobe. Subsequent endoscopic ultrasound and endoscopic retrograde cholangiopancreatography demonstrated common hepatic duct dilation. There was a common bile duct stricture, for which sphinctertotomy was performed and a stent was placed. Surprisingly, the pancreas and pancreatic duct appeared to be normal. A fine needle biopsy of the pancreatic head mass was performed, and pathology showed high-grade neuroendocrine carcinoma with small cell features. Biopsy of right lower lung mass confirmed a primary high grade neuroendocrine carcinoma of lung. The patient’s symptoms improved, and he was discharged from the hospital. In follow up, he and his family opted for palliative chemotherapy with carboplatin, etoposide, and atezolizumab due to the evidence for longer overall survival and progression-free survival.

Discussion

Our patient's presenting symptom was painless jaundice, which is usually a harbinger of biliary malignancy. Metastatic lesions of the pancreas comprise 3% of all small cell metastatic lesions. SCLC is aggressive and is usually metastatic by the time of diagnosis. The patient's initial presentation and imaging findings suggested a common primary abdominal malignancy. After a normal appearing EUS of pancreas with biopsy and pancreatic duct, we began to investigate other sources of malignancy, leading to the discovery of a primary lung lesion. The importance of a differential diagnosis along with a thorough history are fundamentals of medical education that hold true in the evolution of patient care.

PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Ana Concha Chagime, MD

IMMIGRATION GONE AWRY: A case of graft versus host disease and pulmonary embolism leading to anoxic brain injury

Title

IMMIGRATION GONE AWRY: A case of graft versus host disease and pulmonary embolism leading to anoxic brain injury

Authors

Authors: Ana V Concha MD, Maria Ferrante MD, Mahesh Krishnamurthy MD

Introduction

CD8 positive aggressive epidermotropic T-cell lymphoma is a rare and poorly characterized condition so much so it remains a provisional entity in the latest World Health Organization 2016 classification of cutaneous lymphomas. Allogeneic hematopoietic stem-cell transplantation (SCT) is a curative therapy for hematological malignancies but can be complicated by Graft-versus-host disease (GVHD). This case is unique because the patient in addition to having a rare hematologic malignancy, developed Graft-versus-host disease after bone marrow transplantation, bilateral DVTs with massive pulmonary embolism, cardiac arrest, and suffered an anoxic brain injury.

Case Presentation

A 47-year male was admitted after suffering an out-of-hospital cardiac arrest with pulseless electrical activity. Despite cardiopulmonary resuscitation, unfortunately, he suffered an anoxic brain injury. Cardiac catheterization showed clean coronaries. He was found to have a massive pulmonary embolism (PE) and diffuse venous thromboembolism (VTE). His past medical history was significant for a diagnosis of CD8 aggressive epidermotropic T-cell lymphoma (Ketron-Goodman disease), which was in remission after 5 cycles with R-EPOCH, total body irradiation, and allogeneic stem cell transplantation. However, he developed persistent diarrhea and was diagnosed with Graft versus Host disease (GVHD) and subsequently started on sirolimus, ruxolitinib, budesonide, and prednisone. Given that he was having diarrhea as a manifestation of his GVHD, he was advised to drink plenty of fluids and keep himself well-hydrated. His job required frequent travel and his wife reported his poor compliance with hydration. The diffuse thrombosis was attributed to severe dehydration from persistent diarrhea and inflammation

both secondary to GVHD. The patient's hospital course was complicated by sepsis, acidosis, acute kidney injury, and upper gastrointestinal bleed from an esophageal ulcer. He was treated with guarded anticoagulation, inferior vena cava filter, hemodialysis, tracheostomy, and PEG tube placement and is in long term rehab with some marginal recovery in his brain functions

Discussion

Ketron Goodman disease is a rare and aggressive cutaneous cancer. Allogeneic hematopoietic stem-cell transplantation (HSCT) is considered a curative therapy. VTE and GVHD are common complications of hematopoietic stem cell transplantation (HSCT). The relation between venous thromboembolism and cancer is well known, but the incidence and risk factors after allogeneic HSCT, presumptively a curative therapy for aggressive hematologic malignancies, is unclear. Logically one can assume that treating the underlying malignancy with allogeneic HSCT can reduce the risk of VTE, however, some studies report that the incidence of VTE post-HSCT remains high. GVHD does induce a pro-inflammatory state which likely makes patients more prone to VTE. Pulmonary embolism causes 2–9% of all out-of-hospital cardiac arrests, however, this is likely an underestimate. Up to 30% of patients have no underlying risk factors. Most individuals that presented with cardiac arrest following pulmonary embolism had not complained of preceding symptoms. Adequate hydration must be stressed in all patients with GVHD. Though prophylactic anticoagulation is not currently recommended in GVHD patients post-HSCT, our case perhaps opens the door for a discussion on this topic.

PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Biren J Desai

The Clot Thickens: A Case of Acute Kidney Injury with an Incidental Renal Artery Thrombosis

Title

The Clot Thickens: A Case of Acute Kidney Injury with an Incidental Renal Artery Thrombosis

Authors

Biren Desai, DO 1; Amelia Morgan, DO 1; Lauren DiMarino, DO 2 Geisinger Medical Center, Danville, PA 1. Department of Internal Medicine-Pediatrics; 2. Department of Internal Medicine

Introduction

Renal artery thrombosis (RAT) is an uncommon cause of acute kidney injury (AKI) given a clinical incidence reported as low as 0.01% [4]. Etiologies range from straightforward traumatic injury to the often more convoluted diagnoses of embolism, thrombosis or hypercoagulable state [1, 2, 3, 6]. Timely treatment decisions are vital as delaying treatment decisions may directly impact renal recovery as time to thrombectomy can be associated with worse outcomes [5].

Case Presentation

A 51-year-old Caucasian male presented to the Emergency Department with acute right flank pain and one day of anuria. His medical history was significant for tobacco abuse, controlled HTN (on lisinopril), and nephrolithiasis; he had no known history of underlying renal dysfunction. Upon evaluation, he was diagnosed with hypertensive crisis and AKI with systolic BP over 220 mmHg and creatinine of 9.7 mg/dL, respectively. A non-contrast CT scan was notable for previously unknown left renal atrophy and perinephric stranding. By hospital day 3, he continued to remain anuric with difficult to control BP. Renal duplex demonstrated greater than 60% stenosis in the right renal artery. Hemodialysis (HD) was initiated and a renal biopsy was performed revealing severe arteriosclerosis without immune complex disease. Due to elevated BP's and high-grade renal artery stenosis in the setting of an atrophic kidney, revascularization was pursued. On hospital day 6, during intervention, an occlusive thrombus was discovered in the right renal artery; mechanical thrombectomy was performed with placement of an arterial stent. Incidentally, a right iliac artery occlusion was noted for which treatment was deferred. Following intervention, HD was no longer required due to renal

recovery. Given the thrombus was potentially embolic in origin, cardiac and hypercoagulable workups were pursued. Systemic anticoagulation was initiated and he was discharged home on hospital day 9 off HD with a creatinine of 2.6 mg/dL. The patient's hypercoagulability workup was initially remarkable for elevated homocysteine levels and Bence-Jones proteinuria; however, repeat testing demonstrated normalization of blood and urine abnormalities. It was ultimately determined the most likely etiology for the thrombus was luminal irregularities; however, he has been committed to lifelong anticoagulation as embolic etiologies could not be fully excluded. After six-months, his BP remains controlled on three agents and renal function has stabilized with a creatinine of 1.6 mg/dL.

Discussion

This patient's dramatic presentation was unique in that he required HD for AKI after experiencing unilateral RAT likely compounded by his atrophic left kidney. Despite thrombectomy occurring 6 days after presentation, his renal recovery was better than anticipated. Controversy exists as to the benefit of thrombectomy when the etiology is not fully known [7]. In this case, renal recovery and improved BP control favor thrombotic etiology as these outcomes can be anticipated after thrombectomy; however, an underlying vascular disorder or embolic event could not be fully excluded given the presence of his atrophic left kidney and iliac artery occlusion. Our patient's clinical course demonstrates the importance of considering early revascularization even in cases of RAT with difficult to determine etiologies.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Daniel Egan

A Rash By Any Other Name: A Case of Borderline Tuberculoid Leprosy Masquerading as Systemic Lupus Erythematosus.

Title

A Rash By Any Other Name: A Case of Borderline Tuberculoid Leprosy Masquerading as Systemic Lupus Erythematosus.

Authors

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Introduction

Leprosy, or Hansen's Disease, represents a wide clinical spectrum of diseases caused by either *Mycobacterium leprae* or *Mycobacterium lepromatosis*. This case illustrates the challenge in diagnosing Hansen's Disease and maintaining an appropriate index of suspicion with a thorough history and physical.

Case Presentation

A 53 year old gentleman with no past medical history presented to his primary care doctor with concerns of intermittent pain in his extremities and a salmon-colored rash on his left flank. He was having swelling and pain in his right index finger, left palm, and left wrist. He reported a 30 pound weight loss over the past three months and hair loss involving the area around his right knee. Additional history revealed that he had emigrated from Kenya two years prior. His skin exam showed an annular, erythematous plaque along his left flank, as well as hyperpigmentation along the medial aspect of both feet. He underwent an extensive workup, including a complete metabolic panel and blood count which were unremarkable. A rheumatologic panel showed positive antinuclear antibodies, elevated anti-RNP antibodies and SS-B antibodies. The patient's symptoms continued to worsen, including right-sided facial weakness, loss of taste, and numbness in his lower extremities. Prior to initiating treatment for

presumed Lupus via IVIG and high-dose steroids, he was referred to an infectious disease clinic. Given a suspicion for leprosy, he underwent a left foot skin biopsy, which was unremarkable. An additional right sural nerve biopsy showed endoneurial and perineurial inflammation with acid-fast bacilli on Fite Stain, consistent with Borderline Tuberculoid Leprosy. With assistance from the National Hansen's Disease Foundation, he was initiated on a multi-drug treatment regimen and his symptoms had gradually started to resolve upon follow-up visits.

Discussion

Neglected tropical diseases present a diagnostic challenge to providers. Hansen's Disease can present with many different cutaneous, soft tissue, and neurologic findings. These presentations revolve around the interplay between a host's cell-mediated immune response and the underlying mycobacterial infection (6). It is important to note that there have been cases in which leprosy has masqueraded as mixed connective tissue disease or autoimmune disease (1, 2, 4). With the progressive and sometimes waxing and waning symptoms, confusion can arise as to whether a patient has an underlying mycobacterial infection versus an ongoing lupus flare (1). Various antibodies have been found to be positive in patients with leprosy, including antinuclear antibodies (ANA), anti-neutrophil cytoplasmic antibodies (ANCA), rheumatoid factor (RF), and anti-cyclic citrullinated peptide antibodies (anti-CCP) (5). Our patient did have a positive ANA, though overall non-specific antibody panel. The National Hansen's Disease Program is a vital source of clinical support for both physicians and patients. They work to provide clinicians with assistance for managing leprosy patients, as well as providing informational, medication packets, and outreach to patients (3). As seen in this patient, Leprosy remains an important neglected tropical disease and making an accurate and definitive diagnosis often requires an intensive look at one's history, physical presentation, and maintaining an index of suspicion so as to not purely rely on laboratory values.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Seemal Faisal, MBBS MD

Psoas Abscess As First Sign Of Malignancy.

Title

Psoas Abscess As First Sign Of Malignancy.

Authors

Seemal Faisal, MD; Chen Rong Phang, MD; Pranali Pachika MD; Jonathan Arnold, MD

Introduction

Psoas abscess is a rare infectious disease and can present with vague clinical features, such as fever and back pain. It is classified as primary or secondary and is associated with various clinical conditions such as Crohn's disease, diverticulitis, appendicitis, vertebral osteomyelitis, urinary tract infection and endocarditis. Its insidious onset and occult nature, frequently causes diagnostic difficulty. We present a patient in whom psoas abscess was the first presentation of underlying colorectal cancer.

Case Presentation

A previously healthy 54-year-old African American woman with a history of chronic constipation and tobacco use disorder presented to the emergency department with a 3-day history of intermittent left lower quadrant (LLQ) cramping abdominal pain which radiated to her back and an associated 5-day history of fatigue. She had no prior colonoscopy. On presentation, patient was afebrile and hemodynamically stable. Her physical exam was notable for mild LLQ tenderness on deep palpation without rebound or guarding. Initial lab work was significant for a mild leukocytosis (WBC 10.8 with neutrophilic predominance) and a microcytic anemia (Hgb 7.4, MCV 76.4). Iron panel was suggestive of anemia of chronic disease (serum iron 16, total iron binding capacity 190, iron saturation 8%, ferritin 326). Her stool occult blood was negative. A non-contrast CT abdomen and pelvis showed acute colitis in her descending and sigmoid colon and a left psoas abscess. Her psoas abscess was drained surgically and grew gram positive rods, gram negative rods and anaerobes. A mixed culture suggested gastrointestinal or genitourinary etiology, hence, a flexible sigmoidoscopy was performed which showed a malignant appearing stricture in the sigmoid colon which was biopsied. Barium enema revealed a 6 cm segment of persistent narrowing at the junction of sigmoid and descending colon with associated mucosal irregularity and shouldering (apple-core lesion). Pathology report revealed

an invasive moderately differentiated adenocarcinoma of the colon. Patient underwent left colectomy followed by adjuvant chemotherapy. Patient was then discharged home in a stable condition with recommendations to repeat colonoscopy in 3 months for surveillance.

Discussion

This case illustrates the significance of recognizing atypical presentations of serious underlying diseases such as development of a secondary psoas abscess in the setting of an underlying colon cancer perforating into a psoas muscle. Hence, besides treating psoas abscess with antibiotics and incision and drainage, efforts should be made to identify the primary cause to catch the underlying disease as early as possible. A delay in diagnosis of conditions like cancer can lead to worse outcomes with increased rates of morbidity and mortality.

PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Seemal Faisal, MBBS MD

Not Just A Rash - A Case of Asymptomatic Neurosyphilis

Title

Not Just A Rash - A Case of Asymptomatic Neurosyphilis

Authors

Seemal Faisal, MD; Pranali Pachika, MD; Tariq Hassan, MD; Qistas Ahmad, MD; Jonathan Arnold, MD

Introduction

Neurosyphilis refers to infection of the central nervous system by Treponema pallidum, the spirochete causing syphilis. Traditionally, it was thought that neurosyphilis occurs only with later stages of syphilis, however, since the re-emergence of syphilis during the HIV epidemic it has become clear that neurosyphilis can co-occur with early stages of syphilis in both HIV infected and non-infected patients. Patients with poorly controlled HIV have a higher incidence of both asymptomatic and symptomatic neurosyphilis. We present a patient living with poorly-controlled HIV who was diagnosed with asymptomatic neurosyphilis at the time of syphilis diagnosis highlighting the importance of considering this investigation at the time of syphilis diagnosis.

Case Presentation

A 44-year man with history notable for illicit drug use (amphetamine, cocaine), poorly controlled HIV (CD4 count 387, HIV quantitative PCR with a viral load of 188,000) and anaphylaxis with penicillin use presented with a 1-day history of sore throat along with a 1-month history of a warm, diffuse, symmetric, non-pruritic, non-vesicular, maculopapular rash. His rash first developed on his trunk and gradually spread across his entire body involving the genital area and extremities, including his bilateral palms and soles. Mucosal surfaces were spared. He was alert and oriented to person, place and date. He had an unremarkable neurological exam without neck stiffness, gait abnormalities, vision or hearing problems. Pupillary response to light and accommodation was intact bilaterally. He tested positive for syphilis with elevated serum RPR (1:64) and reactive FTA-ABS. His HIV was poorly controlled with low peripheral blood CD4 + T cell count and detectable plasma HIV RNA. Because of this, he underwent lumbar puncture despite his lack of neurological symptoms. His central spinal

fluid (CSF) VDRL was reactive and a diagnosis of asymptomatic neurosyphilis was made. He underwent penicillin desensitization and was treated with intravenous penicillin with plans for a 14-day course.

Discussion

This case illustrates the significance of having a high clinical suspicion for neurosyphilis at the time of syphilis diagnosis and a low threshold for lumbar puncture and CSF analysis, especially in patients with poorly controlled HIV. While it is unknown whether diagnosing asymptomatic neurosyphilis changes outcomes in the era of antibiotics, treatment of neurosyphilis involves more intensive antibiotic therapy than syphilis without CNS involvement. In our patient's case, the initial plan was to treat the patient for secondary syphilis with a single dose of intramuscular penicillin G benzathine, however, once he was diagnosed with neurosyphilis his treatment plan was changed to intravenous penicillin for 14 days. Failure to treat asymptomatic neurosyphilis appropriately may result in progression to symptomatic neurosyphilis with serious consequences such as impairment in vision and hearing, stroke, general paresis or tabes dorsalis.

PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Maria Ferrante, MD

A Psychosocial Analysis of Differential Perceptions of Physicians, Residents and Nurses and Paramedical Staff during the COVID pandemic

Title

A Psychosocial Analysis of Differential Perceptions of Physicians, Residents and Nurses and Paramedical Staff during the COVID pandemic

Authors

Maria Ferrante Narla Gowtham Mahesh Krishnamurthy

Introduction

Medicine is in noble profession. During the COVID pandemic, healthcare workers are facing a dilemma. They are trying to balance the obligations as professionals with duties to their families with duties to their patients. The risk to healthcare workers from coronavirus is significant but somehow the risk of infecting family members because of exposure at the job is taking a psychological toll on many healthcare workers. With this background, we did a survey of physicians, nurses, paramedical staff and the residents in a community hospital in Eastern Pennsylvania. The purpose of our survey was to find out the impact of working during the COVID pandemic on various aspects of the healthcare workers' personal and professional lives. The study was done through Survey Monkey (online tool that can be accessed on smart devices), but if needed- a paper option with the same questions was also available to the participants.

Case Presentation

23.5% of physicians said that this spent less time with their families as compared to nurses 61%, residents 51.7% and paramedics 60%. Doctors were the least affected as they likely have the most autonomy regarding their work hours. Around 40% of doctors, nurses and residents said that treating patient infected with COVID negatively impacted the relationships with family and friends. In contrast, 60% of paramedical staff felt so. 32% of paramedical staff had a family member who was diagnosed with COVID and 44% of them had a spouse/ significant other lose job due to COVID (much more than the other groups. A surprising finding in our study was that 29.4% of doctors reported difficulty with paying bills compared to 20% of the nurses, 7.2% of that residence and 16% of the paramedics. This likely showed as that more earning power

seems to be correlated with more difficulty paying bills potentially due to increased financial obligations. 76.4% of the doctor reported decreased income in comparison to 43% for nurses, 46% for paramedical staff and no impact for residents. As patient load in physician practices and elective procedures decreased, doctors had a greater negative financial impact. An important aspect of this study is that across the board- doctors 41.2%, nurses 52.3%, residents 41.3% of paramedics 68% reported a decrease in motivation in the job. Doctors 64.7 % , Nurses 72.7% , Residents 65.5% and Paramedics 76% reported increased stress in their daily lives.

Discussion

Our study clearly shows that COVID pandemic had significant psychosocial impact on healthcare workers as evidenced by low motivation and high stress levels. Although this was a small study in a community hospital, the findings are likely to be similar at various other healthcare settings. This was aptly stated by Dr. Jauhar in the New York Times op-ed “Healthcare workers may be considered heroes during this pandemic; we do not want to be martyrs”.

PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Stefanie M Gallagher

Well Isn't That Swell? A Curious Case of Swollen Gums and Loose Stools

Title

Well Isn't That Swell? A Curious Case of Swollen Gums and Loose Stools

Authors

Stefanie Gallagher, DO, Billy Zhang, MD, and Ehren Dancy, MD

Introduction

?Acute necrotizing ulcerative gingivitis (ANUG), colloquially trench mouth or Vincent's angina, is an ulcerative disorder of the gingiva that involves interdental necrosis. Initially described in World War I Western Front soldiers, ANUG is associated with poor oral hygiene, nutritional deficiencies, smoking and immunocompromise. ANUG often occurs without specific trigger, presenting diagnostic uncertainty when coupled with systemic disease.

Case Presentation

A 25-year-old female with a past history of bipolar disorder, iron and vitamin B-12 deficiency, prior clostridium difficile infection (CDI) and salmonella enterocolitis presented with progressive, painful gingival edema for one week and inability to tolerate oral intake. She denied any recent dental procedures and maintained good oral hygiene. She denied smoking, drinking or drug use. Physical exam was notable for a protected airway, malodorous and extensive upper and lower gingival edema, intact dentition, non-edematous tongue, no tonsillar exudates, and no stridor. Vital signs notable for sinus tachycardia. Labs remarkable for leukocytosis and microcytic anemia. CT maxillofacial imaging demonstrated soft tissue edema in bilateral buccal spaces without enhancing fluid collections. She was fluid resuscitated, started on ampicillin-sulbactam and oral chlorhexidine rinses. Dentistry was consulted and diagnosed ANUG of unclear etiology. Her gingival edema and pain improved with treatment. On day three of admission, she developed acute-onset, diffuse abdominal pain and hematochezia. Vital signs and hemoglobin were stable. CT abdomen and pelvis showed nonspecific ileocolitis. Gastroenterology was consulted and recommended upper and lower endoscopy remarkable for erythematous mucosa in the entire ileum with denuded mucosa and ulceration. Pathology of the terminal ileum showed acute inflammation and ulceration without granulomas or definite crypt distortion. Additional investigative workup notable for negative HIV, tuberculosis, C.

difficile, and syphilis. Stool cultures, blood cultures, and stool ova/parasites showed no growth. IgG levels, tissue transglutaminase IgA, ANA, ACE and lithium levels were all within normal limits. Fecal calprotectin was elevated to 1,684. Ultimately, symptoms improved with supportive care with discharge on day five of hospitalization with planned periodontal and gastroenterology follow-up.

Discussion

ANUG is a rare disorder that can be localized or associated with underlying systemic pathology. Limited, retrospective cohort studies demonstrate an association between periodontal disease and inflammatory bowel disease (IBD) given shared immune system and microbiome interplay. We posit that this case highlights periodontal disease, ANUG specifically, as a possible harbinger for IBD. In addition, given the patient's history of prior salmonella and CDI, both of which have a known association with IBD, and nutritional deficiencies, her development of an IBD-like episode following ANUG is suggestive of significant gastrointestinal immune dysregulation. Given the limited literature on ANUG, this case demonstrates intersections between dentistry and medicine, and highlights the importance of the relationship between underlying gastrointestinal disorders and dental pathology.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Praveen Gangavarapu, MD

Recurrent fever secondary to Macrophage activation syndrome

Title

Recurrent fever secondary to Macrophage activation syndrome

Authors

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Introduction

Hemophagocytic lymphohistiocytosis (HLH) is a severe hyperinflammatory condition with unregulated immune activation. It has 2 forms, primary which is seen more in children are caused by genetic mutations, whereas the secondary form is an acquired condition which can be from infections, malignancies, and autoimmune diseases, which is seen more in adults. Secondary HLH from autoimmune disorders is called Macrophage activation syndrome (MAS). We present a patient with recurrent fevers who was diagnosed with MAS.

Case Presentation

41-year-old African American female with a history of Systemic lupus erythematosus (SLE) with antiphospholipid syndrome and cocaine abuse presents with acute onset of atypical chest pain, upper respiratory tract infection symptoms, myalgia, and arthralgia with an unremarkable physical examination. The labs were significant for urine drug screen positive for cocaine, elevated troponin, and D-dimer. Electrocardiogram showed new Q waves and T- wave inversion in lead III. Computerized tomography (CT) angiography was negative for pulmonary embolism. Her chest pain was diagnosed to be secondary to cocaine use which subsided in one day. She had recurrent fever and rash. Initially, it was thought to be secondary to lamotrigine, which was discontinued. The infectious workup was negative. However, she had low C3 and C4, elevated CRP, low fibrinogen of 142, hypertriglyceridemia of 589, pancytopenia (hemoglobin of 8.2 g/dl, leucopenia of 3000 and thrombocytopenia of 130,000), abnormal liver function tests (LFT) with highest values reaching alanine transaminase (ALT) of 425, aspartate transaminase (AST) of 2157, gamma-glutamyl transferase (GGT) of 517, alkaline phosphate (ALP) of 509 and normal total bilirubin. In view of recurrent fever, ferritin was obtained which was significantly elevated at approximately around 7800, which continued to peak around 15000. Macrophage activation

syndrome was diagnosed given her underlying history of SLE and laboratory abnormalities. She was started on high-dose pulse methylprednisolone followed by prednisone taper. The fever and her aforementioned laboratory findings improved with this treatment.

Discussion

In patients with recurrent fever and hyperferritinemia, one should also, consider HLH especially with a history of rheumatological disorders. Ferritin is an acute-phase reactant that can be seen elevated in infection, inflammation, and malignancy. The presence of hyperferritinemia with levels more than 2000 microgram/liter should raise the suspicion of MAS.? Our patient had recurrent fevers and given her underlying history of SLE and HLH probability scores of 98.5% MAS was diagnosed. Early recognition and diagnosis of MAS-HLH are essential for efficacious management. Ferritin level should be considered in patients with recurrent fevers without identifiable infections and malignancies.

PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Tariq Hassan, MD

Catastrophe following a catastrophe!

Title

Catastrophe following a catastrophe!

Authors

Tariq Hassan, MD; Pranali Pachika, MD; Jad Sallit, MD; Malik Ahmad, MD

Introduction

Catastrophic antiphospholipid syndrome (CAPS) is a severe manifestation of APS that leads to accelerated and widespread thrombosis and multi-organ failure. Almost 50% of the cases are due to underlying infections and the rest are seen after surgery, malignancy, or trauma.

Case Presentation

A 71-year-old female with ESRD on dialysis, remote history of provoked DVT/PE, and no history of intravenous drug use, came to the hospital with acute lower abdominal pain and was being managed for acute diverticulitis. Pertinent initial physical exam was remarkable for mild tenderness in the lower quadrants and warm and pink distal extremities with intact pulsations. On the third day of the hospital stay, she had sudden onset bluish of bluish discoloration of the left forefoot and left middle finger. Venous doppler revealed thromboembolism in the left popliteal and posterior tibial vein and thrombophlebitis of left upper extremity veins. Exhaustive initial testing to establish the etiology of hyper-coagulable state and skin necrosis, including workup for heparin-induced thrombocytopenia with thrombosis (negative serotonin release assay, heparin PF4 antibody), disseminated intravascular coagulation, and vasculitis was non-revealing. Transthoracic echocardiography was unremarkable for an embolic source, abdominal imaging negative for any other emboli, hepatitis B, C, and HIV was negative. and the patient endorsed no history of IV drug use. Her hospital course was complicated further due to the rapid progression of her pathology leading to ischemia of bilateral upper extremities, ears, buttocks, and abdominal perforation secondary to diverticulitis. Further clinical testing revealed results positive for anticardiolipin antibodies IgM, but negative for beta 2 glycoprotein IgG, IgM, IgA. A clinical diagnosis of APS was made and later based on the rapidity and sudden progression was changed to CAPS. She was treated in the critical care unit with plasma exchange therapy and high dose steroids with taper with improvement in her clinical status.

Discussion

CAPS is a quite rare but sinister pathology that is associated with significant morbidity and mortality. The common contenders for differentials in the hospital include disseminated intravascular coagulation, heparin-induced thrombocytopenia with thrombosis, and thrombotic microangiopathies. The mortality from it approaches 50% even with anticoagulation and immunosuppression. This makes it an absolute necessity to not only know about this disease but also familiarize with its presentation so an early diagnosis can be made, and management sought.

PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Naif Hindosh

A Double Edged Sword: A Case of Infliximab Associated Vasculitis

Title

A Double Edged Sword: A Case of Infliximab Associated Vasculitis

Authors

Naif Hindosh MD, James Kamau MD, Rand Hindosh MD, Emily Ernst MD, Dhanushya Amaratunga MD, Mark Scaccia MD, Richard Snyder DO. Department of Internal Medicine. St. Luke's University Health Network-Anderson Campus

Introduction

Tumor necrosis factor (TNF) is a proinflammatory cell signaling protein used in the induction of interleukin-1 and interleukin-6 as well as neutrophil activation. Infliximab (Remicade) is a monoclonal antibody that inactivates TNF alpha reducing its proinflammatory effects. This is beneficial in disease states with persistent inappropriate inflammation such as inflammatory bowel disease (IBD), rheumatoid arthritis (RA) and vasculitis. The paradox of immunosuppressive medications is the risk of significant immune-mediated side effects. We present a case of an Infliximab induced vasculitis.

Case Presentation

A 26-year-old male with a history of ulcerative colitis well controlled on infliximab for 5 years presented with a painful rash on his hands and neck of three days duration. On exam, he had an erythematous papular rash involving the whole face and posterior neck, a petechial rash involving the arms and legs, and tender erythematous nodules on both palms. There was no purulence or vesicular lesions noted. Vitals showed a temperature of 98.3 °F. pulse-108, BP-185/106, respiratory rate-18 and SpO2-96%. Initial labs, which included CBC and CMP, were only notable for WBC-12.38, K-3.2 and Cr-0.96. Further work up included IgA/M/G levels, ANA, anti-double stranded DNA, ESR, CRP, cryoglobulins, ANCA, HIV, VZV PCR, Viral Culture, Varicella IgM antibody and ASO titers. Apart from positive cryoglobulin and mildly elevated ESR and CRP, other blood workup was within normal limits. Punch biopsies of the skin lesions were obtained that showed a neutrophilic infiltrate with leukocytoclasia in the dermis, with many eosinophils, which supported an anti-TNF associated vasculitis and ruled out Sweet syndrome. Furthermore, tissue cultures showed no growth of organisms. Infliximab was held and patient started on

intravenous steroids with good response. He was discharged on an oral steroid taper with subsequent resolution of the rash.

Discussion

Despite its beneficial properties with vasculitis, medications that inhibit TNF have been paradoxically implicated as a cause of vasculitis. This may be due to the development of antibodies against the anti-TNF that form immune complexes, which are deposited on the vessel walls thus initiating the inflammatory cascade. However, anti-TNF induced vasculitis has been called into question because the conditions treated by anti-TNF are often associated with development of vasculitis. More studies are needed to look at the risk of vasculitis in patients with IBD treated with anti-TNF vs those treated with other agents. Until then, vasculitis associated with anti-TNF in IBD remains a rare but significant adverse effect that needs to be promptly recognized as about 50 percent of patients may develop systemic vasculitis with peripheral nerves and kidneys predominantly affected. This can be challenging as this form of vasculitis usually occurs 3-years after initiation of treatment which falls out of the scope of the "recent medication changes" window typically employed to screen for potential drug induced complications and can be easily mistaken for disease flare up with potentially grave consequences in the setting of continued treatment with the same agent.

PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Rand Hindosh

Extramedullary Plasmacytoma Associated with Clostridium Septicum Bacteremia in a Patient with Multiple Myeloma

Title

Extramedullary Plasmacytoma Associated with Clostridium Septicum Bacteremia in a Patient with Multiple Myeloma

Authors

Rand Hindosh MD, James Kamau MD, Krielle Pantino MD, Ifunanya Akusoba MD, Justin Psaila MD, Richard Snyder DO. Departments of Internal Medicine and Family Medicine. St Luke's University Health Network-Anderson Campus.

Introduction

Multiple myeloma (MM) is a plasma cell dyscrasia affecting the bone marrow. A plasmacytoma is a proliferation of plasma cells that can appear anywhere in the body. Clostridium septicum is a gram-positive anaerobe found in the intestines commonly associated with spontaneous infection and hematologic malignancies. We report a patient with MM who developed septicemia with findings concerning for liver abscess on imaging.

Case Presentation

A 57 y.o male with history of diabetes and MM on chemotherapy presented with fever and abdominal pain. He was treated for diverticulitis fifteen days prior. At that time, the patient was bacteremic with Clostridium septicum. He was treated with intravenous antibiotics and transitioned to an oral regimen at discharge. Two days prior to admission he developed worsening right-sided abdominal pain. Vitals were T 102.5 °F, HR 118/min, BP 174/81mmHg and RR 26/min with 95% O2 saturation on room air. On physical exam, he was distressed. Abdominal exam demonstrated mild right upper quadrant tenderness. Initial labs showed WBC 6280/uL, Hemoglobin 8.2 g/L, Na 128 mmol/L, K 4.2mmol/L, Cl 95mmo/L, CO2 26mmol/L, Cr 1.06mg/dL, Glucose 169mg/dL, AST 39U/L, ALT 15U/L, Alk phos 59, total bilirubin 0.88mg/dL, lactic acid 1.3 and procalcitonin 0.45. CT of the abdomen and pelvis showed a lesion in the dome of the liver measuring 4.5cm with a gas collection concerning for abscess or necrotic tumor. The patient was started on empiric antibiotics. Abdominal MRI demonstrated a dome lesion with a thick surrounding enhancing wall and extensive internal gas consistent with an

abscess, and persistent inflammatory changes in the sigmoid colon with potential pericolonic abscess, likely from diverticulitis. Blood cultures regrew Clostridium septicum, likely due to inadequate source control from the infected liver mass. The patient required operating room (OR) drainage and biopsy. A large loculated cavity was noted with no purulent material. OR cultures were negative. Biopsy of the mass showed plasma cell infiltrates suggestive of extramedullary plasmacytoma. Echocardiogram showed no vegetation. Repeat blood cultures were negative. He was transitioned to Augmentin to complete 2 week postoperative course of antibiotics.

Discussion

Clostridium septicum is part of the human gut flora. Disruption of the normal intestinal barrier allows for bacterial translocation into the bloodstream. Bacteremia may result in seeding of infection. Tumors that have outgrown their blood supply can create an anaerobic environment ideal for bacterial growth. Our patient likely had a superimposed infection of the extramedullary plasmacytoma with MRI findings consistent with a gas-producing organism that cleared before the biopsy was taken due to pre-operative antibiotic treatment. In patients with Clostridium septicum bacteremia and concomitant malignancy, abdominal imaging is warranted to exclude abscess formation. Treatment and prevention of recurrence is imperative as this infection has a high mortality rate.

PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Rand Hindosh

Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) Associated With Sulfasalazine Used for Linear IgA Disease

Title

Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) Associated With Sulfasalazine Used for Linear IgA Disease

Authors

Rand Hindosh MD, James Kamau MD, Dhanushya Amaratunga MD, Emily Ernst MD, Mark Scaccia MD, Richard Snyder DO. Department of Internal Medicine. St. Luke's University Health Network-Anderson Campus

Introduction

Drug reaction with eosinophilia and systemic symptoms (DRESS) is a rare drug-induced hypersensitivity reaction that occurs 2-8 weeks after initiation of the offending agent. Typical manifestations include skin rash, eosinophilia, atypical lymphocytosis, lymphadenopathy, and internal organ involvement. Sulfasalazine is an anti-inflammatory drug commonly used to treat inflammatory bowel disease and rheumatoid arthritis. We report a case of DRESS associated with sulfasalazine prescribed for linear IgA disease.

Case Presentation

A 59-year-old female with a history of linear IgA bullous dermatosis maintained on mycophenolic acid, prednisone and sulfasalazine who presented with generalized weakness and fever of 3 days duration. She has a history of methemoglobinemia related to Dapsone use. This was discontinued about 4 weeks prior due to shortness of breath and the patient was started on sulfasalazine. She was evaluated by her pulmonologist for this including an echocardiogram, which showed no evidence of pulmonary hypertension. Vitals showed BP-141/66, pulse-77, temp-100.8, RR-18, SpO2-99% on room air. Physical exam was unremarkable. Initial labs showed hemoglobin 8.4g/dL (baseline 8-9), platelet-294,000/uL, WBC-6720/uL ,9% eosinophils with an absolute count of 630/uL, AST-142U/L, ALT-79U/L, Alkaline phosphatase-134U/L and TSH-4.635. Sodium, chloride, potassium, bicarbonate, creatinine, calcium, glucose, total bilirubin and lactic acid were within normal limits. Influenza and RSV PCR was negative. Procalcitonin 0.48. UA showed moderate bacteria and leukocytes but no nitrites. Patient was

started on empiric antibiotic treatment for suspected UTI due to a relatively immunocompromised state although patient reported no urinary symptoms. She was admitted for further work up and management. Due to persistent intermittent fevers of 101-103 despite ongoing antibiotic treatment and, negative urine and blood cultures, infectious disease was consulted. Blood parasite smear was negative twice. Hepatitis panel, EBV/CMV and anaplasma studies were negative. Lower extremity venous duplex was negative. CT of the chest, abdomen and pelvis look for an occult infectious process was unrevealing. The patient developed a faint pruritic rash on her upper torso on the second day of admission and antibiotics discontinued. Patient was seen by Dermatology given her history of IgA linear bullous dermatosis and rash. Rheumatology was also consulted for a possible inflammatory or autoimmune etiology. After further discussion, patient diagnosed with DRESS with symptoms palliated by immunosuppressive medication. HHV 6 and 7 were negative. Fever, eosinophil count and liver function tests improved with stopping sulfasalazine.

Discussion

DRESS is a type IV mediated immune reaction. The skin contains a significant number of T cells, which would explain the consistent cutaneous clinical findings. A high index of clinical suspicion for DRESS should be maintained in patients' who are recently started on a new medication and present with persistent fevers and eosinophilia. This would allow for prompt withdrawal of offending agents and avoidance of new medications during the course of DRESS, especially the beta-lactam class of antibiotics, which may provoke severe reaction.

PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Alisha T Hossain

A Rare Case of a Plurihormonal Pituitary Adenoma

Title

A Rare Case of a Plurihormonal Pituitary Adenoma

Authors

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Introduction

Pituitary adenomas are usually benign tumors that arise from adenophypophyseal cells and produce one or two types of hormones. Plurihormonal adenomas are a rare subtype that produce two or more hormones and represent less than 1% of all pituitary adenomas. Patients with plurihormonal adenomas typically come to clinical attention on the basis of symptoms and abnormal biochemical tests. The gold standard of establishing a diagnosis is based on immunohistochemistry. We describe a case of a plurihormonal pituitary adenoma, involving multiple hormonal axes, that was highly suspected based on physical exam and biochemical investigation and ultimately confirmed through immunohistochemistry after surgical resection.

Case Presentation

A 76-year-old female presented for evaluation of abnormal thyroid function test results. She was found to have an elevated free T4 of 1.92 ng/dL and total T4 of 14.4 ug/dL with an inappropriately normal TSH of 2.11 uIU/mL. Physical examination was significant for tachycardia, tremors, diaphoresis, coarse facial features, and enlarged hands. Further biochemical evaluation of her pituitary hormone levels demonstrated an elevated prolactin (PRL) of 237.2 ng/mL, elevated insulin-like growth factor 1 (IGF-1) of 787 ng/mL, normal morning ACTH of 47 pg/mL, normal morning cortisol of 17.0 ug/dL, an inappropriately suppressed FSH of

Discussion

Our case demonstrates the clinical course of a unique patient with clinical and biochemical manifestations of thyroid dysfunction and acromegaly with a pituitary adenoma immunoreactive for GH, TSH, FSH, and PRL. The co-secretion of GH, TSH, PRL, and FSH as well as positivity for the alpha-subunit is extremely unusual with only 8 cases being reported as secreting TSH as well as gonadotropins. This case emphasizes the importance of considering pituitary abnormalities as a cause for abnormal thyroid function tests.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
James Kamau

Elsberg Syndrome-A Rare Presentation of West Nile Virus Infection from an Unexpected Source.

Title

Elsberg Syndrome-A Rare Presentation of West Nile Virus Infection from an Unexpected Source.

Authors

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Introduction

While West Nile Virus (WNV) has the propensity to cause neuro-invasive disease[1], CNS involvement occurs in less than one percent of patients. Elsberg syndrome is rare and consists of lumbosacral myeloradiculitis and urinary retention. Very few cases of WNV associated Elsberg syndrome have been reported[2]. We present a patient with Cauda Equina nerve enhancement due to WNV infection with a never before reported source of infection.

Case Presentation

A 73-yo male with a history of hypertension had grabbed onto a beam with bird spikes as he fell off a ladder two months prior. Since then, he experienced a mild gait problem. He was seen in the emergency department (ED) a month later for dizziness with a negative head CT. He presented to the ED five days later for back pain with radiation to the bilateral thighs. Lumbar spine CT showed mild degenerative changes. The patient was discharged on Tramadol only to return due to worsening pain. He was admitted and improved with symptomatic treatment. He also had constipation and urinary retention, which resolved. His primary care physician sent the patient for MRI a month later noting weight loss, worsening leg weakness and urinary retention. He presented to the ED after the MRI of the lumbar spine revealed prominent enhancement along the surface of the distal cord, conus, and cauda equina nerve roots. The patient was unable to walk and had lost thirty pounds. On exam, he was alert and oriented with decreased proximal motor strength in bilateral lower extremities, brisk asymmetric reflexes and intact sensation. MRI of the brain and cervical spine were unremarkable. Serum studies including CBC, BMP, CK, ESR, CRP, ANA, dsDNA, ACE, UPEP, SPEP, Lyme, varicella and scleroderma antibodies were unrevealing. A lumbar puncture was performed and the patient

started on high dose steroids. CSF studies demonstrated WBC-8/uL, RBC-61/uL, protein-141mg/dL, glucose-64mg/dL, negative culture, cytology and encephalitis panel. WNV antibodies were IgG and IgM positive. CSF WNV PCR was negative. The patient improved on intravenous steroids and transitioned to a prednisone taper. EMG showed bilateral lower motor neuron dysfunction. Repeat MRI of the lumbar spine demonstrated an interval decrease in the abnormal enhancement. He eventually had complete resolution of symptoms.

Discussion

WNV is commonly transmitted to humans through mosquitoes that acquire the virus from infected birds. Other means of transmission include blood transfusion, organ transplantation and occupational exposure in laboratory workers. However, bird droppings can contain infectious levels of WNV[3], which could provide a potential mode of disease transmission. To the best of our knowledge, this is the first reported case of WNV associated with bird droppings.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Jonathan C Li

Right Syndrome, Wrong Pandemic – EVALI Misdiagnosed as Presumed COVID-19 Pneumonia

Title

Right Syndrome, Wrong Pandemic – EVALI Misdiagnosed as Presumed COVID-19 Pneumonia

Authors

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Introduction

Prior to the COVID-19 pandemic, United States healthcare practitioners were challenged by a worsening epidemic of E-cigarette or vaping product use-associated lung injury (EVALI). EVALI is a syndrome of respiratory, gastrointestinal, and constitutional symptoms associated with bilateral interstitial infiltrates on chest imaging and elevated systemic inflammatory markers (transaminases, c-reactive protein [CRP], and erythrocyte sedimentation rate [ESR]) which remarkably mimic the symptoms of COVID-19.

Case Presentation

A 19-year-old male with asthma presented with acute onset cough, shortness of breath, fever, chest pain, and gastrointestinal symptoms amidst the COVID-19 pandemic. He was hypoxemic to 91% on 2 liters of supplemental oxygen via nasal cannula. Chest x-ray revealed bilateral interstitial infiltrates concerning for multifocal pneumonia. Complete blood count revealed a leukocytosis to 17.4/nl (3.9-10.6) with bandemia to 27.8% (0-5%), and lymphopenia 0.5/nl (0.9-4.4). Inflammatory markers were markedly elevated; ferritin to 939 ng/mL (30-400), lactate dehydrogenase to 423 U/L (107-270), CRP to 446 mg/L (0-8), and procalcitonin to 2.03 (0-0.24). The patient was initiated on broad-spectrum antibiotics and admitted to the general medical floor in airborne isolation. Initial COVID-19 testing was negative. Given the high pre-test probability of COVID-19 and lack of alternate explanation, a second COVID-19 test was sent XXX hours later and was also negative. The patient developed progressive hypoxemic respiratory failure requiring transfer to the intensive care unit for high flow nasal cannula with FiO2 100%

at 45L. A vaping history was obtained, and the patient reported vaping THC-containing products up to 6 hours per day. Urine drug screening confirmed cannabinoid exposure. He was initiated on 2mg/kg daily of intravenous methylprednisolone. A third COVID-19 test was negative 4 days after admission and the patient was discharged home six days later after receiving appropriate therapy.

Discussion

As we illustrate in this case, EVALI remains a clinically relevant entity that presents similarly to COVID-19. Even during the COVID-19 pandemic, a complete social history should include a vaping history in patients presenting with new-onset hypoxic respiratory failure, especially in the younger populations. Asking what substances patients vape is also important, as EVALI is most highly associated with vaping tetrahydrocannabinol (THC)-containing products purchased from the internet. Obtaining a thorough social history may prevent the overuse of scarce medical resources. Our patient was tested for COVID-19 three times and roomed with isolation precautions, requiring extensive usage of personal protective equipment. EVALI, as a diagnosis of exclusion, should be considered in patients with persistent respiratory symptoms but negative COVID-19 testing.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Alisha Maity

Unlikely Cause of An Ischemic Toe

Title

Unlikely Cause of An Ischemic Toe

Authors

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Introduction

Digital ischemia has a wide differential and its treatment is complicated by the fact that each potential pathological etiology of tissue death requires rapid and aggressive assessment, as patients are at high risk for further ischemic events. We present a case of a patient with necrotic digits in an individual with untreated systemic lupus erythematosus (SLE), severe Raynaud's disease, and recent initiation of warfarin in suspected anti-phospholipid antibody syndrome (APLS).

Case Presentation

A 63-year-old female with a past medical history of SLE, hyperlipidemia, and secondary Raynaud's presented with worsening digital ischemia for the past 4 months. With these findings and her history, she was tested and found to be positive for antiphospholipid antibodies. She was started on warfarin, but 9 days later she had worsening discoloration of the toes. Warfarin was stopped with concern for purple toe syndrome; she was placed on aspirin and clopidogrel. She then presented to the ER with intolerable pain. On exam, the patient was tachycardic and had painful necrosis of her left 4th finger, a livedoid pattern on her left 5th finger, left 3rd and 4th toes, and a raised, erythematous rash across her chest and face. Laboratory data was revealing for a leukocyte count of 4.87 K/uL, hemoglobin 8.8 g/dL, prothrombin time 15.8 sec, and partial thromboplastin time 164 sec. A CT angiography showed an occluded left popliteal artery with distal reconstitution of flow; an echocardiogram showed no abnormalities. She was started on hydroxychloroquine for her SLE, enoxaparin for her APLS, and sildenafil for her

Raynaud's. She was discharged with stable digital findings and plans for left middle toe amputation and rheumatology follow-up.

Discussion

The differential for small-vessel critical digital ischemia in this patient includes secondary Raynaud's due to SLE, APLS with thrombosis, and warfarin-induced necrosis. Secondary Raynaud's occurs via a deficiency of vasodilatory mediators and increased presence of vasoconstrictors. The severity of secondary Raynaud's depends on the severity of the underlying disease; two alternative ways to measure severity are detection of anti-centromere antibody and assessing for the presence of avascular areas on nailfold capillaroscopy. The treatment of Raynaud's with medications such as sildenafil and other PDE inhibitors have been associated with a reduced occurrence and duration of episodes. For patients with APLS, the presence of the anti-beta2 GPI and anticardiolipin antibodies are a predictive factor for digital loss. Thrombosis in APLS occurs through endothelial injury combined with decreased activity of endothelial nitric oxide. APLS can manifest as small-vessel arterial or venous thrombosis of any organ. Patients with APLS must be on lifetime anti-coagulation with warfarin or low molecular weight heparin. Purple toe syndrome is hypothesized to be caused by multiple mechanisms including cholesterol microembolization and acquired protein C deficiency. In these patients, digital ischemia can occur 1-2 weeks after initiation of warfarin. This diagnosis is one of exclusion, and resolution occurs with discontinuation of warfarin and transition to alternate anticoagulation. This patient's digital findings preceded warfarin and were likely primarily due to APLS, but worsened after initiation of warfarin, suggesting exacerbation by this second mechanism.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Aniqa Malik

Clinical challenge of Pleiotropic Necrotizing Vasculitis

Title

Clinical challenge of Pleiotropic Necrotizing Vasculitis

Authors

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Introduction

EGPA formerly called as Churg Strauss syndrome is necrotizing vasculitis condition of small and medium sized blood vessels. It encompasses 3 stages in manifestation. The first or allergic stage marked by airway inflammation in patients experiencing asthma or allergic rhinitis. The second stage is characterized by peripheral hyper eosinophilia causing tissue damage most commonly in the lungs and digestive tract. The last stage encompasses a vasculitic phase eventually leading to sudden death and can be life-threatening.

Case Presentation

A 49 years old Moroccan female with past medical history of chronic sinusitis and rheumatoid arthritis on Humira presented with the chief complaints of cough and low-grade fever for 1 week. She also had progressive worsening of cough which was productive with dark yellowish/greenish colored phlegm. It was associated with low-grade fever. Initially the patient attributed these episodes to the worsening of sinusitis, but lately patient also started to have shortness of breath. Initially the patient was hypoxic with tachypnea and tachycardia. Blood pressure was stable. On exam, the patient was in moderate respiratory distress with normal chest expansion, but reduced breath sounds in the lower lung fields.CTA chest showed dense bilateral pneumonia with bilateral pleural effusions. The Patient was initially admitted to the medical floor for the treatment of pneumonia with IV Zosyn and IV azithromycin. However, the patient continued to have hypoxic respiratory failure and minimal relief in cough despite broad spectrum antibiotics. On day 3 of hospitalization, patient had to be transitioned to BiPAP. The patient did not tolerate the trial with BiPAP very well. Eventually, she was intubated and transferred to the intensive care unit. A repeated chest x-ray showed worsening bilateral airspace disease with more dense infiltrates. Patient's clinical status continued to deteriorate as

she was requiring FiO2 of 50% and PaO2/FiO2< 200 concerning for ARDS. The patient was empirically started on IV methylprednisolone. Bronchoscopy was performed which showed no evidence of intraluminal growth, mass or stenosis, but bronchoalveolar lavage studies revealed a high eosinophil count of 64%. It raised the suspicions for Fungal/Mycobacterial infections, ABPA, EGPA. AFB and fungal staining were negative. ANCA levels and total IgE levels were sent. On day 5 of admission patient's PaO2/FiO2 ratio improved. A repeat chest x-ray showed partial clearing of infiltrates. The patient was extubated on day 6 and the patient was discharged on tapering doses of steroids over a period of 6 months. The patient was followed outpatient with pulmonary medicine and patient's ANCA levels came out to be positive with elevated total IgE levels and lung biopsy revealed eosinophilic infiltration with areas of necrosis-confirming the diagnosis of EGPA.

Discussion

Eosinophilic granulomatosis with polyangiitis is a pleiotropic systemic vasculitis which can present with multisystem involvement. It can mimic allergic and asthmatic symptoms. A clinician should have a high level of suspicion, especially if the patient presents with persistent sinusitis or poorly controlled asthma with high level of eosinophil count. Treatment can be as simple as early initiation of steroids and other immunosuppressants which usually has favorable outcome and expectancy.

PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Pranali Pachika, MBBS MD

Immunotherapy Induced Anterior Hypophysitis

Title

Immunotherapy Induced Anterior Hypophysitis

Authors

Pranali Pachika, Razwana Khanam, Seemal Faisal, Tariq Hassan

Introduction

Immunotherapy based regimens are now the standard treatment for many different types of cancers. Monoclonal antibodies against cytotoxic T lymphocytes antigen for(CTLA-4) and programmed cell death protein–1 (PD–1) and anti–PD–1 ligand molecules are the two major subgroups of immune checkpoint inhibitors, which are being used widely for various malignancies. They function by reactivating the immune system against the tumor cells but can also trigger autoimmune side effects termed immune-related adverse effects.

Case Presentation

A 64-year-old Caucasian man with colorectal cancer recurrence being treated with ipilimumab and nivolumab presented with the persistent central throbbing headache for 5 days. He had associated fatigue and nausea but denied any neurological symptoms and vision changes. His physical examination was unremarkable without any neurological deficits. On further investigations CT head was unremarkable, the MRI brain showed mild prominence of the pituitary gland measuring 11 mm in craniocaudal dimension. In the setting of treatment with immunotherapy and MRI findings, diagnosis of hypophysitis secondary to immunotherapy was formulated and further work-up was done. His hypophysitis was complicated by hypogonadism (LH -1 MIU/ml, Testosterone 19 ng/dl), hypothyroidism (TSH-0.18 uIU/ml, FT4 0.8 ng/dl), Adrenal insufficiency(ACTH-

Discussion

Hypophysitis is one of the most notable side effects of CTLA-4 inhibitors. The incidence of hypophysitis in patients being treated with both CTL A-4 and PD-1 inhibitors is 8%. Although the mechanism of action is not well understood, many studies suggest that the pituitary expression

of CT LA 4 in few individuals is likely the cause. Immunotherapy can cause irreversible hypopituitarism and can lead to an acute adrenal crisis which warrants timely diagnosis and treatment. Patients can have a variety of symptoms including headaches, vision changes, or symptoms consistent with other endocrine abnormalities. Such a presentation should prompt immediate workup with brain imaging and hormonal blood work. Management includes discontinuation of the offending agent, initiation of corticosteroid therapy, and hormone replacement therapy. Given the advances in cancer treatment with immunotherapy and the fact that it now has become a mainstream therapy for many cancers, physicians need to realize the most widely recognized side effects. Our case represents one such important immune-related adverse effect.

PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Sophia Panaccione

Anterior spinal artery infarct in the setting of epidural abscess with inflammatory vasculitis resulting in paraplegia: a case report.

Title

Anterior spinal artery infarct in the setting of epidural abscess with inflammatory vasculitis resulting in paraplegia: a case report.

Authors

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Introduction

There are numerous case descriptions of anterior spinal artery infarction secondary to vertebral artery pathology, aortic dissection or surgical complication, however, there are limited reports of infarction in the setting of infection, specifically epidural abscess. Herein we present an adult with Methicillin-resistant Staphylococcus aureus (MRSA) bacteremia who developed acute lower extremity flaccid paralysis and was found to have an epidural abscess with phlegmon of his thoracic spine. Given the acuity of his para-hemiplegic presentation and intra-operative findings inconsistent with significant cord compression, we present a case of suspected anterior spinal artery infarct secondary to a peri-inflammatory vasculitis in the setting of active MRSA spinal infection.

Case Presentation

A 27-year-old male with a history of intravenous drug use presented to the emergency department with three days of right wrist, left ankle and mid back pain. Initial physical exam

was notable for tachycardia, tachypnea, swelling of the right wrist with lymphangitic streaking, warmth and tenderness, left foot swelling, midline back pain, and a normal neurological examination. Laboratory data was revealing for a leukocytosis of 19,400/L. He was given IV vancomycin and piperacillin-tazobactam and admitted. On evaluation by the medical team six hours later, the patient was noted to have new complete loss of motor and sensory function below the T5 level with saddle anesthesia and no rectal tone. The patient was taken emergently for magnetic resonance imaging of his spine which revealed a "large epidural abscess extending from T1- T8 dorsally [with...] considerable mass effect on the cord at the T5 level [and...] extensive paravertebral phlegmonous changes versus small abscess [...] seen at T3-T5 [along with...] heterogenous enhancement and thickening along the pleural space on the right, uncertain if this just represents an extension of the paravertebral phlegmonous changes versus a developing subdural empyema." Patient underwent emergent posterior decompression, debridement and evacuation of epidural abscess via T1-T8 laminectomy. However, intra-operatively, there was no spinal cord compression noted, suggesting spinal cord infarction related to infection and thrombosis versus embolic source as the etiology of the patient's neurological presentation. The patient completed a four day course of dexamethasone with initial improvement of distal right lower extremity motor function. Blood and intra-operative cultures returned positive for MRSA and he completed a prolonged course of vancomycin. Patient improved one month later with anti-gravity range of motion with 4- and 2 graded hip flexion of the right and left lower extremity respectively and improved sensation to light touch.

Discussion

Flaccid paralysis in the setting of known spinal epidural abscess most commonly results from cord compression via bacterial burden. Anterior spinal artery pathology classically arises in the setting of vertebral artery disease (dissection, infarction), aortic dissection or surgical complication. There is little report of both entities existing together and resulting in pathology. Specifically, spinal artery infarct in the setting of a presumed peri-infectious / inflammatory vasculitis, to the authors' knowledge, is not distinctly documented in the literature. This case opens future discussion regarding pathophysiology, diagnostic work up, and use of steroids in actively infected patients with potentially reversible life-altering neurological deficits.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Sophia Panaccione

Pneumococcal meningitis with epidural abscess secondary to otitis media in an adult with tegmen dehiscence: a case report.

Title

Pneumococcal meningitis with epidural abscess secondary to otitis media in an adult with tegmen dehiscence: a case report.

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Introduction

Subdural empyema is a known, yet rare, complication of otitis media. It has more frequently been reported in the pediatric population. Even rarer in this setting, is subdural empyema secondary to Streptococcus pneumoniae. Herein we present a case of an adult female who developed S. pneumoniae meningitis and subdural empyema following otitis media and bacterial spread secondary to dehiscence of the tegmen tympani.

Case Presentation

A 47-year-old Caucasian female with no past medical or surgical history presented to the emergency department with three days of right ear pain and one day of fevers after swimming in the Atlantic Ocean. Upon presentation, initial physical exam was notable for fever, tachycardia and tachypnea. The patient demonstrated normal mentation, normal cranial nerve and motor exam with no focal deficits, however, exam revealed right cervical lymphadenopathy

and neck tenderness with marked peri-auricular tenderness to palpation. Otologic exam demonstrated right otorrhea and bulging tympanic membrane with effusion, with no ear proptosis or other clinical findings of acute mastoiditis. Kernig and Brudzinski signs were negative. Laboratory data demonstrated leukocytosis of 15,100 K/uL with neutrophilic predominance and a lactate of 2.5 mmol/L. Computed Tomography scan of the head, neck, and internal auditory canals demonstrated right otitis media, dehiscence of the right tegmen tympani anteriorly, an intact ossicular chain, and right mastoid opacification without coalescence, and no intracranial mass lesion. The patient was empirically started on meningitis dosing of antibiotics and re-evaluated by the medical team approximately six hours later. Upon re-evaluation, she demonstrated findings of meningismus. Emergent lumbar puncture revealed cerebrospinal fluid (CSF) analysis consistent with bacterial meningitis. Otolaryngology placed a myringotomy tube for source control. Intra-operative findings were notable for a purulent and serosanguinous effusion. Post-operative Magnetic Resonance Imaging demonstrated a right parietal subdural empyema. Her neurological status rapidly deteriorated with seizure activity, left sided weakness, and visual field deficits. She underwent emergent left sided craniectomy with evacuation of the subdural empyema. Despite craniectomy, the patient continued to have high intracranial pressure necessitating external ventricular drain (EVD) placement and subsequent removal of EVD. After blood and intra-operative cultures were negative, Streptococcus pneumoniae was isolated by polymerase chain reaction of the CSF. Her symptoms improved with an extended antibiotic course and she was discharged to a rehabilitation facility given residual weakness and cognitive delay. She underwent titanium mesh cranioplasty one month after craniectomy, and continues to have clinical improvement.

Discussion

Subdural empyema, although one of the most common intracranial pyogenic infections, is significantly rarer than brain abscess. While Streptococcus pneumoniae is sometimes implicated, numerous other pathogens are more frequently associated with subdural empyema formation. Even more unusual, the patient's right tegmen dehiscence, an anatomic anomaly with an incidence of only 2%, likely played a central role in the bacterial extension of her otitis media through the bony erosion. This case highlights the importance of an interdisciplinary approach between subspecialties to rapidly diagnose and intervene surgically in a septic patient presenting with otitis media, tegmen dehiscence and subdural empyema in order to prevent lifelong disability given severity of clinical disease.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Urvi V Patel

When It Rains, It Pours: A Case Report of Flood Syndrome and the Associated Morbidity and Mortality

Title

When It Rains, It Pours: A Case Report of Flood Syndrome and the Associated Morbidity and Mortality

Authors

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Introduction

Flood syndrome is a rare but known complication of refractory ascites and end-stage liver disease. First reported in 1961 by Frank B Flood, it refers to spontaneous umbilical hernia rupture causing sudden rush of ascitic fluid (spontaneous paracentesis).

Case Presentation

A 51-year-old male with alcoholic liver cirrhosis (MELD-Na 23, Child-Pugh Score 10) complicated by esophageal varices, refractory ascites requiring weekly large volume paracentesis, and history of umbilical hernia repair due to incarceration presented with ruptured umbilical hernia with spontaneous paracentesis through pinpoint skin ulceration. He reported drainage of fluid from ulcerated skin over the hernia when he stood up earlier that evening. He was afebrile but hypotensive. On examination, patient was alert and oriented with a distended abdomen due to ascites and a 4 cm midline abdominal fascial defect was present with serosanguinous fluid draining. Laboratory findings were significant for a hemoglobin of 9.9 g/dL, white blood cell count of 3,900/µL, platelet count of 3400/µL, and INR of 1.7. Chemistries were significant for sodium of 134 mmol/L, creatinine of 1.37 mg/dL, and total bilirubin of 3.3 mg/dL. Patient was admitted with a diagnosis of ruptured umbilical hernia and a temporizing stitch was placed to stop ascitic fluid leakage. Ultimately, the patient had a peritoneal catheter placed for abdominal decompression and to facilitate wound healing with anticipated primary hernia repair after improvement in thrombocytopenia. Patient was deemed an unsuitable candidate for transjugular intrahepatic portosystemic shunt due to hepatic encephalopathy and high MELD score. He underwent primary repair of recurrent umbilical hernia with abdominal wall reconstruction that was later complicated by wound dehiscence. He underwent daily large

volume paracentesis via peritoneal catheter that was eventually tapered. Hospital course was complicated by multiple episodes of acute kidney injury and hepatorenal syndrome that improved with intravenous fluid, albumin, octreotide and midodrine. Hospital course was also complicated by three episodes of bacterial peritonitis with extended-spectrum beta-lactamase E.coli requiring treatment with meropenem. Patient was discharged with removal of peritoneal catheter after a 69-day inpatient stay. Unfortunately, the patient was readmitted to the ICU six days later due to altered mental status and was found to be in hemorrhagic shock from variceal bleeding that was not amenable to multiple endoscopic interventions. He passed away ten days later.

Discussion

This case illustrates the importance of preventing a rare but well-known complication of cirrhosis and refractory ascites: Flood syndrome. Patients with long standing ascites and cirrhosis have a 20% risk of developing an umbilical hernia. Rupture of the umbilical hernia occurs due to intra-abdominal pressure increasing and is preceded by cutaneous ulceration in 80% of cases, which should be a red-flag to refer patients for expert surgical opinion, as they are at high risk for rupture. Rupture can cause complications including bacterial peritonitis and hypotension due to large volume spontaneous paracentesis, as seen in our patient. It is associated with high rates of morbidity and mortality and presents with challenges in medical and surgical management with no existing consensus in the treatment of Flood syndrome.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE CHEN RONG PHANG, MD

Statin-Induced Necrotizing Autoimmune Myopathy After Twenty Years Of Statin Use-A Case Report

Title

Statin-Induced Necrotizing Autoimmune Myopathy After Twenty Years Of Statin Use-A Case Report

Authors

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Introduction

Statins are generally safe and effective in both primary and secondary prevention of cardiovascular disease. However, statin-associated muscle toxicity remains a concern with presentations ranging from myalgia to rhabdomyolysis. Statin-induced necrotizing autoimmune myopathy (SINAM) is an extremely rare complication of statin therapy with incidence estimated to be roughly 2 cases per million per year. This complication is usually seen within weeks to about six months of initiating statin therapy. Here, we present a unique case of SINAM which occurred after two decades of atorvastatin use.

Case Presentation

66-year-old Caucasian male with history of type 2 diabetes mellitus and prostate cancer presented to the emergency department with a 6-week history of progressive weakness. Initially, he noted difficulty arising from a chair signifying weakness in his proximal lower extremity musculature. It then progressed to involve bilateral proximal upper extremities causing difficulty with brushing his teeth. He denied any associated myalgia, arthralgia, oral ulcers, rashes, dysphagia, or reflux. Medication history was notable for atorvastatin use for the past twenty years. On admission, vital signs were within normal limits. Physical examination revealed bilateral hip flexion weakness, muscle strength graded 3/5, and motor weakness with shoulder abduction, muscle strength graded 4/5. Labs were significant for elevated creatinine phosphokinase (CPK) of 22,255 Units/L, elevated aldolase of 71.8 U/L, transaminitis with ALT of 434 U/L, AST of 521 U/L. Renal function was normal. Atorvastatin was discontinued and he was

aggressively hydrated with intravenous fluid, with an initial improvement of his CPK to 9299 U/L. However, his CPK worsened again on hospital day 4 with CPK increased up to 12000 U/L. Tests for antinuclear antibody, anti-Jo 1, anti-PL-7, anti-PL-12, anti-MI-2, anti-KU, anti-EJ, anti-OJ, and anti-SRP were all negative. Electromyogram showed evidence of patchy myopathic process with electrical features of muscle inflammation, necrosis, or membrane irritability. Muscle biopsy done subsequently is consistent with necrotizing myopathy. His anti-3-hydroxy-3-methylglutaryl-coenzyme A reductase (HMGCR) antibodies eventually came back positive with a level of 103 (normal

Discussion

SINAM is an exceptionally rare and potentially life-threatening complication of statin therapy characterized by acute, severe onset of progressive proximal muscle weakness. The onset of muscle symptoms is highly variable, usually seen within weeks to six months but may occur at any time during treatment. Our case is unique as the timeline is over 20 years. Diagnosis of SINAM is often difficult due to its variable time course. Its pathophysiology remains poorly understood. Muscle biopsy of SINAM is characterized by myonecrosis and thus serum CPK levels are usually markedly elevated (> 10,000 U/L). Unlike the self-limiting statin-induced myopathy, symptoms of SINAM persist and its CPK levels remain elevated even after discontinuation of statin therapy. Diagnosis is confirmed by positive anti-HMGCR antibodies. Management of SINAM involves discontinuation of statin therapy and initiation of high dose corticosteroid. Other immunosuppressants such as methotrexate, azathioprine are used as adjunctive therapy.

PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE CHEN RONG PHANG, MD

Digoxin in Disguise

Title

Digoxin in Disguise

Authors

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Introduction

Digoxin is used clinically in heart failure and in certain supraventricular tachyarrhythmias. Digoxin has a narrow therapeutic index and requires close monitoring of its level to prevent toxicity. As per the United States poison control in 2017, 1689 cases of digitalis toxicity were reported. Of those, 559 suffered moderate or major toxicity and 23 resulted in death. We present an unusual case where a patient developed digoxin toxicity despite normal levels of serum digoxin and potassium.

Case Presentation

56-year-old Caucasian male with history of atrial flutter/fibrillation, heart failure with preserved ejection fraction, coronary artery disease status post coronary artery bypass graft surgery, mechanical aortic valve replacement presented to the emergency department with progressive generalized weakness, fatigue and shortness of breath for 5 days. He was on metoprolol and verapamil for rate control of atrial flutter/fibrillation. However, due to his borderline normal blood pressure and inadequate rate control, he was started on digoxin two months ago. On admission, patient was noted to be hypotensive and bradycardic (blood pressure 87/54 mm Hg, heart rate 50 beats/min). Initial labs remarkable for elevated creatinine of 4.86 mg/dL (baseline creatinine-0.6 mg/dL) consistent with acute kidney injury. He had normal serum potassium and magnesium levels. Troponin was negative. Electrocardiogram (ECG) showed new junctional rhythm with depressed and concave ST segment typical of “digoxin effect”. Transthoracic echocardiogram showed normal ejection fraction, without any wall motion abnormalities. Serum digoxin level was obtained and found to be normal at 1.0 ng/mL. He received fluid boluses and was started on intravenous norepinephrine infusion. However, he remained

bradycardic with heart rate at 50 beats/min. Digoxin toxicity was suspected due to persistent bradycardia and ECG abnormality. Patient was administered antidotal therapy with DigiFab. Few hours after administration of DigiFab, his heart rate improved and he was in atrial fibrillation with rapid ventricular response requiring amiodarone infusion. He was later discharged on amiodarone and metoprolol.

Discussion

Digoxin toxicity can occur with precipitating factors such as renal dysfunction, hypokalemia, hypomagnesemia or drug interactions (especially non dihydropyridine CCBs). Clinical features of digoxin toxicity commonly include neurologic manifestations such as lethargy, fatigue, confusion, visual disturbances and gastrointestinal symptoms such as nausea, vomiting, diarrhea and abdominal pain. Almost any arrhythmia can occur with digoxin toxicity and premature ventricular contractions are the most common. Others include bradycardia, atrial tachyarrhythmias with AV block, junctional rhythms, ventricular tachycardia, and ventricular fibrillation. Our patient has digoxin toxicity, despite normal digoxin levels, which likely happened in the setting of his renal dysfunction and verapamil use. This case emphasizes that digoxin toxicity can occur in patients with normal digoxin and potassium levels and the diagnosis of digoxin toxicity should be based upon clinical and electrocardiographic manifestations, not serum digoxin level.

PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Maitreyee Rai

Spontaneous pneumothorax / pneumomediastinum in a patient with COVID-19.

Title

Spontaneous pneumothorax / pneumomediastinum in a patient with COVID-19.

Authors

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Introduction

Coronavirus SARS-CoV-2 (COVID-19) encompasses a wide spectrum of clinical presentations, ranging from an asymptomatic infection to severe pneumonia accompanied by multisystem failure[1]. To date, there have been only a few case reports of spontaneous pneumothorax and/or pneumomediastinum in COVID-19 pneumonia involving non-invasive ventilation and positive airway pressure[2]. Approximately 1% of such patients requiring mechanical ventilatory support may develop pneumothorax. The underlying mechanism may be similar to one seen in coronavirus causing SARS: air leak following distended ruptured alveoli and peribronchiolar abscess formation probably leading to interstitial pulmonary emphysema, which tracks back along the bronchovesicular sheath and reaches the mediastinum space[2,3,4]. Herein we report a case of spontaneous pneumothorax / pneumomediastinum in a patient experiencing worsening cough, dyspnea and hypoxia with COVID-19 pneumonia who did not require mechanical ventilation.

Case Presentation

A 58-year-old male with a past medical history of diabetes mellitus, hypertension, obesity, and obstructive sleep apnea, presented to the emergency department with progressive shortness of breath over the span of 1week. The patient had earlier tested positive for COVID-19 by polymerase chain reaction in an outpatient setting and had been monitoring symptoms at home. He reported worsening dyspnea, dry cough and muscle fatigue, but denied chest pain, fevers or chills. Physical examination was significant for tachypnea and tachycardia, oxygen saturation of 75 % on room air which improved to 99% on non-rebreather mask at 15L oxygen,

and bibasilar diminished breath sounds. The laboratory findings were remarkable for an elevated D-dimer (4.69), LDH (406U/L), ferritin (1529ng/ml), procalcitonin (1.11) and CRP (230mg/L). The chest x-ray showed bilateral patchy opacities. He received ceftriaxone, azithromycin, dexamethasone, remdesivir, convalescent plasma and therapeutic enoxaparin. On the seventh day of admission, while on high-flow nasal cannula for persistent unchanged hypoxia, the chest x-ray showed a small right apical pneumothorax with subcutaneous emphysema in neck and pneumomediastinum, and persistent unchanged airway disease. Patient was managed conservatively. By the eighteenth hospital day, the patient's hypoxia had significantly improved. He was able to ambulate with 3L of oxygen via nasal cannula without developing further hypoxia and was discharged home.

Discussion

Discussion: COVID-19 can manifest with a variety of different presentations. There have been a few case reports about the association between COVID-19 and spontaneous pneumothorax/pneumomediastinum. Most presented after multiple weeks of hospitalization[6,7,8]. In our case, the patient developed a spontaneous pneumothorax/pneumomediastinum within a week of admission. He had intense repeated episodes of dry cough which are known to produce increases in distal airway pressure, causing alveolar rupture and gas leakage into the peri-bronchovascular pulmonary interstitium, ultimately reaching the mediastinum. Spontaneous pneumothorax is a very rare complication of any viral pneumonia. Though pneumomediastinum may be considered a self-limited condition that responds well to conservative therapies, the progress of such patients should be carefully monitored for the possibility of related cardiovascular or respiratory complications. Additional cases will need to be identified and further studied to determine the potential for prognostic significance.

# PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Subha Saeed, MD

Covid-19 Encephalitis: A conundrum in mechanically ventilated patients

Title

Covid-19 Encephalitis: A conundrum in mechanically ventilated patients

Authors

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Introduction

We report an unusual case of Covid Encephalitis where neurological symptoms possibly predated the pulmonary complications and ultimately halted our attempts at timely liberation and weaning from the ventilator.

Case Presentation

A 66-year-old man with a history of diabetes mellitus, CAD, hepatitis C with cirrhosis, CKD stage IIIB, presented with progressive lethargy and fatigue, culminating in unresponsiveness and eventually requiring Cardiopulmonary resuscitation by EMS. The review of System was unremarkable except for one episode of non-bloody, non-bilious emesis earlier the day and decreased appetite. The vitals included a blood pressure of 136/81 mmHg, respiratory rate of 16/min, and Pulse of 74/min. He had a steady decline in Oxygen saturation on Room Air which necessitated transition to a non-rebreather mask, and eventually required intubation with mechanical ventilation and maintained 98% Oxygen Saturation on 60% FiO2 on AC mode. The Physical Examination was significant for the Glasgow Coma Score (GCS) of 9, with a limited verbal response, and diminished breath sounds in bilateral lower lung lobes. The COVID-19 PCR returned Positive and there was a mild elevation in WBC count to 11.5. In addition, the metabolic panel reflected AKI on CKD. The Chest X-ray and CT-chest showed patchy opacities in the mid and lower lungs with associated ground-glass opacities, consistent with Covid-PNA. The CT head showed no acute intracranial abnormality. The inflammatory markers including D-dimer (9.72), ESR (113), LDH (495), Ferritin (618), Procalcitonin (1.82), and CRP (266.1) were all elevated. The patient was managed in MICU for Acute Hypoxic Respiratory Failure complicated by metabolic encephalopathy and possible aspiration pneumonia secondary to emesis. Over

the 14-day ICU course with dexamethasone and antibiotics along with other supportive measures, the patient's Oxygen requirement on the ventilator improved faster than physical and radiological signs of pneumonia. However, assessment for weaning parameter was precluded due to persistently low GCS score (7-8) and failing spontaneous awakening trials, despite maintaining adequate Oxygen Pressure on minimal Vent Settings of FiO2 of 50 and PEEP of 5. After ruling out hepatic, uremic, and toxic causes of encephalopathy, MRI brain was considered which demonstrated subtle, confluent periventricular and deep supratentorial white matter hyperintensity, a pattern commonly seen with Covid-19 associated encephalopathy.

Discussion

Covid-19 virus, while commonly affecting the pulmonary system, has a well-documented neurotropic predilection with a wide array of clinical symptoms and neuroimaging classifications. Data from clinical reviews suggests that COVID pneumonia complicated by encephalitis had a longer length of stay, worse functional impairment at hospital discharge, and a higher mortality rate compared with those without encephalitis. Depressed Mental Status in encephalopalitis is a contra-indication for extubation, likely translating to prolonged intubation with concomitant untoward laryngeal sequelae, especially in centers where tracheotomies in COVID-19 patients are deferred due to concerns over the high risk of virus aerosolization. Along with considering Covid 19 encephalitis, it is just as prudent that doctors and hospital policymakers across Globe develop strategies for tracheotomies in Covid-19 patients, especially for ones where non-resolving encephalitis rather than persistent underlying pulmonary compromise, is the reason for continued prolonged intubation.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Ramy Sedhom, MBBS

Spontaneous retroperitoneal hemorrhage associated with aspirin and ticagrelor conservatively managed by switching to clopidogrel.

Title

Spontaneous retroperitoneal hemorrhage associated with aspirin and ticagrelor conservatively managed by switching to clopidogrel.

Authors

Ramy Sedhom, MD, Ammaar Wattoo, MD, Marjorie S Stanek, MD

Introduction

Spontaneous retroperitoneal hemorrhage (SRH) is defined as bleeding into the retroperitoneal space without associated trauma or procedure. It is a rare complication of antiplatelet therapy that is associated with significant mortality. SRH has been reported as early as 2 months and as late as 10 years after initiation of antiplatelet therapy.

Case Presentation

A male patient in his 8th decade of life, with a past medical history of hypertension and anterior wall ST-segment elevation myocardial infarction nine months ago treated with primary percutaneous coronary intervention (PCI) to the proximal left anterior descending artery (LAD) followed by thrombotic occlusion of the mid LAD three months later while on dual antiplatelet therapy (DAPT) of aspirin and ticagrelor, presented with worsening shortness of breath of several days' duration. On the day of admission (day 0), the physical exam showed bilateral basal crackles, lower extremity edema, and jugular venous distension. The patient required intubation and mechanical ventilation, intravenous diuretics were administrated, and the patient was extubated on day 5. On day 6, the patient complained of low abdominal pain and back pain and hemoglobin dropped from 10.6 (day 0) to 8.5. On day 9, the pain got worse and ecchymosis appeared in the left flank. Hemoglobin dropped further to 6.6 g/dl (day 9) and non-contrast computed tomography (CT) done on day 9 showed a large left-sided retroperitoneal hematoma measuring up to 11 x 9 cm in cross-section and up to 17 cm craniocaudally. During his hospital stay the patient was receiving aspirin 81 mg daily and ticagrelor 90 mg every 12 hours and unfractionated heparin (UFU) 5,000 units every 8 hours subcutaneously. After weighing the risks and benefits of continuing DAPT versus discontinuing one or both agents, we

decided to switch to aspirin and clopidogrel which was done on day 10. Prophylactic heparin was discontinued on day 9. The patient was followed up closely for any evidence of hemodynamic deterioration. One week after discharge the patient was readmitted with acute on chronic heart failure. Left heart catheterization showed that the previously deployed stents were patent with no evidence of new obstructive CAD. Three months after discharge, hemoglobin was stable at 10.2 g/dl.

Discussion

SRH should be suspected in any patient on antiplatelet/anticoagulant therapy and unexplained drop of hemoglobin especially if complaining of abdominal or groin pain. Physical exam findings are insensitive for early detection. Our case suggests that in select patients with high thrombotic risk (e.g. recent coronary stenting) management may involve switching from a potent antiplatelet such as ticagrelor to a less potent one such as clopidogrel.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Yesha Shah

Infective Endocarditis-Associated Glomerulonephritis versus Cryoglobulinemic Glomerulonephritis: An Unfortunate Clinical Overlap

Title

Infective Endocarditis-Associated Glomerulonephritis versus Cryoglobulinemic Glomerulonephritis: An Unfortunate Clinical Overlap

Authors

Yesha K. Shah, DO, Emilee Kurtz, DO, Sharon E. Maynard, MD, and Mohammad N. Saqib, MD

Introduction

Infective endocarditis (IE) occurs in 30-60% of patient with Staphylococcus aureus bacteremia and carries a mortality rate of 40-50%. The most common co-morbidities are cardiac valve disease, intravenous drug use, and hepatitis C. Glomerulonephritis due to infective endocarditis most commonly presents with AKI and complicated staphylococcal tricuspid valve infection. The most common pattern of glomerular injury is necrotizing and crescentic glomerulonephritis. Cryoglobuminemia (CG) occurs when the serum contains cryoglobulins, either single or mixed, which precipitate at low temperatures. This can result in an immune complex mediated, small-to-medium vasculitis that most commonly affects the kidneys, presenting as a mesangioproliferative glomerulonephritis. Common known infectious causes of cryoglobulinemia are Hepatitis C and HIV. However, IE-associated glomerulonephritis can also present as an immune mediated phenomena and present as a mesangioproliferative glomerulonephritis similar to that seen in cryoglobulinemic glomerulonephritis. The case below discusses a patient with a history of intravenous drug use who was discovered to have Hepatitis C.

Case Presentation

44-year-old male with past medical history of polysubstance use presented to an outside hospital with foot pain and fever. Blood cultures demonstrated MSSA bacteremia. Transesophageal echocardiogram was performed with findings of tricuspid valve endocarditis. He was initiated on Oxacillin and Daptomycin with subsequent transfer to our hospital for further evaluation by cardiothoracic surgery. Unfortunately, his renal function declined significantly during the course of his hospital stay- initially his creatinine was 0.7 (baseline) with

progressively worsening renal function to a peak creatinine of 5.59 after eight days. Urinalysis demonstrated proteinuria, hematuria, positive leukocyte esterase, WBCs, RBCs and 2+ bacteria. Protein/creatinine ratio was 3.34 mg/dL. C3 and C4 complement levels were assessed and found to be low at 17 mg/dL and 9.5 mg/dL respectively. ANA was positive. Cryoglobulin qualitative screening was positive. PR3 was positive at 28 RU/mL and MPO was negative at

Discussion

This case highlights a diagnostic dilemma and demonstrates the importance of a thorough evaluation due to the overlapping features of IE and mixed cryoglobulinemia. Common risk factors for both include hepatitis C which is commonly seen in intravenous drug users. Treatment for mixed cryoglobulinemia consists of corticosteroid therapy, which, if used in a patient with infective endocarditis, would result in immunosuppression and increase mortality. In this case, steroids were avoided despite the biopsy results given the acuity of the renal failure in the setting of known infective endocarditis, and renal function ultimately improved.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Abigayle Sullivan

Hypercalcemia: An Elusive Sign of PCP

Title

Hypercalcemia: An Elusive Sign of PCP

Authors

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Introduction

Pneumocystis jirovecii is a life-threatening cause of pneumonia among solid organ transplant recipients and immunocompromised patients. Pneumocystis jirovecii pneumonia [PCP] is a concern among renal transplant recipients and requires a six-month regimen of antibiotic prophylaxis following transplant. Hypercalcemia is a common finding among renal transplant recipients [RTR] and is most commonly associated with secondary hyperparathyroidism. However, in recent years there have been a select few cases of hypercalcemia associated with PCP in the setting of RTR despite antibiotic prophylaxis. The definitive cause of hypercalcemia in PCP is not clear but its resolution is associated with PCP treatment. While it is important to consider a broad differential of hypercalcemia in RTR, this case highlights the importance of associating hypercalcemia with PCP in RTR.

Case Presentation

We report a case of a 66-year-old Caucasian woman admitted with severe hypercalcemia in the setting of recent dyspnea, nonproductive cough, and anorexia. Pertinent past medical history includes atrial fibrillation on apixaban, end-stage renal disease secondary to autosomal polycystic kidney disease status post deceased-donor renal transplant, and history of BK viremia. No evidence of post-transplant secondary hyperparathyroidism. The patient was instructed to present to the emergency department for severe hypercalcemia on routine post-transplant lab work, a three-week history of worsening dyspnea, and green productive cough. Presenting lab work included serum calcium 14.0 [ref: 8.4-10.2] mg/dL, serum creatinine 3.1 (baseline 2.0) [ref: 0.5-1.0] mg/dL, lactic acid 4.8 [ref: 0.4-2.2] mmol/L, and pro-B type natrieutic peptide 899 [ref: <354] pg/mL. Arterial blood gas was consistent with acute hypoxemic

respiratory failure and respiratory alkalosis. Computed tomography (CT) of the chest illustrated scattered atelectasis and diffuse ground glass attenuation with mild interlobular septal thickening. The patient was started on broad spectrum antibiotics (vancomycin, piperacillin-tazobactam, and azithromycin). Hypercalcemia was treated with intravenous fluids, 0.9% NaCl, and one dose of furosemide 20 mg IV. Hypercalcemia improved to 12.9 mg/dL within 4 hours. however the patient's oxygen requirements increased to high flow nasal cannula 50L/min with 50% FiO2. Further investigation of infectious workup was negative. Serum beta-D-glucan and serum Pneumocystis jirovecii antigen resulted positive and antibiotic coverage was quickly narrowed to azithromycin 500 mg daily for a 5-day course and atovaquone (in the setting of acute kidney injury) 750 mg twice a day. Prednisone 40 mg daily was initiated. Notably, hypercalcemia resolved with IVF hydration, one dose of calcitonin, and treatment of PCP pneumonia. The patient was discharged with a 21-day course of tapered prednisone and atovaquone 750 mg twice a day.

Discussion

Pneumocystis jirovecii is a well-known cause of increased morbidity and mortality among immunocompromised patients, including RTR. There are no universal antibiotic prophylactic guidelines, however current recommendations involve antibiotic prophylaxis for at least 6 months. In recent years, there has been an increased incidence of late-onset PCP in RTR presenting with hypercalcemia. The exact mechanism of hypercalcemia associated with PCP in RTR is unclear, but its resolution is associated with treatment of PCP. While hypercalcemia is common in RTR, this case illustrates the importance of associating hypercalcemia with PCP.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Nithya Yadlapalli

An Uncommonly Common Bacteremia A Case report and 2-year review

Title

An Uncommonly Common Bacteremia A Case report and 2-year review

Authors

Mownika Yadlapalli, MD; Abdelrhman M. Abo-Zed, MD; Mohamed Yassin, MD, PhD

Introduction

Achromobacter (formerly Alcaligenes) xylosoxidans is an aerobic Gram-negative rod which is occasionally seen in complicated pulmonary and wound infections. This organism has been implicated in nosocomial outbreaks through contamination of water sources, solutions, indwelling catheters, and endoscopic procedures [1]. Achromobacter bacteremia is almost exclusively reported in immunocompromised patients with underlying malignancies. We report a case of Achromobacter bacteremia in an immunocompromised patient with hematologic and solid organ malignancy and conduct a two-year review of cases with internal electronic medical records.

Case Presentation

79-year-old male with a history of small cell high-grade neuroendocrine tumor and adenocarcinoma of the bladder status post radical cystectomy with ileal conduit and chemotherapy, presented to the emergency department with a fever of three days duration, chills, and bilateral flank pain. Physical examination was pertinent for fever and bilateral costovertebral tenderness. Labs were significant for leukocytosis and lactic acidosis. On imaging, computed tomography of abdomen pelvis revealed left-sided hydronephrosis with left renal edema, perinephric, and periureteric stranding consistent with pyelonephritis. Ceftriaxone was empirically started, and three days later blood cultures were positive for Achromobacter xylosoxidans. Antibiotic regimen was switched to piperacillin tazobactam based on susceptibility testing. Patient showed a significant improvement of symptoms after antibiotic initiation and was discharged on Ertapenem for nine days.

Discussion

In a two-year review of cases for Achromobacter infections, there were 386 patients diagnosed with Achromobacter infection or colonization, with a mean age of 42 and an average length of stay of 10 days. A total of 75 mortalities (19%) were documented. Amongst the 386 patients, 11 cases presented with bacteremia with a mean age of 73 and all of which were immunocompromised. There was a total of five mortalities (45%) with an average length of stay of 9 days.

This case illustrates that Achromobacter xylosoxidans is an uncommon bacteremia that is typically seen in older patients who are significantly immunocompromised. A history of underlying malignancy and immunosuppressive therapy are major risk factors for this complication. It is important to remember that Achromobacter xylosoxidans is considered to be of low virulence, however in certain patient populations, mortality rate is reported to be as high as 23.1% [2] in cases of bacteremia. The source of bacteremia is challenging, but extremely important to identify whether if it is clinical or contamination related. Our medical records revealed higher mortality (45%) associated with Achromobacter bacteremia than what was previously reported (23.1%). Investigation may be needed if water borne contamination is suspected, especially in cluster or immunocompromised patients. With such significant rates of morbidity and mortality it is pertinent to keep this microbe on the higher end of clinical suspicion when considering a certain subset of the patient population.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE
Raza Zaidi

To see or not to see? Behcet's disease masquerading as sudden onset scotoma

Title

To see or not to see? Behcet's disease masquerading as sudden onset scotoma

Authors

Raza Zaidi, MD; Aleena Moin, DO; Parth Shah, MD; Pranav Patel, MD

Introduction

Undifferentiated recurrent mucocutaneous ulcerations can invoke a broad range of potential differentials. It is rare for these ulcers to be associated with neurological symptoms, and even rarer still for these neurological symptoms to manifest as sudden onset unilateral central scotoma. Here we present a case of Behcet's disease (BD) in a 30 year old male who presented with the above neurological impairment, and was later found to have had months of preceding, seemingly unrelated, symptoms.

Case Presentation

The patient is a 30-year-old male with past medical history of Lyme arthritis of left knee and asthma who woke up with sudden central monocular vision loss in his right eye. He emergently presented to ophthalmology clinic where physical examination was concerning for a central scotoma of the right eye. On ophthalmologic examination, he was found to have occlusive vasculitis with inflammatory bilateral retinal vein occlusion (BRVO) and exudative macular detachment in the right eye, as well as unspecified early inflammation in the left eye. He was admitted and initiated on ophthalmic and intravenous steroids. Further history revealed recurrent oral and genital ulcers for the past 3 months in the setting of left knee swelling and bilateral ankle pain. Based on clinical findings, patient was diagnosed with BD. He was discharged on high dose steroids (prednisone 80 mg) and subsequently started on Humira (40 mg every 2 weeks) as an outpatient. On outpatient follow-up, he was found to have significant improvement of arthropathy, resolution of mucocutaneous ulcers, and gradually improving eye disease.

Discussion

BD is a multisystemic autoimmune inflammatory disorder of unknown etiology affecting a wide range of tissues. It is characterized by oral and genital ulcerations, skin lesions, oligoarthopathy, and various modes of neurological involvement. The immunopathogenesis of this disease remains unknown, however, genetic predisposition (especially the presence of HLA-B51), immunological abnormalities, and environmental factors likely play significant roles. Considering variations in clinical presentation of BD, it is worthwhile to include this diagnosis on the list of differentials, especially when evaluating the patient for an idiopathic neurological deficit. Mucocutaneous ulcers and arthropathies are often ignored by patients as they may be attributed to sexually transmitted illnesses and daily wear and tear, respectively. Commonly, it is only when a neurological deficit occurs that care is sought. It is the recognition of these seemingly unrelated symptoms as a constellation of disease that allows the diagnosis to be made. This case highlights the importance of obtaining a detailed history. As seen here, it is the history and physical examination that guided our final diagnosis.

PUERTO RICO POSTER FINALIST - CLINICAL VIGNETTE
Cristina Casas Loyola

An Uncommon Pulmonary Complication in SARS-COV-2 Disease.

Title

An Uncommon Pulmonary Complication in SARS-COV-2 Disease.

Authors

Cristina Casas Loyola, MD; Paloma Velasco Corrada, MD; Juan Adams MD, Frances Gonzalez Reyes MD; Mary J. Rodriguez, MD; Mayte Vega, MD

Introduction

The novel Coronavirus-19 (COVID-19) is the main culprit of a severe acute respiratory syndrome, two pneumonia (SARS-CoV-2), and a broad spectrum of complications that have yet to be defined. Severe consolidative and fibrotic changes leading to lung injury and alveolar damage contribute to the increased risk of pneumothorax in mechanically ventilated patients. The incidence, risk factors, and prognosis of patients with associated pneumothorax is still undetermined and scantly described in the literature. We present a case of a mechanically ventilated patient with SARS-CoV-2 pneumonia who subsequently developed pneumothorax, pneumomediastinum, and pneumopericardium.

Case Presentation

A 74-year-old male with no prior history of respiratory disease presented with a one-week evolution of progressive fatigue, generalized weakness, shortness of breath, and dry cough. COVID-19 PCR had been positive two weeks prior. Vital signs were remarkable for tachycardia, high blood pressure, and peripheral saturation of 91% at room air. Laboratories revealed neutrophilia, lymphopenia, and mild transaminitis. Inflammatory markers such as lactate dehydrogenase, ferritin, fibrinogen, and C-reactive protein, were significantly elevated. Arterial blood gases revealed hypoxia and respiratory alkalosis. Chest CT demonstrated scattered regions of ground-glass opacities noted throughout the bilateral lungs, more prominent at the lung bases consistent with COVID-19 pneumonia. The patient was admitted to the medical intensive care unit with oxygen supplementation via 50% venturi mask and was later escalated to a high flow nasal cannula (HFNC) at 70%. Medical therapy of Remdesivir, dexamethasone, and convalescent plasma was administered. Due to worsening respiratory failure despite an escalation of HFNC, the patient was intubated and placed on mechanical ventilation. ABGs

demonstrated a ratio of arterial oxygen partial pressure to fractional inspired oxygen of 80, consistent with severe acute respiratory distress syndrome. Two weeks later, physical examination disclosed subcutaneous emphysema over the right clavicular area and neck. Chest CT demonstrated extensive subcutaneous and deep soft tissue emphysema, pneumomediastinum, pneumopericardium, and small anterior bilateral pneumothorax. General Surgery determined that no surgical intervention was warranted at the time. Despite aggressive medical therapy and mechanical ventilation, the patient's clinical status quickly deteriorated, and he expired.

Discussion

Although there is limited literature regarding SARS-CoV-2, there must be a high clinical suspicion and awareness of the cardiopulmonary complications that the novel virus can precipitate. Both spontaneous and traumatic pneumothorax have been uncommonly seen in COVID- 19 patients. Aggressive and early management of these complications may significantly reduce the morbidity and mortality of these patients.

PUERTO RICO POSTER FINALIST - CLINICAL VIGNETTE
Jeremy Feliciano-Ildefonso, MD

Opdivo-Induced Auto-Immune Attack! An Unforeseen Manifestation

Title

Opdivo-Induced Auto-Immune Attack! An Unforeseen Manifestation

Authors

Feliciano-Ildefonso, Jeremy MD; Vazquez-Fuster, Juan MD; Colón-Donate, Miguel MD; Caceres-Perkins, William MD

Introduction

Targeted therapies such as Opdivo (Nivolumab) have revolutionized the way we treat cancer. Its use has become widespread in clinical practice due to its impressive effectiveness against a growing number of malignancies, and low side effect profile upon comparison to traditional chemotherapies. However, this does not preclude the fact that severe adverse events (AE) have been reported. Immune-mediated pulmonary, hepatic, and endocrinological disorders are amongst the most frequently encountered severe AE, with cutaneous involvement seldom observed. Thus, the rarity of coming across a severe cutaneous AE secondary to Opdivo has led to low clinical suspicion, prompting a delay in treatment and discontinuation of therapy with potential life-threatening complications. Herein, we present this case of a severe Nivolumab-induced bullous pemphigoid eruption.

Case Presentation

A 70-year-old male with Squamous Cell Carcinoma (SCC) of the head and neck with metastasis to the right lung, who was receiving radiation therapy and Nivolumab, presented with a 3-week history of new-onset generalized skin rash and associated itching. He denied symptoms of fever, chills, cough, or recent exposure to sick contacts. Physical examination was remarkable for tense bullae in different stages of healing, extending from the neck to the lower extremities, and scattered urticarial plaques in the abdomen with no mucosal lesions observed. Remaining examination, and laboratories essentially noncontributory. Further questioning revealed to have begun treatment with Nivolumab 4 months prior. Upon evaluation, Dermatology service recommended broad treatment with Doxycycline, Mupirocin, and Clobetazole, based on differential diagnoses that included eczema, neuro-dermatitis, and Bullous Pemphigoid (BP). Symptoms continued worsening, therefore a punch biopsy was performed at the edge of a

fluid-filled bullae. Pathology report revealed a detached bulla with an acute inflammatory infiltrate, and complete dermal-epidermal separation with IgG and C3 staining at the basement membrane. These findings confirmed the diagnosis of BP, of which Nivolumab was the suspected causative agent. Therapy was discontinued with significant clinical improvement achieved in 72 hours, confirming suspicion.

Discussion

Nivolumab is among the immunotherapies with the least severe adverse events reported in literature. Nonetheless, it is strongly encouraged to provide close surveillance to these patients since there is insufficient data regarding complete side effect profile, with Bullous pemphigoid being a rare finding. Rapid recognition is necessary for appropriate treatment and discontinuation of the therapy since the exact trigger is unknown and may lead to life-threatening complications.

PUERTO RICO POSTER FINALIST - CLINICAL VIGNETTE
Aidaliz Llorens

Severe Intractable Headache: COVID-19 Presentation in a 23-Year-Old.

Title

Severe Intractable Headache: COVID-19 Presentation in a 23-Year-Old.

Authors

Aidaliz Lloréns-Bonilla, MD; Janice Vargas-Rodríguez, MD; María A. Rodriguez Santiago, MD; Gabriel Galíndez de Jesús, MD and José Colón Márquez, MD, FACP

Introduction

COVID-19 viral infection has been associated with cerebrovascular accidents (CVA) due to induced prothrombotic hypercoagulable state. Most of the CVAs reported are ischemic that convert to hemorrhagic but there has been isolated cases identified as spontaneous intracranial hemorrhages. Currently, there is limited information regarding this association. This case emphasizes the atypical neurologic presentation and steps in diagnosing a patient with COVID-19 neuroinvasion. Also, we explain the importance of testing patients with unknown etiology of intracranial hemorrhage for COVID-19.

Case Presentation

This is the case of a 23-year-old female G1P0A1 without past medical history who arrived at the hospital with a severe 10/10 intractable right orbital headache radiating to the right occipital area. Patient was positive for COVID-19. Four weeks earlier, she had traveled to Florida, USA where she developed flu-like symptoms including: low grade fever, malaise, runny nose, anosmia, pleuritic chest pain and chills. She denied head trauma, use of contraceptives, miscarriages, history of deep venous thrombosis, pulmonary embolism, oral ulcers or photosensitive, as well as all toxic habits. Physical exam was unremarkable. No gross or focal neurologic deficits. Head CT without contrast showed parenchymal hematoma with surrounding edema centered at the precuneus right parietal lobe conferring her the diagnosis of ICH score 1. In order to assess cerebrovascular accident etiologies in young patients, CTA and CTV were performed which revealed negative arteriovenous malformations or aneurisms and vein thrombosis, respectively. During admission, Mycoplasma test came back positive presenting the possibility of ischemic stroke with hemorrhagic conversion due to cold agglutinins, but these were negative. Patient was observed for close neuro checks since she

persisted with mild headaches despite pain management. Patient remained stable and was discharged to continue isolation at home.

Discussion

This case reveals an intracerebral hemorrhage (ICH) in a 23-years-old healthy female possibly secondary to COVID-19. This virus has been associated with prothrombotic hypercoagulable states presenting as cardiovascular or neurological events, such as ischemic strokes which may have hemorrhagic conversion. Thus far, there are only isolated cases of spontaneous ICH in COVID-19 patients which makes this case a challenge to diagnose and manage. In this case, we portray the importance of an early clinical, radiologic and laboratory assessment in order to achieve an assertive diagnosis. We also suggest in favor of performing COVID PCR tests in patients who have an unclear etiology of intracranial hemorrhage. By testing them, we would avoid underdiagnosing COVID 19 patients and therefore, will provide adequate management. Also, we would be protecting our health care workers by taking the necessary precautions while treating this population.

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PUERTO RICO POSTER FINALIST - CLINICAL VIGNETTE
Jeaneishka M Rivera Rios, MD

Role of Vitamin D supplementation in Fanconi syndrome associated with Vitamin D insufficiency

Title

Role of Vitamin D supplementation in Fanconi syndrome associated with Vitamin D insufficiency

Authors

Rivera, Jeaneishka MD; Rodriguez, Yamiris MD; Villagrasa, Alejandra MD; Ocasio, Ileana MD

Introduction

Vitamin D is essential for calcium, phosphate and bone metabolism. Vitamin D deficiency is one of the most common medical conditions worldwide. It is estimated that up to 50% of the population has vitamin D insufficiency. Vitamin D deficiency can lead to osteomalacia in adults and increased risks of cancer, cardiovascular diseases, infections and autoimmune diseases. Renal tubular acidosis (RTA) Type 2 associated with vitamin D deficiency is rare and a high clinical suspicion is needed to recognize this disorder associated with multiple electrolytes imbalances.

Case Presentation

A 49-year-old male, inmate, with chronic kidney disease, former intravenous drug user and medical history of treated Hepatitis C presented with generalized weakness and muscle cramps. He stated chronic back pain, muscle aches and lower extremities muscle cramps that were impairing his ability to walk over the last months but worsened in the last 2 days making him unable to walk. Physical exam was remarkable for a frail man with a lean body, who seemed to be in discomfort due to pain. Abdomen non distended but moderate tenderness to palpation of the epigastric region. His neurological exam showed strength of 3/5 in lower extremities and 4/5 in upper extremities with intact sensation. Laboratory investigations showed a BUN 37.2 mg/dL, creatinine 4.84 mg/ dL, sodium 143 mmol/L, potassium 1.8 mmol/ L, chloride 109 mmol/L, bicarbonate 11.2 mmol/ L, random blood sugar 117mg/dl, calcium 7.5 mg/dl, phosphorus 2.2 mg/dl, magnesium 2.13mg/dl, uric acid 2.4 mg/dl, 25-OH Vitamin D 17.5 ng/mL, PTH 368 pg/ml and CPK 897 U/L. ABG showed pH 7.19, PCO? 22.3 mmHg, O? 196 mmHg and bicarbonate 11.8 mmol/L. U/A showed a urinary pH of 5.0, specific gravity of 1.006, glucose 300, protein 25. Urine studies remarkable for positive urine anion gap, amino aciduria and

elevated fractional excretion of phosphorus, potassium and uric acid. Renal US findings consistent with small renal size and chronic parenchymal changes.

Discussion

Our patient was diagnosed with proximal RTA and Fanconi syndrome due to findings of hypokalemia, hypophosphatemia, normal anion gap metabolic acidosis, positive UAG, urine pH

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PUERTO RICO POSTER FINALIST - CLINICAL VIGNETTE
Jesus Vega Colon, MD

Unexpected Severe Bone Marrow Suppression Following a Suicide Attempt

Title

Unexpected Severe Bone Marrow Suppression Following a Suicide Attempt

Authors

Jesus D. Vega-Colon, MD, Paloma Lugo-Perez, MD, Dev Boodoosingh, MD

Introduction

Colchicine is a well-known lipophilic alkaloid drug extracted from the autumn crocus. It has anti-inflammatory effects important in the management of medical conditions such as gout attacks and other rheumatologic diseases. The mechanism of action of this drug focuses on the inhibition of microtubule polymerization, leading to mitotic spindle disruption and inhibition of uric acid deposition. Intoxication is uncommon; however, can cause serious adverse effects and even death. Literature describes that consumption of more than 0.5 mg of colchicine per kilogram bodyweight can cause symptoms such as abdominal cramps, diarrhea, nausea, vomiting, seizures, electrolytes disturbances and cardiac dysrhythmias. Few cases have been reported intoxication following the use of this agent as well as causing severe bone marrow suppression in young adult population.

Case Presentation

We report a 22 year-old male with unremarkable past medical history that was transferred to our institution after attempting suicide by ingesting an estimated amount of 28 mg of colchicine (more than 40 tablets) 12 hours before arrival to the emergency department. Family member reported that the patient started presenting generalized weakness, non-bloody vomiting and watery diarrhea two hours after consumption of colchicine. Initial vital signs were unremarkable. Physical exam was remarkable for diffuse epigastric pain. Abrasions on upper extremities were visualized. Initial labs showed evidence of leukocytosis (14.50 103/µL), acute kidney injury (Cr: 1.56 mg/dl), hypocalcemia (6.7 mg/dL) and hypophosphatemia (1.25 mg/dL). Multiple electrolytes disturbances were constantly replaced using calcium gluconate, phosphate sodium, and calcitriol. After 48 hours in the intensive care unit, clinical course continue to deteriorate presenting severe pancytopenia (WBC: 1.32 103/µL, Hgb: 7.5 g/dl, Platelets: 10,000/microL) requiring PRBC and platelet transfusions. Absolute Neutrophil Count

was calculated showing severe neutropenia: 410 cells/µL. Decision was made to start high dose intravenous steroids along with immunoglobulin therapy, as recommended by hematology-oncology service due to prolonged bone marrow suppression. Following treatment, initial symptoms started to improve gradually. On the 7 day of admission, WBC count, platelets and absolute neutrophil count exhibited improvement (WBC: 3.60 103/µL, Platelets: 64,000 /microL, Absolute Neutrophil Count: 1,800). Also, metabolic abnormalities reached adequate levels. Patient was successfully discharge at 12 day hospital stay in a stable condition with close follow up with his primary care physician.

Discussion

Colchicine intoxication is a life-threatening condition that should be monitored carefully in the intensive care unit. There is no antidote; therefore, supportive management plays an important role. Treatment of metabolic derangements and hematologic manifestations is crucial in the reduction of mortality rate. Fortunately, our patient received on time the appropriate management. The uniqueness of this case lies on the displayed characteristics not routinely seen in young population such as severe bone marrow suppression, profound hypophosphatemia, and hypocalcemia requiring intensive electrolyte replacement.

RHODE ISLAND POSTER FINALIST - CLINICAL VIGNETTE
Augustus Chang, MD

A Rare Case of Immunotherapy Induced Myocarditis and Myasthenia Gravis

Title

A Rare Case of Immunotherapy Induced Myocarditis and Myasthenia Gravis

Authors

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Introduction

Immunotherapy related adverse events (irAE) have become increasingly common with the introduction of immune-checkpoint inhibitors (ICI) to the treatment landscape of cancer. For internists, quick identification and treatment of irAE is necessary to avoid morbidity and mortality in this specific population.

Case Presentation

We present a 68 year old woman with renal cell carcinoma (RCC) with lung metastases who presented to the hospital with a two-day history of intermittent diplopia, blurry vision, and subacute shortness of breath. She was diagnosed earlier this year with RCC of the right kidney and was started on first line combination immunotherapy ipilimumab, a cytotoxic T-lymphocyte-associated protein-4 (CTLA-4) inhibitor, and nivolumab, a Programmed cell death protein-1 (PD-1) inhibitor, two weeks prior to her presentation. Her neurological examination was significant for diplopia with binocular vision, but absent with monocular vision. She was noted to be tachycardic, but her electrocardiogram (EKG) demonstrated sinus tachycardia and no acute ischemic changes. Her laboratory workup was significant for a troponin of 5.003 ng/mL, and elevated aspartate and alanine transaminases (532 IU/L and 377 IU/L, respectively). Given her neurological findings, computed tomography angiography (CTA) and magnetic resonance imaging (MRI) were performed and were unremarkable. Given her uptrending troponins, reaching 19.310 ng/mL on day 4, she was admitted to the cardiac critical care units where she was initially treated medically for an non-ST-elevation myocardial infarction. An echocardiogram showed normal left ventricular function but right ventricular hypokinetic wall motion of the apex with heavy trabeculations concerning for cardiomyopathy. She underwent a

cardiac catheterization, with no identifiable coronary artery disease. Subsequent EKGs demonstrated a new right bundle branch block, progressing to transient complete heart block, and a permanent pacemaker was placed. Given her oncologic history coupled with her cardiac catheterization findings, there was concern for immunotherapy-induced myocarditis, and she was started empirically on methylprednisone 1mg/kg. During her hospital course, she was noted to be increasingly fatigued with worsening neuromuscular weakness. The patient was evaluated by neurology and given concerns for myasthenic crisis secondary to her immunotherapy, she was started on intravenous immunoglobulin (IVIG) and pyridostigmine. Despite treatment, the patient's neuromuscular weakness continued to progress, resulting in acute respiratory failure requiring intubation. After extensive discussions with the patient's family, she was terminally extubated.

Discussion

This case illustrates the potential for severe and fatal adverse events from ICI immunotherapies, and presents an opportunity to review common and uncommon irAEs. IrAEs of any grade occur in a large percentage of patients receiving ICI therapy and depend on the agent(s) used and the patient's individual risk factors; fatal ICI-associated adverse events are estimated at 0.3-1.3% overall. Both myocarditis and myasthenia gravis are rarely encountered irAEs (estimated incidence of 1.14% for myocarditis and 2.7% for all neurologic irAEs), but both typically present early after initiation of treatment (median onset 34 days for myocarditis and 28 days for myasthenia gravis) and are associated with a high fatality rate. Prompt recognition, close interdisciplinary collaboration and treatment with immunosuppressive therapy is needed to avoid associated morbidity and mortality.

RHODE ISLAND POSTER FINALIST - CLINICAL VIGNETTE
Cassondra E Paletta, MD

AUTONOMIC DYSFUNCTION, ASCENDING PARESTHESIA AND UNSTEADY GAIT: A CASE OF POST-COVID GUILLAIN BARRE SYNDROME IN A HEALTHY ADULT MALE

Title

AUTONOMIC DYSFUNCTION, ASCENDING PARESTHESIA AND UNSTEADY GAIT: A CASE OF POST-COVID GUILLAIN BARRE SYNDROME IN A HEALTHY ADULT MALE

Authors

Cassondra Paletta MD, Tarek Nafee MD

Introduction

Guillain Barre Syndrome (GBS) is an acute immune-mediated polyneuropathy that often follows a gastrointestinal or viral infection. Coronaviridae infections are associated with a wide array of neurological symptoms (Keyhanian et al). Herein we report a case of a healthy male who presents with ascending paresthesia and unsteady gait 10 days after recovering from a mild SARS-CoV2 infection.

Case Presentation

A 53 year old male with a history of stage 1 hypertension presented to the emergency department with altered sensation in his bilateral lower extremities and new onset gait instability. Two weeks prior to presentation, he tested positive for SARS-CoV2 after feeling unwell for two days. His symptoms included headache, myalgia, fever, and diarrhea. His course was uncomplicated, and he recovered at home within 1 week of onset. Nine days later, he began having intermittent sensation of pins and needles in his heels bilaterally which progressed to his calves in the subsequent 3 days. He presented when he noted gait instability. He denied dizziness and vision changes though he did report headache. On arrival he was persistently in stage 2 hypertension and sinus tachycardia. A neurological exam demonstrated 5/5 strength bilaterally in all extremities, unsteady gait, and hyporeflexia in his lower extremities. CBC and CMP were unremarkable. His workup included CT head/neck, TSH, B vitamins, urine drug screen, copper, ceruloplasmin, tick-borne panel, anti-ganglioside antibodies. An MRI of the brain demonstrated bilateral 7th cranial nerve enhancement and MRI spine showed nonspecific STIR hyper intensity in C3-C7. A bedside lumbar puncture was

unsuccessful. His dysautonomia persisted and paresthesia extended to his hands bilaterally. His proximal muscle strength worsened to 3/5 bilaterally and his gait worsened. Baseline chest x-ray was done and NIF testing was performed every 6 hours (range -15 to -60) and a pulmonary function test was performed. LP was attempted under fluoroscopy. When the patient was proned, he went into SVT with a rate in the 260s. The procedure was stopped and SVT was aborted using carotid massage. Patient was started on clonidine and ultimately a successful LP was obtained and demonstrated albuminocytologic dissociation. The patient was started on IVIG 0.4g/kg for 5 days which he completed with no complications. His paresthesias remained unchanged and his gait showed mild improvement. The patient refused acute rehabilitation and was discharged home with physical and occupational therapy. Electromyography was scheduled 2 weeks post-discharge.

Discussion

SARS-CoV arose in Asia in 2003 and neurologic symptoms were reported in 30% of patients (Lee et al). MERS-CoV arose in June 2012 in Saudi Arabia and CNS involvement including altered level of consciousness ranging from confusion to coma, ataxia and focal motor deficits were documented (Arabi et al). In addition to the myriad of neurologic complications of SARS-CoV2 reported in the literature, there have been 38 reported cases of GBS. Approximately 19% of reported cases had autonomic dysfunction, 40% had acute respiratory failure and 5% died (Zito et al). Clinicians must be cognizant of the post-infective neurologic complications of SARS-CoV2.

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SOUTH CAROLINA POSTER FINALIST - CLINICAL VIGNETTE
Kunjan Udani

Multiorgan COVID-19 Associated Coagulopathy

Title

Multiorgan COVID-19 Associated Coagulopathy

Authors

Kunjan Udani MD, Matthew Crabtree DO, John Tyler Dent DO, Dr. Robert Sherertz MD

Introduction

The COVID-19 pandemic, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has been associated with significant morbidity and mortality worldwide. Initially thought to predominantly affect the respiratory system, it is increasingly appreciated that COVID-19 has multisystem manifestations, particularly those caused by arterial and venous thrombi.

Case Presentation

A 52-year-old male with a past medical history of poorly controlled insulin dependent diabetes mellitus tested positive for COVID-19 and was prescribed prednisone and azithromycin for outpatient management. He re-presented to the hospital a week later with diffuse, sharp, intense, non-radiating abdominal and back pain beginning 4 hours prior to arrival. He was febrile. He was noted to have abdominal and costovertebral angle tenderness to palpation. Labs revealed lymphopenia, elevated inflammatory markers (d-dimer, ferritin, lactate dehydrogenase, C reactive protein (CRP), erythrocyte sedimentation rate (ESR)), hyperglycemia, and diabetic ketoacidosis. Computed tomography (CT) of the abdomen/pelvis demonstrated bilateral renal cortical infarcts. CT angiogram of the chest demonstrated bilateral pulmonary emboli with moderate clot burden without any evidence of right heart strain and an intraluminal thrombus extending from the left lateral wall of the aortic arch. Notably, his renal function remained within normal limits during his hospitalization. Heparin infusion was initiated for management of renal and pulmonary thrombi. Dexamethasone was given for continued suppression of his COVID-19 related inflammation. At discharge, he was transitioned to rivaroxaban.

Discussion

Several mechanisms are implicated in COVID-19 induced hypercoagulability resulting in multisystem microangiopathic thrombotic events. The SARS-CoV-2 virus first binds to the ACE-2 receptor. Internalization and viral replication provokes an inflammatory state that seems roughly proportional to the height of certain laboratory parameters that are measures of inflammation (interleukin-6, CRP, ESR, lactate dehydrogenase, and ferritin). In some individuals, there is the parallel demonstration of a hypercoagulable state and disseminated intravascular coagulation evidenced by changes in certain laboratory parameters (elevated d-dimer and fibrin degradation products, and thrombocytopenia). Both the inflammatory and thrombophilic responses are potentiated by a cytokine storm induced by a multitude of mechanisms: endothelial dysfunction, von Willebrand factor secretion, circulating free thrombin, dysregulated activation of the complement and renin-angiotensin systems, and activation of monocytes, macrophages and neutrophils. The presence of antiphospholipid antibodies is also implicated in thrombotic events. Because of these mechanisms, thrombi in the microvasculature lead to infarcts in multiple organs, including lungs, brain, kidneys, and others. At its most severe, the hypercoagulable state has several measurable laboratory abnormalities including higher levels of d-dimer and fibrin degradation products, and lower levels of platelets, fibrinogen, and anti-thrombin. This is especially true in non-survivors. Several case reports and studies have concurred that coagulopathy is associated with poorer prognosis. In addition to increased mortality, patients are at increased risk of morbidity due to microangiopathy, including renal cortical necrosis and irreversible renal failure, and progressive respiratory failure. Pulmonary capillary thrombosis likely plays a significant role in progressive hypoxia. Amidst this hypercoagulable state, COVID-19 patients are likely to benefit from thromboprophylaxis. The American Society of Hematology recommends continued thromboprophylaxis following discharge in certain high-risk populations. Given these recommendations, our patient was discharged with rivaroxaban.

TENNESSEE POSTER FINALIST - CLINICAL VIGNETTE
Nicholas Campbell, DO

“Where did that come from?” An atypical case of COVID-19 infection

Title

“Where did that come from?” An atypical case of COVID-19 infection

Authors

Nicholas Campbell DO, Jetina Okereke MD, Jon-Austin Ash MD, Maria Tudor DO

Introduction

COVID-19 is known for causing a range of presentations from asymptomatic to acute respiratory distress syndrome. The case presented is unlike typical cases of COVID-19 as the patient remained asymptomatic despite having a large pleural effusion. While pleural effusions have been reported with COVID-19, the exact incidence is unknown and per literature review appears rare. This report serves to increase the recognition of pleural effusions with COVID-19.

Case Presentation

An 83-year-old female with a history of coronary artery disease, hypertension, atrial fibrillation with a pacemaker, anxiety, COPD on 2L, and severe debility completely bed bound presented from a nursing facility after testing positive for COVID-19 and an isolated episode of hypotension. Per family, she normally is able to converse however was now minimally interactive. There were no reports of shortness of breath, chills, fever, or loss of smell or taste. Vitals were HR 96 bpm, RR 14 bpm, BP 113/57, and oxygen saturation 98% on 2L. She did not interact during conversations and only responded to her name. Exam revealed bilateral rhonchi and decreased right breath sounds. Chest x-ray was significant for right pleural effusion with bibasilar atelectasis. CTA chest revealed bilateral patchy ground glass opacities consistent with COVID-19 pneumonia. Labs were notable for normal WBC, elevated d-dimer, normal BNP, normal ferritin, and a urinalysis consistent with a urinary tract infection. COVID-19 treatment was considered with remdesivir or dexamethasone but decided against due to no respiratory compromise. Although asymptomatic, a thoracentesis was obtained for diagnostic purposes. 600 mL of yellow pleural fluid was drained and laboratory findings were notable for lymphocytic predominance (94%) and a protein ratio consistent with exudative effusion. Follow-up x-rays showed an improved pleural effusion. She would remain without respiratory symptoms and her mental status improvement modestly, close to baseline.

Discussion

The etiology of the patient's pleural effusion was not initially known. Heart failure, pulmonary embolism and pancreatitis were excluded based on history and laboratory values. Malignancy was a concern however cytology was never reported. Further investigation would have been pursued however she lacked history to suggest malignancy and given her poor quality of life any cancer would not be treated. A literature review of pleural effusions in COVID-19 revealed this to be an uncommon complication but its association has been reported in some case reports. (1-4) Due to the similarity of this case to others and negative workup, her pleural effusion was attributed to COVID-19. Viral parapneumonic pleural effusions are not common however their presence has been associated with a number of viral illnesses, including those compared to COVID-19 such as MERS, SARS, & H7N9. (4-6) Typically these are benign and resolve with the illness; however in MERS the presence of a pleural effusion was an independent predictor of increased mortality. (5) As more information is published about COVID-19, it is likely similar oddities will be known, potentially showing pleural effusions as an under-reported consequence. This case demonstrates other manifestations of an infectious disease that has a myriad of unique presentations.

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TENNESSEE POSTER FINALIST - CLINICAL VIGNETTE Akesh Thomas

Gemella bergeri Endocarditis a Case Report

Title

Gemella bergeri Endocarditis a Case Report

Authors

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Introduction

Gemella bergeri is a gram-positive coccus seen in pairs and clusters. It is a normal human gastrointestinal and genitourinary flora but has been exceptionally rarely reported to cause bloodstream infection and endocarditis. After an extensive literature review, we were able to find 9 cases of Gemella bergeri endocarditis reported in the literature with only two cases from the United States. Here we are reporting a case of mitral valve endocarditis by G.bergeri.

Case Presentation

A 72-year-old female with a past medical history of Multiple myeloma, deep vein thrombosis, hypertension, and Hyperlipidemia was brought to the emergency department with lethargy and reduced food intake for two days. The patient had undergone a screening colonoscopy and biopsy a week before the current presentation. At the time of presentation, the temperature was elevated to 103.8 F. She was also tachypneic, hypotensive, and hypoxic, with oxygen saturation of 82% on room air. Initial laboratory evaluation revealed the presence of elevated lactic acid levels of 1.5, elevated white cell count of 11.2 with left shift, and the arterial blood gas studies showed the presence of high anion gap metabolic acidosis. The patient failed to gain blood pressure with Intravenous fluids resuscitation given as per sepsis protocols and was started on vasopressor medications. She was also started on vancomycin and cefepime. The initial transthoracic echocardiogram obtained showed mild mitral regurgitation but was otherwise normal. Her clinical condition improved on day one only to worsen the next day; on day 3, Gemella bergeri was isolated in the blood culture. The antibiotics were switched to intravenous penicillin. The patient's condition continued to worsen. A transesophageal

echocardiogram was obtained on day six of admission, which showed the presence of severe mitral regurgitation with irregular mitral valve thickening and possible mitral valve perforation. The patient's overall condition precluded her from getting a mitral valve replacement surgery. Her condition continued to worsen, and the patient expired on day eight of hospital admission.

Discussion

As seen in our case G.bergeri endocarditis is rapidly progressive and is often fatal unless the patient receives early medical and surgical treatment. Marked destruction of the mitral valve by G.bergeri has been reported [1]. While G.bergeri has been reported as normal flora in the colon; it is unknown whether the colonoscopy and biopsy the patient had undergone paved the way for the infection. Most of the reported cases of G.bergeri endocarditis are associated with underlying valvular heart disease [2,3,4]. In culture-negative cases infections molecular diagnosis by 16s rRNA gene sequencing is the diagnostic method of choice [5,6]. Neurologic complications, including embolic stroke and intracerebral hemorrhage from G.bergeri infection, have been reported [7]. Intravenous penicillin, gentamycin, and ceftriaxone were the antibiotics used in treating previously reported cases of G.bergeri endocarditis. G.bergeri has been reported as a cause of purpura fulminans and orbital abscess in isolated case reports as well [8,9]. Gemella morbillorum and Gemella haemolysans are species within the Gemella group that are also extremely rarely reported to cause infective endocarditis [10,11].

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TEXAS POSTER FINALIST - CLINICAL VIGNETTE Nina S Appareddy

A Reversible Cause of Psychosis: Thyroid Storm

Title

A Reversible Cause of Psychosis: Thyroid Storm

Authors

Dr. Nina Shyama Appareddy MD, Dr. Nayeli Zarate MD, Ms. Nancy Vergara, Dr. Henry Kwang MD

Introduction

Thyroid storm is a rare and life-threatening endocrine emergency with an incidence of less than 1 per 100,000 persons in the U.S. annually. Common presenting symptoms include hypotension, congestive heart failure, tachycardia, atrial fibrillation and other arrhythmias. Less than 1% of patients in thyroid storm present with psychosis as a primary feature. With a mortality rate ranging from 10-30%, patients presenting with psychosis must be evaluated for infectious, toxic/metabolic and other reversible etiologies to ensure timely diagnosis. The Burch-Wartofsky point scale can be utilized to predict the likelihood that a patient with thyrotoxicosis is in thyroid storm based upon presence of CNS, GI, Cardiovascular and thermoregulatory dysfunction.

Case Presentation

A 28 year-old Latina female with a history of menorrhagia, uterine fibroids and iron deficiency anemia presented to the Emergency Department with altered mental status. She is a student working multiple jobs with several psychosocial stressors. Patient was initially seen pacing in her room, displaying flight of ideas, pressured speech and delusions of grandeur. Her roommates noted similar behaviors for several days prior, which prompted family to bring her to the ED. Patient had 2 brief episodes of hypomania four years prior which she attributed to academic and other psychosocial stressors. Work-up at that time was limited to CBC, CMP, UDS and salicylate level. Patient was carefully evaluated for organic and potentially reversible causes of psychosis. Work-up included CBC, CMP, CSF studies, HIV panel, urinalysis, standard urine drug screen, K2, Spice, LSD, lead level, CT Head and MRI Brain that were all negative or within normal limits. The patient was initially started on benzodiazepines for agitation, which were discontinued when the psychiatry consultant started patient on antipsychotics. After

discontinuation of benzodiazepines, the patient's heart rate increased from 110-150s with sinus tachycardia on ECG. TSH was

Discussion

The lifetime prevalence of psychotic disorders in the U.S. is approximately 3%, with an estimated 0.21% accounting for psychosis due to a general medical condition such as infection, electrolyte disturbance, drugs or toxicity. Patients presenting with psychosis must have complete medical work-up in order to exclude underlying and potentially reversible causes of psychosis, prior to establishing a primary psychiatric diagnosis. Given the vastly differing modes of treatment for various etiologies of psychosis, clinicians must complete a thorough evaluation of reversible causes in order to make this potentially life-saving diagnosis.

TEXAS POSTER FINALIST - CLINICAL VIGNETTE Emily Bergstrom, MD

An Uncommon Diagnosis Presenting as Acute Blood Loss Anemia

Title

An Uncommon Diagnosis Presenting as Acute Blood Loss Anemia

Authors

Emily Bergstrom, MD; Kim Minh Le, DO; Christopher Hearne, MD (Faculty)

Introduction

Cryptogenic Multifocal Ulcerous Stenosing Enteritis (CMUSE) is a rare disease that is difficult to diagnose because of the nonspecific clinical manifestations and vague radiological findings across multiple diagnostic modalities. This abstract aims to present a case of CMUSE, re-iterate how its presentation can mimic other common GI conditions, and emphasize the importance of its consideration when the common GI conditions do not align with a patient's presentation.

Case Presentation

78 year old male presented with two episodes of hematochezia. The patient denied prior history of anemia or melena and was not on oral anticoagulation. He completed a colonoscopy which revealed pan diverticulosis and internal hemorrhoids. He continued to have intermittent hematochezia with significant anemia. A pill cam was then completed and showed distal small bowel with active bleeding from unclear etiology. A distal small bowel stricture was noted to be present, and for this reason, the pill cam was unable to pass. CT enterography was then recommended; this did not reveal a small bowel stricture as was seen on the pill cam study, but rather, it revealed a 1cm enhancing nodule in the distal small bowel. Surgery was consulted for small bowel laparoscopy with plan for resection of the nodule to obtain pathology. Two small bowel tumors were observed in the distal ileum approximately 10cm apart in addition to a jejunal diverticulum with thickened tissue. Pathology reported non-specific shallow ulceration confined to the mucosa and submucosa and no identifiable granulomas. Working differential diagnoses at that time included: Crohn’s Disease, CMUSE, and Drug Induced Ulceration with Stenosis. Immunological work revealed negative C-ANCA, P-ANCA, Saccharomyces Cerevisiae Antibodies: IgG 4.5, IgA 5.2 (Relative Ranges 0-24.9). After negative antibody titers, the working diagnosis in this patient is CMUSE.

Discussion

Although this patient did not present with an ileus as many patients with CMUSE do, the anemia secondary to GI bleeding, ulcerations and capsule retention in the distal small bowel are consistent with the diagnosis. Tao et al reported in 2019 that the most effective form of treatment is immunotherapy and surgery, the reported patient receiving the latter. However, the recurrence rate is high, and some patients become steroid dependent. Increasing awareness of this condition can contribute to identification of the optimal treatment of this rare condition in an effort to improve the lives of those affected.

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TEXAS POSTER FINALIST - CLINICAL VIGNETTE Ria Cabanero, MD

"Lupus & Lungs: ANA -negative Lupus presenting initially with Pleural effusion"

Title

"Lupus & Lungs: ANA -negative Lupus presenting initially with Pleural effusion"

Authors

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Introduction

Systemic Lupus Erythematosus (SLE) is a chronic inflammatory disease that effects any organ of the body and manifests as fever, fatigue, rash and arthritis. Patients may present with only a few clinical features of SLE that can resemble other autoimmune, infectious, or hematologic diseases. Cough or dyspnea are often the first clues of lung involvement (1). The diagnosis of SLE should promptly be considered in any febrile patient with unexplained pulmonary involvement, including pleural effusions. Supportive laboratory studies makes the diagnosis of SLE relatively straightforward, however a negative ANA does not preclude the diagnosis and warrants further workup.

Case Presentation

A 21-year-old male patient presented with one week of fever and cough worsened with exertion. He also complained of intermittent bilateral knee arthritis and fatigue. He denied family history of connective tissue disease. Lung examination revealed diminished lung sounds in the lower left and right hemithorax, and dullness to percussion. Lymphadenopathy were appreciated in the cervical and inguinal area. CXR and Chest CT revealed increased density in the lower zones of left and right hemithorax, consistent with pleural effusion. A left thoracentesis was performed for therapeutic and diagnostic purposes, which revealed serous fluid, consistent with exudative pleural effusion. Cytological examination did not reveal signs of

malignancy, nor were acid resistant bacilli present. Direct Gram stain and culture were negative for bacteria and fungi. COVID-19 PCR , HIV, CMV, and EBV DNA were negative. CBC showed Hemoglobin 10.2g/dl, Platelet 217 x103 /u, RBC 3. 48 x 10 6 /uL. Ferritin 378 mg/ml. INR 0.9. His CMP was unremarkable. Random urine protein and urine creatinine were 233mg/dl and 174mg/dl respectively. Immunological blood tests were negative for antinuclear antibody (titer

Discussion

Pleural effusion accounts for 4-5 % of patients with SLE and involvement may include, pneumonitis, interstitial lung disease, or pulmonary hypertension (5). Although these are common features of SLE, as an initial presentation it is rare (6). The presence of Antinuclear antibodies (ANAs) has been a hallmark of SLE, a feature incorporated into multiple classification criteria. Approximately, 5% of patients with lupus are ANA- negative, creating a new subgroup of SLE (3,4). Screening for ANA is highly influenced by testing methods, including testing substrate, disease duration and treatment exposures (7,2). In this case report, the patient presented with a pleural effusion, a prime example of the complexity of this disease. Pleural effusion and a negative ANA could easily be a misdiagnosis. It is important to keep SLE on the differential diagnosis for the initial presentation of pleural effusion, despite a negative ANA in complex cases.

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TEXAS POSTER FINALIST - CLINICAL VIGNETTE Karthik Chamarti, MD

Low Back Pain as the Presenting Symptom in a Previously Healthy Young Adult with Acute Myeloid Leukemia.

Title

Low Back Pain as the Presenting Symptom in a Previously Healthy Young Adult with Acute Myeloid Leukemia.

Authors

Karthik Chamarti, MD (PGY-1 IM resident at Texas Tech University Health Science Center at Permian Basin)

Introduction

The most common presentations of Acute Myeloid Leukemia(AML) are fatigue, fever, weakness, anorexia, weight loss, bleeding, easy bruising, and rarely bone and joint pain. Approximately, 84 percent of adults have low back pain at some time in their lives. Mostly the etiology is related to musculoskeletal origin. Rarely, back pain is an indicator of serious medical illness. Here we describe a case of a healthy young adult presenting solely with severe low back pain, who was later diagnosed with AML. There have been cases of adult patients diagnosed with acute leukemia who presented initially with back pain, but these were accompanied by pain in long bones that is more typical of acute leukemia.

Case Presentation

The Patient is a 29-year-old male with a history of recreational drug abuse, who presented to the emergency room (ER) due to lower back pain. The patient was in his usual state of health 3 weeks ago, after which he started experiencing intermittent low back pain. The patient had been self-treating with over-the-counter analgesic's but the pain had progressively worsened to the point that he decided to show up in the ER. The pain was 6 to 7 out of 10 in intensity. It was aggravated by movement with no relieving factors. He denied recent trauma to the back, fever, fatigue, night sweats, bleeding, weight loss, and IV drug abuse. On examination, his vitals were normal. The patient was in severe distress due to pain. Palpation of the back elicited tenderness over the lower lumbar vertebra (L4-L5). Neurological exam revealed normal strength, sensation, reflex, and range of movements. Radiographs of the lumbar region were normal. Laboratory evaluation revealed a total WBC of 37400 cells/mm3, hemoglobin of 10.1 g/dL, and

platelets of 22 x10^3/mcL. Peripheral blood smear showed predominate blast cells about 80 % consistent with acute leukemia. Blood cultures were negative. Flow cytometry was positive for 70% blast and bone marrow aspirate showed 60-70% myeloid blast with t (8:21). This confirmed the diagnosis of AML. Two months post-diagnosis, the patient is in remission after induction therapy.

Discussion

In recent years it has become evident that the prognosis of young adults diagnosed with AML is poor, so it is important to prevent the delay in diagnosis and treatment in these patients. In our patient, typical symptoms of AML were not present to aid in the clinical diagnosis. Laboratory workup revealed elevated total WBC cells and the presence of blast in his peripheral smear raised the suspicion of acute leukemia, which could be causing the possibility of bone marrow proliferation in the lumbar vertebra causing his low back pain. If blood workup was not ordered on this healthy young adult, thinking that the cause was related to musculoskeletal etiology then his AML would have gone undetected. So in a healthy young adult presenting to the ER, solely with severe low back pain in the absence of trauma, it is important to recognize AML as one of the potential etiologies to prevent the delay in diagnosis and treatment.

TEXAS POSTER FINALIST - CLINICAL VIGNETTE Gabriel R Gonzales

Acute Onset Hydrocephalus Caused by a Colloid Cyst

Title

Acute Onset Hydrocephalus Caused by a Colloid Cyst

Authors

Gabriel Gonzales, DO, Gerardo Mederos, MD, Som Aftabizadeh, DO, Madhrira Machaiah, MD, Dr. Frood Eelani, DO

Introduction

A headache in a young individual can often be regarded as benign with a low morbidity and mortality burden, often diagnosed as a primary headache. But in rare cases the headache is a symptom of a severe underlying pathology with significant medical consequences. We present a rare and fatal case resulting from hemorrhagic transformation of a colloid cyst located in the third ventricle. It is important for the clinician to recognize the red flag symptoms associated with a headache in order to keep a broad differential diagnosis.

Case Presentation

The patient is a 36 year old male with no past medical history that presented with a persistent headache despite over the counter medications. His headache started insidiously, slowly increased in severity with eventual intractable nausea, vomiting, encephalopathy, and slurred speech. Initial lab results were unremarkable. A drug screen was positive for marijuana. A non-contrast computed tomography scan of the head demonstrated ventriculomegaly of the lateral and 3rd ventricles without obstruction. The patient was initiated on mannitol, steroids, antibiotics, and antiviral medications. A lumbar puncture was performed with unremarkable findings. Despite intervention, his condition deteriorated requiring intubation. Within hours, he developed signs of severe neurological damage. An emergent ventriculostomy was performed. A diagnosis was made after MRI of the head revealed a 17 mm obstructive hemorrhagic colloid cyst. Other findings included extensive ischemic changes to the thalami, internal capsules, cerebral peduncles, hippocampi, and amygdalae. The symmetry and distribution of ischemia was suggestive of a venous insufficiency infarct pattern rather than arterial process. Due to infarction of vital structures and poor neurological function, no surgical intervention was performed and the patient was transitioned to hospice care.

Discussion

Colloid cysts make up

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TEXAS POSTER FINALIST - CLINICAL VIGNETTE Kavita Gupta, MD

An Interesting Case of Aseptic Myonecrosis in an HIV Patient

Title

An Interesting Case of Aseptic Myonecrosis in an HIV Patient

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Introduction

Aseptic myonecrosis is a spontaneous myonecrosis unrelated to trauma, surgical procedure, vascular occlusion, infective or neoplastic etiology. As its presentation closely mimics cellulitis and thromboembolism; it can be diagnostically challenging. We report a case of aseptic myonecrosis in an HIV patient, which is extremely rare and critical to identify.

Case Presentation

A 38-year-old male with a past medical history of Human Deficiency Virus (HIV) not on antiretroviral therapy (ART) presented with sudden onset left lower extremity swelling above the knee joint associated with severe pain and limited range of motion (ROM). He denied trauma, insect bites, or intravenous drug abuse. During the admission, his left lower extremity was hard, tender, and swollen on examination as compared to the right. Laboratory studies showed elevated creatinine kinase (CK) levels of 4417 IU/L, and C- reactive protein (CRP) of 5.3 with an unremarkable complete blood count as well as complete metabolic profile. CD4 count was noted to be 368 cells/mm3. Venous doppler ultrasound revealed areas of thin laminar anechoic fluid noted in the calf. Due to unclear diagnosis on US doppler, computed tomography (CT) of lower extremity was done. Findings showed diffuse subcutaneous edema in the left thigh and knee along with large areas of non-enhancing muscular edema affecting the posterior and medial compartments of the left thigh involving large regions of the left

semimembranosus, semitendinosus, long head of biceps femoral, adductor magnus and obturator externus muscles. No intramuscular or superficial fluid collections were noted. No vascular anomalies such as arteriovenous fistula, thrombi, emboli or intramural hematoma were reported. He received intravenous fluids as well as empiric antibiotics. Compartment pressures were measured serially every 2 hours, but remained within the normal range. Magnetic resonance imaging (MRI) done on day 6 showed findings of diffuse subcutaneous edema. It also showed decreased muscular enhancement in the abductor compartment measuring up to 9 x 8.6 x 17 cm and within the posterior compartment measuring 10 x 5.7 x 20 cm with radiological evidence of myonecrosis. ART was not initiated during hospitalization due to concerns regarding resistance and was pending further testing results. Gradually, the swelling improved and CK levels trended down with supportive care with antibiotics and IV fluids. During follow up after 4 weeks, patient reported improvement in symptoms.

Discussion

Acute myonecrosis in the setting of HIV is extremely rare. Our case report highlights three important aspects of this clinical condition. First, early diagnosis is important as it can lead to acute kidney injury secondary to myoglobin. Secondly, it requires only conservative management along with ART therapy. Third, MRI scan is superior to CT scan in diagnosis of myonecrosis. Atraumatic myonecrosis in our patient is thought to be secondary to HIV associated vasculopathy leading to muscle infarction. HIV associated vasculopathy includes subtypes such as HIV-associated accelerated atherosclerosis, nonatherosclerotic vasculopathy, HIV-associated vasculitis and small vessel disease. Level of immunosuppression, ART treatment, and CD4 count, play an important role in the subtype of HIV-associated vasculopathy that a patient develops.

TEXAS POSTER FINALIST - CLINICAL VIGNETTE Scott Hatcherson

NEEDLE EMBOLUS TO THE HEART IN AN INTRAVENOUS DRUG USER

Title

NEEDLE EMBOLUS TO THE HEART IN AN INTRAVENOUS DRUG USER

Authors

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Introduction

Foreign bodies in the heart are very rare. Needle embolisms (NE) in the myocardium and pericardium are even rarer. This case illustrates the importance of having high clinical suspicion for this condition when treating intravenous drug users (IVDU) presenting with chest pain.

Case Presentation

A 28-year-old male IVDU presented to the emergency department with acute, severe, pressure-like chest pain with dyspnea that began suddenly after he injected ice (crystal methamphetamine). Two years prior to arrival, he had accidentally broken off two needles in his right arm. Upon examination, he was afebrile, tachycardic (115-125 beats per minute), tachypneic (18-30 breaths per minute), blood pressure ranged 90/60 to 131/117 mmHg, and pulse oximetry was 99% saturation. He had distal heart sounds with faint pulses and the remainder of his exam was non-contributory. His troponin was normal, but an electrocardiogram demonstrated subtle ST segment elevations in the inferolateral leads concerning for ST-elevation myocardial infarction (STEMI). Bilateral coronary angiogram with left ventriculogram demonstrated normal anatomy, ejection fraction of 55%, and mild inferior hypokinesis. There appeared to be a foreign body within the heart prompting emergent computerized tomography of the chest and transthoracic echocardiogram which demonstrated a needle in the right ventricle. His mean arterial pressure dropped to around 60-75 mmHg, so he was rushed to the operating room where an emergent median sternotomy was performed.

During the procedure, 500 milliliters venous pericardial effusion was drained. Upon exploration of the mediastinum, a needle was found embedded in fibrotic tissue and removed from the trabeculations of the apex of the right ventricle. A second needle was not found, so his pericardial sac was copiously irrigated, three chest tubes were placed, and the sternum was closed. An additional 500 milliliters of fluid were obtained before all tubes were removed and the patient was discharged.

Discussion

This illustrates a very rare case of NE from the forearm into the myocardium and pericardium through the venous system. Such incidents do not necessarily lead to infection and can be tolerated asymptomatically for many years. There are currently no guidelines for such cases. The object does not need to be removed if the patient remains asymptomatic and there is no concern for anatomical damage. If expectant management is pursued, vigilance should be maintained since failure to remove such items can potentially lead to cardiac tamponade, infection, embolism, or arrhythmia. The risks and benefits of major surgical procedures for removal should be considered in symptomatic and/or unstable patients and multi-disciplinary management should be utilized. Cardiovascular surgery, cardiology, infectious diseases, internal medicine, psychiatry, wound care, and drug abuse rehabilitation professionals should be consulted as necessary in developing the treatment plan.

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TEXAS POSTER FINALIST - CLINICAL VIGNETTE Mashroor Jahan

A Curious Case of Anosmia and Ageusia in Giant Cell Arteritis during SARS-CoV-2 Pandemic

Title

A Curious Case of Anosmia and Ageusia in Giant Cell Arteritis during SARS-CoV-2 Pandemic

Authors

Mashroor Jahan, Yuanchen Wang, Jovan Popovich, Robert Jackson

Introduction

Temporal arteritis is a medium to large vessel vasculitis that typically presents after the age of 50 with the classic symptoms of temporal headaches, scalp tenderness, jaw claudication, and association with symptoms of polymyalgia rheumatica. There are also nonspecific elevations in the body's inflammatory markers including ESR, CRP, Ferritin, LDH, IL-6, amongst others. However, there are also lesser known, atypical symptoms that can be the first signs of GCA. This fact is crucial during this Sars-CoV-2 pandemic of 2020, in that the presenting symptoms can be almost identical in both disease processes. Here, we present a case of biopsy proven GCA with the initial presentation being anosmia and ageusia.

Case Presentation

The patient is a 73 year old Caucasian female with a past medical history of hypertension, hypothyroidism, and depression, who presented with fatigue, loss of taste and smell (can only smell strong coffee and taste salty and sweet foods), and headache. There was concern for COVID-19, but she had tested negative for the COVID-19 PCR on two separate tests. The headache was initially worked up with concern for migraine, but her blood tests showed high ESR and CRP. Upon further questioning, she also did have tightening of the jaw muscles, and some photophobia, but no other vision disturbances. With the elevated inflammatory markers, headache, and non-specific visuals symptoms, concern now shifted to diagnosis of GCA. The patient was started on Dexamethasone 12 mg as she had problems tolerating Prednisone in the past. She underwent a bilateral temporal artery biopsy which showed bilateral treated/healing Giant-cell (temporal) Arteritis, with multifocal segmental absence of internal elastic lamina, numerous histiocytes associated with disrupted internal elastic lamina, transmural lympho-histiocytic inflammatory infiltrate, focal, medial and adventitial fibrosis, marked intimal

thickening with fibro-myxoid changes and luminal narrowing and no well-formed granulomata or multinucleated giant-cell infiltrate identified. The patient continued steroids with improvement of symptoms and was started on Tocilizumab, as a steroid sparing therapy, with continued suppression of symptoms.

Discussion

Temporal arteritis is a vasculitis of medium to large vessels, which in severe cases, can lead to blindness with involvement of the ophthalmic artery. As more research comes out on Sars-CoV-2, there is increasing evidence showing that the virus creates a hyperinflammatory state, which is like the pathophysiology seen in GCA. Involvement of the blood supply supplying the nasal and lingual arteries can explain these symptoms. Furthermore, the treatment for both diseases include anti-inflammatory agents including steroids, and the IL-6 receptor inhibitor, tocilizumab. Immediate treatment however, with high dose steroids is required if there is concern for GCA with vision loss. Thus, it is imperative that amidst this COVID-19 pandemic, that there is not a delay in diagnosis of GCA with the initial symptoms that mimic a viral infection.

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TEXAS POSTER FINALIST - CLINICAL VIGNETTE Govind Jha, MBBS

A case of Kikuchi Disease masquerading as lymphoma in a young female

Title

A case of Kikuchi Disease masquerading as lymphoma in a young female

Authors

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Introduction

Kikuchi-Fujimoto disease, originally described in young women, is a rare cause of cervical lymphadenopathy and fever. (1)

Case Presentation

The case involves a 20-year-old female with a history of persistent cervical lymphadenopathy of 2 months duration. No B symptoms including fever, night sweats, and weight loss. No complaints of dysphagia, hoarseness, difficulty in breathing, bleeding, hemoptysis, hematemesis. She was initially commenced on steroid therapy, with responsiveness; however, the mass returned on weaning off. On examination, bilateral cervical lymphadenopathy, right worse than left was seen. She underwent a CT scan which revealed multiple enlarged and small-sized rounded and oval homogenously enhancing lymph nodes seen in Left level IA, IB, II, measuring up to 1cm. No evidence of calcification/necrosis seen. Fiberoptic Nasopharyngolaryngoscopy was done with no evidence of masses, lesion, erythema, inflammation. Following this, an open neck biopsy to rule out lymphoma was done. This biopsy showed lymph node tissue with extensive necrosis and extra nodal extension into soft tissue. No large, atypical cells. The abundant necrosis and karyorrhexis coupled with the proliferation of CD123+/TCL1+ cells characteristic of plasmacytoid and dendritic cells supported the diagnosis of Kikuchi-Fujimoto disease. Immunostains for CMV, HHV8, and HSV1/2 were negative for viral inclusions. AFB and Warthin-Starry stains were also negative. DNA deposits characteristic of SLE not seen.

Discussion

The etiology for Kikuchi disease has not yet been fully described, although inciting agents including Epstein-Barr virus (EBV) HHV 6, 8, HIV, parvovirus B19 have been described (2). Apoptosis by CD8-positive T lymphocytes via Fas and perforin pathways have also been described (3). Although most frequently reported from Asia, this disease has been found in all racial and ethnic groups and in many countries. The most common presenting features are Lymphadenopathy, Fever, Rash, Arthritis, Fatigue, Hepatosplenomegaly (4). There are no specific lab findings in Kikuchi disease and diagnosis is via lymph node biopsy. Histological appearance changes with disease progression. In the proliferative phase, follicular hyperplasia and paracortical expansion by lymphocytes, blast cells, monocytes, histiocytes are seen, while the necrotizing phase shows necrosis without neutrophilic infiltrate. Kikuchi disease is a self-resolving condition in 1 to 4 months with no effective treatment established. (5) Severe relapsing cases can sometimes be responsive to high dose glucocorticoids and IVIG.(6) Thus, a diagnosis of Kikuchi disease must be kept in mind in addition to lymphoma, tuberculous adenitis, LGV, Kawasaki disease when evaluating for lymphadenopathy in these groups of patients to prevent harmful aggressive therapy in these cases

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TEXAS POSTER FINALIST - CLINICAL VIGNETTE Joscilin Mathew

A case of Concomitant Coccidioidomycosis in SARS-CoV-2 with concomitant refractory Pneumothorax

Title

A case of Concomitant Coccidioidomycosis in SARS-CoV-2 with concomitant refractory Pneumothorax

Authors

Joscilin Mathew- Department of Internal Medicine, Texas Tech University Health Sciences Center El Paso Sundar V. Cherukuri- Department of Internal Medicine, Texas Tech University Health Sciences Center El Paso Fatma Dihown- Department of Internal Medicine, Texas Tech University Health Sciences Center El Paso

Introduction

The incidence of secondary co-infections particularly fungal infections among SARS-CoV-2 is not well described. Little is known of the complications that could be encountered in such conditions.

Case Presentation

50-year-old Hispanic male, with past medical history of Type 2 diabetes mellitus, was diagnosed with SARS-CoV-2. He was a prior smoker with a 7.5 pack year smoking history. Chest x-ray at admission showed multifocal opacities in mainly the middle and lower lobes, and a 6.1 cm pneumatocele in the medial right lower lung. He started on azithromycin, vitamin C, vitamin D, and zinc(institutional practise at that time). And was requiring supplemental oxygen at 3L via nasal cannula. He was discharged with home oxygen and had titrated it down over the course of two weeks at home. A month later, he presented with sudden onset cough and shortness of breath. SARS-CoV-2 nucleic acid testing on admission remained positive and he was saturating 94% on room air. Chest x-ray showed a 3.7 x 2.9 cm air filled cystic structure with a round solid dependent component in the right lower lung field. A computed tomography (CT) thorax showed a thin walled cavitary lesion with a fungal ball in the superior segment of the right lower lobe, as well as multiple cavitary nodules in bilateral upper lobes and in the superior segment of the lower lobes, suggestive of pulmonary coccidioidomycosis. Imaging studies also showed development of right-sided pneumothorax, associated collapse of the right lung, and

right pleural effusion. A pigtail catheter was placed. Pleural fluid analysis showed: serum protein of 9, pleural protein of 7.2, serum lactate dehydrogenase (LDH) of 242, and pleural LDH of 2401, meeting Light's criteria for an exudative effusion. Serologic studies obtained to investigate the etiology of his cavitary lesions were positive for coccidioides antigen. The patient was started on amphotericin B liposomal initially due to suspicion for CNS involvement. This was later switched to fluconazole 600mg PO daily when he developed an acute kidney injury after initiating amphotericin. A chest tube was placed for pneumothorax. Due to initial interval improvement of the pneumothorax on follow up radiographs, the chest tube was switched to water seal, but unfortunately, the pneumothorax re-expanded. Another attempt was made to transition the chest tube to water seal; however, re-expansion occurred again. The pigtail chest tube was then swapped to a 32-Fr chest tube and chemical pleurodesis was performed. After 48 hours of suction, it was transitioned successfully to water seal and no re-expansion of the pneumothorax was noted. Throughout the hospital course, the patient continued to saturate well and required minimal to no supplemental oxygen. He was discharged with a four-week oral course of fluconazole 400mg and was to follow up closely as an outpatient for continued monitoring.

Discussion

The presence of pneumothorax is associated with a worse prognosis, especially in patients with comorbidities such as diabetes, immunosuppression and malignancy. Suspicion for concomitant fungal infection is such patients should be high and would necessitate further investigation.

TEXAS POSTER FINALIST - CLINICAL VIGNETTE Maria Goretti Ochi, MD

Acute Urticaria and Angioedema associated with H. Pylori and Strongyloides Co-Infection

Title

Acute Urticaria and Angioedema associated with H. Pylori and Strongyloides Co-Infection

Authors

Maria Goretti S. Ochi, MD; Sara Lugonjic, DO; Hemali Patel, MD

Introduction

Urticaria, also known as hives, is a common disorder characterized by recurrent, pruritic, pink-to-red edematous lesions that often have pale centers (wheals) that can range in various sizes [1]. Urticaria can be classified as acute (6 weeks). Helicobacter pylori (H. pylori) infection has been the subject of investigation as a possible cause of chronic urticaria in the last few years [2]. Likewise, urticaria has been associated with a variety of helminth infections including Strongyloides.

Case Presentation

An 18-year-old female with an unremarkable past medical history presented with chief complaint of diffuse, pruritic rash that started two days prior to presentation. Her associated symptoms included cramping epigastric pain, nausea, vomiting, and diarrhea. She endorsed that her abdominal pain and intermittent diarrhea had been persistent for the last month. She recently immigrated to Texas from Honduras. Her exam was significant for a diffuse maculopapular rash consistent with urticaria. Additionally, early in her hospital course she also developed angioedema without laryngeal edema that resolved with steroids. Computed tomography (CT) of her abdomen and pelvis were remarkable for fluid in the small bowel related to possible gastroenteritis or non-specific inflammation. Her labs were notable for an elevated white blood cell count of 15300 with the differential showing an absolute eosinophil count of 900. A work up to connect her abdominal complaints to her dermatological findings was initiated. As her symptoms improved with supportive measures she was discharged home with instructions to follow up with her primary care provider. Subsequently, she was found to be positive for H. Pylori Stool Antigen, and her serum Strongyloides IgG antibody was elevated

to 4.8. The results of these tests were discussed with her and treatment was prescribed for both.

Discussion

Both H. pylori and Strongyloides infections have been noted to cause urticaria. It is thought that infection with H. pylori increases the permeability of the stomach lining consequently increasing the exposure of allergens in the gastrointestinal tract. Also, the immune response to H. pylori produces antibodies that may encourage the release of histamine in the skin. Our patient presented with symptoms of urticaria and angioedema as well as gastrointestinal symptoms of epigastric pain and diarrhea. Symptomatic Strongyloides infections usually result in gastrointestinal and less often respiratory symptoms or dermatologic manifestations including urticaria. We suspect the patient's dual infections most likely exacerbated an acute allergic reaction of urticaria and angioedema, among other symptoms. Further investigation is needed to evaluate the exact etiology and pathophysiology of H. pylori and other infections and autoimmune urticaria.

TEXAS POSTER FINALIST - CLINICAL VIGNETTE Sujith Puskoor

A Cold Vicious Pernicious Anemia (Pernicious Anemia Presenting with Cold Agglutinin Disease)

Title

A Cold Vicious Pernicious Anemia (Pernicious Anemia Presenting with Cold Agglutinin Disease)

Authors

Sujith Puskoor, DO; Kim Minh Le, DO; Allen Jacob, MD; Rakesh Surapaneni, MD

Introduction

Most anemias are secondary to iron deficiency, but patients requiring recurrent blood transfusions should be further evaluated. The following case presents a non-vegetarian, O-positive, patient with a history of multiple ER visits requiring repeated blood transfusions. She was ultimately diagnosed with Vitamin B12 (VB12) deficiency deemed secondary to pernicious anemia (PA) but was also found to have simultaneous autoimmune hemolytic anemia (AIHA).

Case Presentation

A 26-year-old African-American female with a medical history of anemia presented to the hospital complaining of intermittent abdominal pain, nausea, vomiting, and dizziness. For one year, she experienced fatigue, chills, and cold intolerance every two to four weeks. Menstrual cycles were described as regular without menorrhagia. Many of her maternal relatives had uncategorized anemia and consumed daily oral iron supplements.

Admission hemoglobin, hematocrit, and platelets were 6.1 g/dL, 17.1%, and 132 × 109/L, respectively. Initial objective data included MCV, 91.4 fL; RDW, 18%; serum iron, 120 ug/dL; TIBC, 364 ug/dL; ferritin, 497 ng/mL; folate, 9.3 ng/mL; cobalamin, <88 pg/mL; haptoglobin below assay lower limit; LDH, 4,111 IU/L; reticulocyte count, 2.0%; total bilirubin, 2.2 mg/dL; and negative ANA. Based on these labs, a hemolytic process was suspected of causing her hypoproliferative anemia, and she was transfused two units of packed red blood cells. Peripheral blood smear showed severe normocytic anemia, thrombocytopenia, tear drop cells, and rare atypical mononuclear cells with immature features. Hemoglobin electrophoresis was unremarkable. No other significant electrolyte, metabolic or vital sign irregularities were noted aside from a heart rate of 106 beats/min. On physical exam, conjunctival pallor and diffuse mild

abdominal tenderness were observed. A later Coombs' test showed positive polyspecific and C3 component and negative IgG component. She was started on IM VB12 and IV iron.

An endoscopy showed global atrophic gastric mucosa and small bowel biopsies were unimpressive. Helicobacter pylori immunostaining was negative. Her intrinsic factor (IF) antibodies returned positive, which correlated with the endoscopy findings to establish the diagnosis of PA. She is to continue taking VB12 with the possibility of adding treatment for AIHA if symptoms recur or worsen.

Discussion

Deficiency of VB12, an animal-origin micronutrient, is a common cause of anemia. Typically, substantial deficiency of VB12 occurs from lack of IF, a gastric-made protein. The combination of anemia, antibodies to IF, and atrophic gastritis in our patient allowed for the diagnosis of PA to be made. The reduced reticulocyte count and thrombocytopenia were likely due to her ineffective hematopoiesis from insufficient VB12. PA should be treated with supplementation of parental or high-dose oral VB12 (allowing for IF-independent absorption via diffusion). The additional diagnosis of cold agglutinin disease (CAD) was demonstrated by Coombs' positive C3 component, increased LDH, increased bilirubin, decreased haptoglobin, and decreased hemoglobin. CAD can be treated by pharmacological and non-pharmacological means, including avoidance of cold, treatment of underlying causes, B-cell-targeted treatments, and complement-system modifications. Recently, rituximab with bendamustine has shown positive outcomes in those with life-interfering CAD symptoms.

An increased awareness of this dual-presentation leading to a thorough workup will allow affected patients to be treated more readily and appropriately.

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TEXAS POSTER FINALIST - CLINICAL VIGNETTE Ivania C Salinas, MD

Multiple Soft Tissue Tumors: A Cancer Predisposition Genetic Disorder

Title

Multiple Soft Tissue Tumors: A Cancer Predisposition Genetic Disorder

Authors

Ivania Salinas, MD PGY-1. Genesis Perez del Nogal, MD PGY-1. Sarah Kiani, MD Assistant Professor. Department of Internal Medicine, Texas Tech University Health Sciences Center at the Permian Basin, Odessa, TX.

Introduction

Bannayan-Riley-Ruvalcaba Syndrome is a rare genetic disorder caused by mutations in the PTEN gene; several malignant neoplasms have been associated with loss of function of this gene. Clinical manifestations arise early during childhood and include macrocephaly, multiple lipomas, and developmental delay. This syndrome of unknown prevalence belongs to a variety of rare syndromes with different clinical presentations that are collectively known as PTEN Hamartoma Tumor Syndrome.

Case Presentation

A 24-year-old female immigrant from Mexico presented to the clinic with the chief complaint of right knee pain for the past few years. She explained that the pain was present when standing for long periods or walking, causing her to limp. Additionally, she reported chronic upper-back pain and the presence of soft masses throughout her body, which had increased in size in recent years; some of them painful. The physical exam revealed numerous well-defined, mobile soft masses of different sizes with a maximum diameter of 13 cm, causing deformation of the trunk, pelvis, and lower extremities. One of the masses was located on the medial aspect of the right knee. Freckles were observed on the dorsal aspect of hands and feet. A wide gait was also noted due to a leg length discrepancy. On further questioning, she reported that small soft masses began to appear when she was three years of age; a neurocutaneous disorder was suspected but never confirmed. Imaging studies and histopathological results from biopsies of the masses confirmed a benign fatty tissue origin consistent with lipomas. Additional history revealed that the patient was born with macrocephaly and suffered from seizures until five years of age. Growing up, she was diagnosed with developmental delay and learning disability;

nevertheless, she was able to complete high school. The family history was unremarkable, except for a diagnosis of colon cancer in her maternal grandmother at age 52. The patient was the youngest of 6 siblings of unrelated parents; none of the family members had any physical deformity or medical illness. Molecular diagnosis identified a heterozygous missense mutation in the PTEN gene. The patient declined a trial of Sirolimus or surgery for possible palliation of lipomas. She is currently following the recommended cancer surveillance guidelines.

Discussion

Bannayan-Riley-Ruvalcaba Syndrome is inherited in an autosomal dominant manner. At least 10% of the PTEN pathogenic variants are estimated to occur de novo. The PTEN gene, located on chromosome 10q23, is considered to be a tumor suppressor gene that inhibits signaling pathways notably critical for cell proliferation, cell cycle progression, and apoptosis. The loss of function of this gene contributes to the development of different types of cancer, including thyroid, breast, endometrial, colorectal, and renal cancer. This case illustrates the importance of associating cutaneous signs, macrocephaly, developmental delay, and intellectual disability with PTEN gene mutations. Early recognition of this syndrome is critical, given the significantly increased risk of cancer. Some of the recommendations include annual thyroid ultrasound, annual mammography and breast MRI, early colonoscopy, renal ultrasound, among others. The implementation of appropriate surveillance is the primary focus of medical management.

TEXAS POSTER FINALIST - CLINICAL VIGNETTE Nisha Soneji

Spilled Milk: Buffalo chest with bilateral chylothorax

Title

Spilled Milk: Buffalo chest with bilateral chylothorax

Authors

Nisha Soneji MD, Kanza Muzaffar MD, Kevin Ferriter MD, Paul Harford MD Department of Internal Medicine, The University of Texas at Austin Dell Medical School

Introduction

The term “buffalo chest” is used to define a single pleural space with no anatomic separation of the two hemithoraces, seen in an American buffalo or bison. Less than ten cases have been reported in the past where spontaneous bilateral pneumothorax was suspected due to interpleural communication suggesting buffalo chest syndrome. In the previous reports, this interpleural communication have been associated with major invasive thoracic procedures such as esophagectomy, cardiothoracic surgery with median sternotomy, pacemaker placement, and central venous catheter placements. We present a rare case of simultaneous bilateral chylothorax fashioned by a pleuro-pleuro communication creating a life-threatening complication. me.

Case Presentation

A 45-year-old male chronic smoker with past medical history of esophagitis presented with one week of cough and reflux. He otherwise denied fevers, odynophagia, chest pain, weight loss or early satiety. He was hypoxemic on admission requiring 2 L oxygen supplementation. Other vitals were normal on admission. Physical exam revealed decreased breath sounds in the left lower lung base. Chest radiograph showed minimal atelectasis at the left lung base. CT Chest showed a large sliding hiatal hernia with distention of esophagus and centrilobular nodules in the right middle lobe and bilateral lower lobes. The presumptive diagnosis was aspiration pneumonia likely secondary to hiatal hernia. Thus, he underwent laparoscopic para-esophageal hernia repair with EGD. Two days later, he developed acute hypoxic respiratory failure and was urgently intubated. Chest radiograph at the time was concerning for new large bilateral pleural effusions. Within hours, he underwent an ultrasound guided right thoracentesis draining four liters of opaque, pink, non-purulent fluid. Left thoracentesis drained only five mL. Pleural fluid

revealed pH 7.48, elevated triglycerides (600 mg/dL) and low cholesterol (50 mg/dL) indicating chylothorax. He had bilateral chest tubes placed and placed on bowel rest. Despite adequate pleural drainage, he continued to have high output from the right chest tube and minimal output from the left chest tube. Decision was made to evaluate him for thoracic duct injury in the setting of recent hiatal hernia repair. He was eventually taken for right video-assisted thoracoscopic surgery with thoracic duct ligation and talc pleurodesis. During the surgery, it was seen that there was a communication from the pleural cavity into the mediastinal area from the hiatal hernia dissection. This interpleural communication explained the resolution of the bilateral chylothorax with a single right-sided thoracentesis. Patient was extubated thereafter and was discharged.

Discussion

This report documents a rare case of bilateral chylothorax completely resolved with a single sided thoracentesis. The phenomenon was explained by the interpleural connection formed during hiatal hernia repair suggesting buffalo chest syndrome. Recognition of buffalo chest syndrome as a life-threatening complication is important in the setting of iatrogenic injuries during mediastinal surgeries. Prompt resolution achieved with a single sided thoracentesis can be life-saving.

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TEXAS POSTER FINALIST - CLINICAL VIGNETTE William Sovic, MD

Papillary Fibroelastoma in the Left Ventricle – A Rare Disorder

Title

Papillary Fibroelastoma in the Left Ventricle – A Rare Disorder

Authors

William Sovic, MD; Justin Arunthamakun, MD; Ariane Lemieux, MD; Joseph Guileyardo, MD

Introduction

Papillary fibroelastoma is a rare primary cardiac tumor that most often is located on a cardiac valve. This avascular tumor is covered by endocardium surrounding a layer of elastic tissue which in turn covers fibrous tissue. Papillary fibroelastoma has been associated with thromboembolic events including stroke and myocardial infarction. We present a 61-year-old woman with a recent transient ischemic attack who was found to have an 8 mm papillary fibroelastoma located at the apex of her left ventricle.

Case Presentation

A 61-year-old woman presented to the emergency department with two days of episodes of intermittent palpitations associated with dizziness and lightheadedness. The episodes lasted for 20-30 minutes, were brought on by minimal activity, and resolved with rest and meditation. Her past medical history included chronic tobacco use, sinus bradycardia, hypothyroidism, and schizoaffective disorder. She had also had a recent transient ischemic attack (with slurred speech and facial weakness) 6 months prior to this presentation. Workup of her near-syncope and palpitations included a transthoracic echocardiogram. This demonstrated a mobile pedunculated 8 mm mass in the apex of her left ventricle. IV heparin infusion was initiated to treat a presumptive left ventricular thrombus. She then underwent left heart catheterization which demonstrated no coronary artery disease. Cardiac MRI suggested that the mass was more likely a tumor rather than a clot. She underwent successful minimally invasive resection of the mass. Final pathology was consistent with papillary fibroelastoma.

Discussion

Our case highlights the utility of cardiac MRI to help diagnose an undifferentiated left ventricular mass as a cardiac tumor in a patient with a recent TIA. Most cardiac tumors are of metastatic origin; primary cardiac tumors are very uncommon. Of the primary cardiac tumors, almost one half are myxomas. Papillary fibroelastomas comprise only 10% of benign cardiac tumors and these tumors are almost always on a cardiac valve. Papillary fibroelastoma emboli have been identified in coronary arteries and the tumor also is associated with cerebrovascular events. Thrombus can also be found on the surface of these tumors. Therefore, it has been suggested that one conservative therapeutic option for patients with known papillary fibroelastoma could be systemic anticoagulation rather than surgical excision of their tumor. However no clinical studies have compared medical management with systemic anticoagulation and surgical excision. Currently, many patients, like ours, undergo surgical tumor excision when feasible.

TEXAS POSTER FINALIST - CLINICAL VIGNETTE Eric Torkildsen

Potassium For Two: Management of Refractory Electrolyte Disturbances in Gitelman Syndrome During Pregnancy

Title

Potassium For Two: Management of Refractory Electrolyte Disturbances in Gitelman Syndrome During Pregnancy

Authors

Eric Torkildsen, MD, Lehigh Valley Health Network Yesha Shah, DO, Lehigh Valley Health Network Sharon Maynard, MD, Lehigh Valley Health Work

Introduction

Gitelman syndrome (GS) is a rare inherited renal tubulopathy characterized by dysfunction of the thiazide-sensitive sodium-chloride cotransporter in the distal convoluted tubule (DCT). This produces clinical features similar to that of a chronic thiazide diuretic, including severe hypokalemia and hypomagnesemia. As a result, GS during pregnancy is associated with increased maternal and fetal morbidity. Here we present a case of GS during pregnancy highlighting the complexity of management in refractory electrolyte abnormalities, multidisciplinary management, and the critical nature of patient involvement in management.

Case Presentation

A 22 year-old woman G1P0 at 13 weeks with a history of Gitelman syndrome presented to the emergency department after outpatient labs revealed a potassium (K+) of 2.5 mmol/L and complaints of lower extremity paresthesias. Serum chemistries on admission revealed severe hypokalemia (1.9 mmol/L) and hypomagnesemia (1.1 mmol/L). The patient had previously been trialed on potassium-sparing diuretics but had stopped due to pregnancy and concerns over teratogenicity. Despite ongoing replacement, her hypokalemia and hypomagnesemia persisted. After careful discussions with the patient discussing the risks and benefits, the patient was initiated on amiloride with oral potassium and magnesium (Mg2+) replacement and discharged home. During close outpatient follow up with nephrology and obstetrics, her K+ was persistently

Discussion

Gitelman Syndrome during pregnancy is associated with an increased risk of maternal morbidity, such as cardiac arrhythmias, and increased risk of miscarriage, oligohydramnios, and intrauterine growth restriction. This is due to the fact that pregnancy increases K+ and Mg++ requirements, which can make normalizing these levels difficult. Treatment involves close electrolyte monitoring with either oral or intravenous replacement and initiation of a potassium-sparing diuretic, the latter of which require risk-benefit discussions regarding maternal and fetal benefit weighed against potential fetal risks. These risks have not been well defined, but data and isolated case reports to date suggests successful and safe use with amiloride and eplerenone. This case highlights the challenges in managing electrolyte control in pregnancy and Gitelman Syndrome, the importance of risk-benefit discussions, and a multidisciplinary approach for good obstetric and neonatal outcomes.

TEXAS POSTER FINALIST - CLINICAL VIGNETTE CPT Stephanie Wachs, MD

"It's Either COVID19 or Hepatorenal Syndrome": A Perplexing Case of Multi-Organ Failure Due to Murine Typhus

Title

"It's Either COVID19 or Hepatorenal Syndrome": A Perplexing Case of Multi-Organ Failure Due to Murine Typhus

Authors

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Introduction

Murine typhus, a disease caused by Rickettsia typhi and transmitted via fleas, occurs worldwide, though prevalence is highest in Texas and California in the U.S. The disease is often self-limited and typically presents with nonspecific symptoms of fever, rash, and headache, though more severe disease can rarely occur. In Texas from 2008 to 2018, annual reported cases have been steadily increasing from 157 to 738 respectively with geographic areas of incidence expanding as well. It is unclear why incidence continues to rise, though theories involving climate change, migration, and possible re-establishment in reservoir populations have been proposed. Given the potential seriousness of this infectious disease and increasing incidence, it is imperative that Texas physicians be well-versed in both classic and obscure presentations of murine typhus.

Case Presentation

We present a case of murine typhus in a healthy 64-year-old gentleman from Eagle Pass, TX without past medical history who developed fevers, chills, night sweats, and fatigue with progressive myalgia, dyspnea, and finally jaundice. He was admitted with acute kidney injury and concern for sepsis and placed on broad-spectrum antibiotics. Due to rising liver associated enzymes, hyperbilirubinemia, thrombocytopenia, and concern for impending acute liver failure without clear etiology, he was transferred to the San Antonio Methodist Specialty and

Transplant Hospital Intensive Care Unit. There, he developed a total-body maculopapular rash, and serologic evaluation for autoimmune, vasculitic, and infectious etiologies was obtained. Renal ultrasound was unremarkable, but liver ultrasound was suggestive of cirrhosis; however, liver biopsy showed no evidence of fibrosis consistent with cirrhosis and instead showed prominent portal acute inflammatory cells consistent with systemic infection. Renal biopsy demonstrated acute tubule-interstitial nephritis with fibrin thrombi in the venules, interstitial fibrosis, and tubular atrophy. He was started on high-dose steroid therapy for possible acute interstitial nephritis but still necessitated hemodialysis. Broad-spectrum antibiotics were eventually pared down to doxycycline monotherapy as negative evaluations for alternative etiologies suggested higher possibility of rickettsial disease. With time and supportive care, he had improvement in liver enzymes, bilirubin, and platelet counts and return of renal function. Murine typhus was diagnosed 15 days later with return of Rickettsia typhi IgG of 1:256 and R typhi IgM of 1:128.

Discussion

This case illustrates how murine typhus can present with nonspecific symptoms and mimic other disease processes, making diagnosis difficult without a high index of suspicion. While increased liver associated enzymes and renal dysfunction are common, a severe case of multi-organ failure requiring dialysis is exceedingly rare. Recognition of the possibility of murine typhus as a cause of severe illness, especially in Texas, is critical to initiating early appropriate therapy in order to mitigate severe systemic consequences in affected patients.

VIRGINIA POSTER FINALIST - CLINICAL VIGNETTE Reema Abughoush

Look Out! A case of isolated oculomotor palsy

Title

Look Out! A case of isolated oculomotor palsy

Authors

Reema Abughoush MD, Reece Quinton Hoerle, Mathilde Franklin, B. Mitchell Goodman III MD

Introduction

Diplopia can have a wide range of etiologies, from benign to more emergent pathologies necessitating immediate intervention.

Case Presentation

A 34-year-old caucasian male with a past medical history significant for gastric bypass surgery and prediabetes presented to the emergency room with a 2-day history of sudden onset binocular diplopia. His physical exam was significant for impaired adduction, infraduction, and an inability to accommodate in the left eye. Pupils were equal, round, and reactive to light, and there was no relative afferent pupillary defect. Ptosis was not present and visual acuity was 20/20 in both eyes. Laboratory studies were remarkable only for iron deficiency anemia and vitamin D deficiency. Tests for syphilis, HIV, HCV, sarcoidosis, myasthenia gravis, Lyme, and West Nile virus were all negative. Though he was neither ataxic nor confused, we considered Wernicke encephalopathy given his history of gastric bypass and risk of malabsorption. Thiamine levels were drawn and later proved normal. A trial of high dose IV thiamine yielded no benefit. Additionally, CT and CTA head, MRI brain, MRV, and MRI orbits, were normal. A lumbar puncture was performed, showing normal opening pressure, cell counts, and protein. Ultimately, we discharged the patient on aspirin and statin with a presumed diagnosis of pupil sparing, partial oculomotor palsy caused most likely by an infarct at the level of the ventral subnucleus within the oculomotor nucleus.

Discussion

Our case illustrates the importance of a careful ophthalmologic exam and appropriate workup to identify reversible causes of oculomotor palsy. When evaluating diplopia, the first step is to

identify if diplopia is monocular vs. binocular. The latter resolves when either eye is covered. Additionally, identifying the extraocular muscles involved and determining if there is pupillary and eyelid involvement can help narrow down the diagnosis. Pupillary involvement often but not always indicates a compressive etiology for the nerve palsy and may necessitate rapid intervention. The oculomotor nerve innervates the majority of the extraocular muscles, the eyelid, pupillary accommodation, and constriction. There are two major divisions of cranial nerve III, the superior and inferior divisions. The inferior division, which was impaired in this patient, supplies the inferior rectus, inferior oblique, medial rectus, and the pupillary sphincter, responsible for accommodation. The most common etiology of isolated third nerve palsy is presumed to be ischemic microvascular disease. Intracranial aneurysms, tumors, or trauma can compress the oculomotor nerve's superficial parasympathetic fibers, which typically present with pupillary dilatation. As aneurysms can lead to subarachnoid hemorrhage, they need to be ruled out in patients presenting with diplopia. Given our patient's reactive pupils and unremarkable imaging, aneurysm, and tumor were ruled out. He had no history of cranial surgery or trauma. Other causes of cranial nerve pathologies, including infections and less common etiologies such as myasthenia gravis, thyroid eye disease, and demyelinating disorders causing internuclear ophthalmoplegia should also be considered. Despite extensive workup, we were unable to define a cause for our patient's diplopia. However, given his clinical findings and history of pre-diabetes, we believe ischemic injury to be the most likely culprit.

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VIRGINIA POSTER FINALIST - CLINICAL VIGNETTE
Omowunmi Adedeji, MD

Lemierre's Syndrome: A Role for Thrombectomy

Title

Lemierre's Syndrome: A Role for Thrombectomy

Authors

Adedeji, Omowunmi: George Washington University Hospital D.C. Davis, Jevaughn: George Washington University Hospital D.C. Akkari, Riad: George Washington University Hospital D.C.

Introduction

Lemierre syndrome is thrombophlebitis of the vasculature of the head and neck following an oropharyngeal infection. Sepsis/septic emboli are common complications with emboli frequently affecting the lungs (primarily); musculoskeletal system and occasionally affects the hepatic system. [1] The primary source of infection is commonly the palatine tonsils and peritonsillar. Although the mortality has decreased significantly, Lemierre's syndrome still poses a serious threat to a patient's life given its tremendous potential for bacteremia, sepsis, septic emboli, thrombosis and clot burden if not promptly diagnosed and treated. Thrombectomy and surgical intervention remain viable options however their role is not well elucidated upon in current literature and thus often not utilized. [10-11] This occurs one because of good disease response to antibiotics and because of the low incidence of the disease.

Case Presentation

55 year old woman admitted who presented with complaints of neck pain for 14 days associated with anorexia, fatigue, lethargy and intermittent fevers. She was febrile, hypertensive, tachycardic and on 4L NC. On physical exam, she was in no apparent distress with positive exam findings of high pitched stridor pointing to possible upper airway narrowing. Neck exam revealed tenderness to palpation laterally. Labs demonstrated WBC of 38.6 (4.8–10.8×103/uL) with a 93% polymorphonuclear leukocyte predominance, procalcitonin 3.360 (0-0.099 ng/mL), erythrocyte sedimentation rate 102 (0-30 mm/hr) and lactate dehydrogenase 624 (300-600 unit/L), aspartate aminotransferase(AST) 126 (16–40 units/L) and alanine aminotransferase (ALT) 64 (10–45 units/L), Blood culture x 2 were negative. Computed tomography demonstrated retropharyngeal abscess 1.5 x 3 cm spanning C1-C2 associated with bilateral internal jugular vein (IJV) thrombosis. She was started on broad spectrum antibiotics.

Interventional Radiology consulted for thrombectomy for the bilateral IJV. She clinically improved, vancomycin was discontinued. IV Metronidazole and Unasyn was continued. She was eventually transitioned from a heparin drip to therapeutic lovenox.

Discussion

Intravenous antibiotic administration is the mainstay of treatment and should be prompt and timely. Anticoagulation in Lemierre's syndrome is heavily debated mainly because conflicting results demonstrate both favorable outcomes with and without anticoagulation. [10] Proponents argue that resolution of thrombophlebitis and bacteremia occurs more rapidly with anticoagulation and propose that anticoagulation should be started if thrombosis extends into the cerebral sinuses, no clinical improvement within 2-3 days of starting antibiotics, significant clot burden, complications of septic emboli, arterial ischemic stroke, thrombophilia, cerebral infarction and advancement of jugular vein thrombosis. [3,5, 8-10] as seen in our patient. The role of thrombectomy is not well described in the literature and only a handful of cases have used this treatment modality. However, in the last 5-7 years, more reports have surfaced pointing to thrombectomy and other percutaneous mechanical antithrombotic procedures as possible treatment options for the thrombophlebitis associated with Lemierre's syndrome. Both Kar and Webel as well as Ashraf et tal., were able to demonstrate a role for aggressive mechanical thrombolysis in addition to antibiotic administration.[11, 12] Patients refractory to standard medical care involving antibiotics plus or minus anticoagulation or those considered poor surgical candidates may benefit from thrombectomy to achieve loftier or more timely results.

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VIRGINIA POSTER FINALIST - CLINICAL VIGNETTE Johnny Espinoza

An Idiopathic Case of Glossopharyngeal Neuralgia in a Lymphoma Patient Following Herpes Zoster Ophthalmicus

Title

An Idiopathic Case of Glossopharyngeal Neuralgia in a Lymphoma Patient Following Herpes Zoster Ophthalmicus

Authors

Johnny Espinoza MD, Arisha Carreon DO, Lindsay Collins DO, Marissa Vito Cruz MD

Introduction

Glossopharyngeal neuralgia is a rare condition affecting the oropharyngeal area primarily causing problems with swallowing. Odynophagia in our patient led to recurrent hospitalizations and adverse effects until adequate treatment was achieved. The glossopharyngeal nerve is comprised of somatic sensory fibers, special receptors, and motor components. Neuropathy follows the sensory glossopharyngeal nerve distribution. Most cases are recognized as nerve compression at the root entry to the brain stem. Pain radiates in intervals and has multiple triggers to include swallowing, yawning, jaw movement, and coughing. Complications include weight loss, reflex arrhythmias, and cardiac-related syncope. The etiology can be idiopathic or due to secondary causes, most common of which are vascular compression, inflammatory and autoimmune demyelination, space-occupying lesions, or infections.

Case Presentation

We present a case of a 66-year-old female with a medical history of Stage III Diffuse Large B-cell Lymphoma treated with R-CHOP chemotherapy. She was unable to complete her 6th and final cycle of R-Chop due to fatigue. Three months post treatment she developed Herpes Zoster Ophthalmicus requiring inpatient IV acyclovir. Following recovery, she began to experience odynophagia described as intermittent, severe lancinating pain in her right supraglottic larynx and right lower oropharyngeal throat. She was diagnosed with glossopharyngeal neuralgia after ENT and neurology evaluation. Triggers included coughing and swallowing cold foods. Episodes would last 2 seconds to 10 minutes occurring approximately 4-5 times per week. This resulted in a 20lb weight loss, suicidal ideation, and syncope. She was initially treated with carbamazepine and pregabalin, but medications were discontinued due to hallucinations and

confusion warranting ICU admission. In the ICU she developed a cough with paroxysmal atrial fibrillation requiring rate control therapy. Prior to discharge a temporary PEG tube was placed to facilitate eating as she reported going several days without eating. Baclofen and liquid sertraline were started but did not resolve symptoms completely. CT and MRI of her head were performed and stereotactic radiosurgery to the right glossopharyngeal nerve was performed three months after the initial diagnosis. On follow up the patient was found to be free of pain, tolerating a regular diet, and no longer experiencing symptoms.

Discussion

This case demonstrates an extremely rare occurrence of idiopathic glossopharyngeal neuralgia. In this case we suspect the etiology is likely viral (Herpes) although medication (Rituximab) induced cannot be ruled out. Herpes has been implicated in cranial neuralgias although the glossopharyngeal variant is rare. Glossopharyngeal neuralgia is a clinical diagnosis and is often misdiagnosed as trigeminal neuralgia, a more common cause of maxillofacial pain. Treatment is usually medical however surgical decompression has been shown to relieve symptoms in up to 80% of patients. Being able to correctly identify and diagnose the condition is crucial for early intervention and proper treatment. Ongoing symptoms can disrupt normal life and in our case lead to extreme duress. The patient has since been evaluated by cardiology and long-term cardiac monitoring has not demonstrated repeat atrial fibrillation. She continues to take sertraline and Baclofen but currently remains symptom free.

VIRGINIA POSTER FINALIST - CLINICAL VIGNETTE Kelly Hill

Facing Herpes Virus: Uncovering a New Diagnosis of AIDS

Title

Facing Herpes Virus: Uncovering a New Diagnosis of AIDS

Authors

Kelly Hill, MD, Caroline Mears, DO, Benjamin Goodman, MD.

Introduction

Herpes zoster ophthalmicus (HZO) and disseminated herpes zoster (HZ) are rare and severe presentations of varicella zoster virus. Advanced age and immunocompromised status are primary risk factors. Here we present a case of these rare conditions leading to a new diagnosis of HIV.

Case Presentation

A 64-year-old woman presented to the emergency department with three days of worsening right-sided facial pain and swelling. There was no significant medical history, other than chickenpox as a child. She did not take any medications. She described at first feeling as if a bug had bitten her, which rapidly progressed into a swollen, painful, burning, itching eruption with fluid-filled vesicles extending from the right forehead to right upper lip. On physical exam, she had multiple crusted and vesicular lesions on an erythematous base with distribution to the ophthalmic and maxillary divisions of the trigeminal nerve. The lesions did not cross midline and did not extend to the skin of the jaw or below the angle of the mandible. CT showed preseptal soft tissue stranding and involvement of the anterior globe with thickening of the conjunctiva. Given the severity of eyelid edema, nasal involvement, and the eye swollen shut, ophthalmology was consulted. Unaided visual acuities were OD 20/50 without improvement on pinhole and OS 20/30-1. Pupils were equally round and minimally reactive to light, without an afferent pupillary defect. The patient was diagnosed with herpes zoster ophthalmicus (HZO) with V1/V2 branch involvement. She was promptly started on IV Acyclovir, empiric broad spectrum antibiotics including Vancomycin and Piperacillin/Tazobactam for cellulitis, and Dexamethasone which dramatically improved swelling. Over the first few days of hospitalization, additional vesicular lesions erupted over her trunk and disseminated zoster was diagnosed. Due to the disseminated and severe nature of her presentation, immunodeficiency was suspected. Fourth generation HIV test returned positive for HIV-1 antibody and absolute

CD4 90. She was started on trimethoprim-sulfamethoxazole for Pneumocystis jirovecii prophylaxis, genotyping was sent, and she was scheduled for initiation of antiretroviral therapy in the outpatient setting.

Discussion

This case illustrates the importance of timely identification of HZO as well as recognition of conditions predisposing patients to development of herpes zoster. HZO affects about 5-15% of patients who are infected with HIV. The incidence of herpes zoster, unlike that of many of the other opportunistic infections seen in HIV disease, has not decreased with the advent of highly active antiretroviral therapy (HAART). HZO affects up to 20% of HZ cases involving the fifth cranial nerve dermatome and can lead to a host of acute or chronic ocular conditions, many of which involve the cornea. Older patients should be monitored more closely and treatment should be more aggressive, as the incidence and severity of the disease increase with age. Overall, recognition of HZO with prompt and aggressive treatment as well as awareness of underlying immunocompromised status allows the astute clinician to treat both ocular and underlying systemic manifestations of the disease.

VIRGINIA POSTER FINALIST - CLINICAL VIGNETTE Harpreet Kaur, MD

Rare Complications of VZV Reactivation

Title

Rare Complications of VZV Reactivation

Authors

Harpreet Kaur, MD. Elizabeth Nowak, MD. Dorothy Garner, MD.

Introduction

Ramsay Hunt Syndrome (RHS) Type 2 is a rare and severe complication of latent varicella-zoster virus reactivation. RHS includes a triad of ipsilateral facial paralysis, ear pain and herpetiform vesicles in the auricle and auditory canal. RHS accounts for 12% of facial palsies in adults, with increased prevalence in the elderly. We present a rare case of concurrent RHS with disseminated herpes zoster and herpes zoster encephalitis.

Case Presentation

An 83-year-old Caucasian male presented with left-sided facial droop, confusion and generalized weakness for 3 days. He had multiple crusted herpetiform lesions in the left auricle and auditory canal, scattered small papular and vesicular lesions in the right axilla, left back and left hand. He was afebrile (98.5 F) in moderate distress with photophobia. Laboratory studies revealed no leukocytosis. CT head and MRI brain were negative. Cerebrospinal fluid was notable for lymphocytic predominance with negative cultures consistent with viral meningitis. Additional lab work: negative RPR, FTA-Abs, HSV 1/2, Lyme EIA and Cryptococcal antigen. CSF varicella zoster virus DNA was detected by PCR. He was diagnosed with disseminated herpes zoster and Ramsey Hunt Syndrome. On completion of a 10-day course of acyclovir with methylprednisolone taper, he had persistent left-sided facial droop but improvement in skin lesions and mental status.

Discussion

Ramsay Hunt Syndrome and disseminated herpes zoster are caused by reactivation of latent varicella-zoster virus in the geniculate ganglion. There have been very few reported cases of concurrent RHS, disseminated herpes zoster and herpes zoster encephalitis. RHS is typically

seen in immunocompetent patients, whereas disseminated herpes zoster is more likely in the immunocompromised. The patient presented had no known history of immunocompromise making his combination of diagnoses unusual. Diagnosis of RHS is primarily clinical with emphasis on physical examination findings. The appearance of vesicles usually precedes facial paralysis, this delay can make RHS difficult to distinguish from Bell's palsy. Additional symptoms include vestibulocochlear dysfunction: hearing loss, tinnitus, vertigo and nystagmus. The gold standard for diagnosing VZV reactivation is polymerase chain reaction of skin, saliva or middle ear fluid samples. Standard treatment for RHS includes antiviral therapy with corticosteroids; better outcomes noted if initiated within 72 hours. The addition of corticosteroids for disseminated herpes zoster compared with acyclovir alone did not demonstrate any benefit on quality of life. Furthermore, corticosteroids could potentially increase the risk of secondary bacterial skin infection. The question arises would corticosteroids lead to worse outcomes in cases of concurrent RHS and disseminated zoster. Limited data is available to support this theory and guide treatment. However, in regard to periocular lesions, there is a fear of dissemination of the VZV infection. In conclusion, recognizing and initiating early treatment is key, however due to limited data, debate continues with the use of corticosteroids.

VIRGINIA POSTER FINALIST - CLINICAL VIGNETTE Ibrahim Mohsin

Pannus formation with severe cardiomyopathy – an unusual complication of a prosthetic valve replacement

Title

Pannus formation with severe cardiomyopathy – an unusual complication of a prosthetic valve replacement

Authors

Ibrahim Mohsin. M.D. (1), Arisha Carreon. D.O. (1), Bryan Watson. D.O., F.A.C.O.I (2), Keith Kramer. M.D., F.A.C.C (3), Michael Ponder. M.D., F.A.C.C(3) (1) Internal Medicine Residency Program. Norton Community Hospital; (2) Core Faculty, Internal Medicine Residency. Norton Community Hospital; (3) Department of Cardiology. Ballad Health Cardiovascular Associates

Introduction

Pannus formation is a rare complication whose estimated incidence varies between 0.3% and 1.3% per patient-year. To our knowledge, this is the first documented case of pannus formation that has formed in a coronary vessel as opposed to forming in the valve. The exact etiology of pannus formation is unknown but histopathologically, pannus formation is due to fibroelastic hyperplasia that variably occurs after valve implantation. The infrequency and acute coronary syndrome like clinical presentation make pannus formation a formidable diagnosis during the initial presentation.

Case Presentation

In 2015, a 66-year old female underwent a 19 mm Trifecta bioprosthetic aortic valve replacement (AVR) secondary to severe calcified aortic stenosis. Significant medical history includes hypertension, hyperlipidemia, and hypothyroidism. She presented to emergency department with complaints of intermittent chest pain that was graded severe, pressure type, mid sternal in location, and radiated throughout the chest wall. She acknowledged a history of smoking, illicit drug abuse, and chronic narcotic dependence. The patient had poor compliance and no follow-up after AVR. Physical examination was unremarkable, S1-S2 normal. EKG revealed sinus rhythm with subtle ST segment elevation in AVR, V1 and diffuse ST segment depression in multiple leads concerning left main/multivessel CAD. Troponin levels were 1.88 with repeat value of 2.37 on serial measurements. The patient was given ticagrelor, aspirin,

heparin, metoprolol, and nitroglycerine paste. The patient underwent emergent left heart catheterization (LHC) which showed ostial left main 90-95% stenosis in proximity to aortic valve bioprosthesis which implied a mechanical obstruction. Left anterior descending artery, left circumflex artery (dominant), and posterior descending artery from the left system was normal. Left ventricle was not crossed because of the presence of the prosthetic aortic valve and was evaluated with a 2D echo after the LHC. Ticagrelor was stopped and CT surgery was consulted for a possible coronary bypass surgery grafting. 2D Echo revealed an ejection fraction of 30-35%, global hypokinesia, and a well seated bioprosthetic aortic valve with normal peak gradient and mean gradient. CT Angiogram was done the next day and showed a non-calcified plaque (pannus) greater than 75% occlusion in the left main in proximity of the aortic valve. The patient was taken to the operation room for a redo sternotomy and pannus excision. Unfortunately, the patient went into ventricular fibrillation cardiac arrest in the operating room. CPR and multiple defibrillation attempts were done as per the ACLS protocol. Despite the resuscitative efforts, the patient did not survive and was declared dead in the operation room.

Discussion

The effect of pannus formation on hemodynamics depends on the extent of narrowing of the outflow tract and its effect on the motion of the prosthetic leaflets. This case illustrates the importance of regular long-term follow-up after AVR. Late complications like pannus formation is uncommon but can yield serious complications including cardiogenic shock and death. Hence, recognition of this complication in patients during late post-operative period is critical. Echocardiography is the main diagnostic test to evaluate prosthetic valve function and regular follow up should be the standard of care.

VIRGINIA POSTER FINALIST - CLINICAL VIGNETTE Nina E Neill

Systemic Lupus Erythematosus Presenting as Pseudo-pseudo Meigs' Syndrome

Title

Systemic Lupus Erythematosus Presenting as Pseudo-pseudo Meigs' Syndrome

Authors

Nina Neill, Kathleen Pencek, Tejasri Chandrabhatla, Ramona Raya, and Ivan Garcia

Introduction

Pseudo-pseudo Meigs' syndrome (PPMS), an uncommon manifestation of systemic lupus erythematosus (SLE), is characterized by the presence of pleural effusion, abdominal ascites, and elevated CA-125 levels. In contrast, Meigs' and Pseudo Meigs' syndromes refer to similar findings in the setting of ovarian or pelvic tumors. PPMS was first reported in the literature in 2005, when a patient with a known history of Lupus presented with dyspnea and a triad of pleural effusion, ascites, and elevated CA-125 with no identified malignancy or uterine tumor. This syndrome has since been described via several case reports, although a specific mechanism behind its pathogenesis has yet to be delineated.

Case Presentation

Here, we describe a 33 year old African American female, with no relevant past medical history, who presented to our hospital with two months of thirty pound weight loss, abdominal distention, and dyspnea. On exam, she was noted to be cachectic with a distended abdomen positive for fluid shift. Lung sounds were diminished bilaterally. Initial workup for renal, hepatic or cardiac etiology of her symptoms was negative, and only pertinent for mild, incidental pulmonary hypertension noted on echo. However, she was found to have an elevated CA-125 level to 108 and imaging significant for suspected peritoneal carcinomatosis and omental caking, large volume ascites, and bilateral pleural effusions, concerning for malignancy of unclear origin. She underwent two CT-guided biopsies of the peritoneum, an attempted biopsy of an enlarged axillary lymph node, and multiple diagnostic and therapeutic thoracenteses and paracenteses. Initial workup was inconclusive, so she underwent exploratory laparoscopy with surgical biopsy of the omentum and esophagogastroduodenoscopy. All cytology and biopsy results were negative for malignancy and indicative only of chronic inflammation. Further rheumatologic work-up was significant for positive antinuclear antibody of 1:1280, anti-double-

stranded DNA elevated to 1086, and anti-ribonuleoprotein and anti-smith greater than 8. Complement levels were low with C3 of 32 and C4 of 3.8. She was initiated on a course of pulse-dose solumedrol, resulting in significant improvement of her symptoms within three days. This patient was ultimately diagnosed with PPMS in the setting of undiagnosed SLE. PPMS as an initial presentation for SLE is extremely rare making this case even more diagnostically challenging. She was initiated on hydroxychloroquine prior to discharge from the hospital with close rheumatology follow up. Currently, her PPMS and SLE are controlled on a regimen of hydroxychloroquine, mycophenolic acid, prednisone, and as needed therapeutic paracenteses.

Discussion

PPMS shares many commonalities with the initial presenting symptoms of a number of malignancies, particularly those of ovarian and gastrointestinal origin. However, because it is only recently gaining recognition, it is often an overlooked differential diagnosis for patients presenting with its associated triad of symptoms. Awareness and early suspicion for PPMS in patients presenting with these symptoms and a negative malignancy work-up, may spare them further costly, invasive, and often distressful testing. Further, because this disease typically responds well to treatment, early initiation of therapy when PPMS is suspected is paramount. Ultimately, additional investigation into the pathogenesis of the condition and diagnostic methods is warranted.

VIRGINIA POSTER FINALIST - CLINICAL VIGNETTE Rakesh Patel

Bye to My MI

Title

Bye to My MI

Authors

Rakesh Patel, Johnston Memorial Hospital Azad Patel, Johnston Memorial Hospital Camelia Chirculescu, Johnston Memorial Hospital

Introduction

Most STEMI cases will require PCI acutely otherwise it may be fatal. Occasionally, timely fibrinolytic therapy when given at non-cardic facilities can result in abortion of STEMI. We present such case.

Case Presentation

A 68-year-old Caucasian female with PMH of muscular dystrophy is transferred to our ED after being treated for STEMI at a facility without cardiac catheterization lab. Patient reported classic sudden onset of sharp, anterior chest pain with radiation to left chest, shoulder and jaw that started at rest. No alleviating or aggravating symptoms reported, however dry heaves and nausea was present. Initial EKG showed sinus rhythm with ventricular rate of 85, PR interval 150, QT 421, with marked ST elevation in leads II, III, AVF and late precordial leads (V3-V6). Other labs include; WBC 13.6, D-dimer 1.3, troponins 0.024 ng/ml. Patient received Aspirin, Clopidogrel, single dose of Reteplase 20mg and Heparin drip was initiated before being transferred to a higher tertiary center. In our ED, vital signs were stable, and labs were essentially normal except blood glucose 241 mg/dL, WBC 15.2 k/ul and rising troponins; 3.36> 27.20> and 36.51 ng/ml (peak). Repeat EKG showed resolution of ST elevation and chest pain had improved. Patient was admitted to ICU and Cardiology evaluated the patient on following day with LHC that showed non-obstructive CAD disease; LAD showed 20-30% proximal lesion just above first diagonal branch. RCA showed 40-50% lesion in distal segment. Patient was placed on ASA, Ticagrelor, Lisinopril, Metoprolol 12.5mg BID, Atorvastatin 80mg QHS and cleared for discharge.

Discussion

Aborted myocardial infarction is defined by >50% ST-segment resolution of initial ST-segment elevation and lack of subsequent enzyme rise more than twice the upper normal limit of creatine-kinase. Aborted infarction has been observed in 13-17% of patients after fibrinolysis therapy (Freek, 2006). Pre-hospital initiation of fibrinolysis results in four-times higher rate of aborted infarction than in-hospital fibrinolysis (Freek, 2006). There are not many known patient characteristics that play a role in potentiating an abortive MI, however according to Freek, there are some recognized factors; 1) Time; early fibrinolytic therapy resulted in increased chance for abortion, ie: treatment in less than one hour resulted in having a 25% success rate. 2) Magnitude of the myocardial territory at risk. 3) Extent of ST segment resolution; only those with >70% ST-segment resolution at 60 min needed more non-urgent angioplasty than those who have aborted infarctions but with

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VIRGINIA POSTER FINALIST - CLINICAL VIGNETTE Gaurang Prabhu

PRESsed, stressed, and immunosuppressed - Posterior Reversible Encephalopathy Syndrome complicated by stress cardiomyopathy in the setting of systemic lupus erythematosus

Title

PRESsed, stressed, and immunosuppressed - Posterior Reversible Encephalopathy Syndrome complicated by stress cardiomyopathy in the setting of systemic lupus erythematosus

Authors

Lauren Keenan, Gaurang Prabhu MD, Aaron Mills MD

Introduction

We present a 47-year old female with clinical and radiographic findings consistent with Posterior Reversible Encephalopathy Syndrome (PRES) versus lupus cerebritis complicated by stress cardiomyopathy (SCM). While PRES and SCM are not classically associated, there have been increasing reports documenting concurrence. Such findings point to a shared pathological mechanism between the two clinical entities.

Case Presentation

A 47-year-old female with a history of systemic lupus erythematosus (SLE), lupus nephritis, rheumatoid arthritis and hypertension presented with altered mental status and two generalized tonic-clonic seizures. On examination, she was hypertensive to 177/133 with elevated troponins to 190 ng/L in the absence of ST-segment abnormalities. Notable Q-waves were unchanged from her previous ECG. Head MRI revealed bilateral hyperintense subcortical/cortical signal abnormalities with posterior hemispheric predominance, prompting initial differential of PRES vs. lupus cerebritis. She was started on stress-dose of methylprednisolone for possible lupus cerebritis, But were discontinued after pan-cerebral arteriogram was negative for vasculitis. Her troponins peaked over next 48-hours to 724 ng/L. Initial echocardiographic evaluation revealed severe hypokinesis of the left ventricular apical and mid-cavity walls and severely reduced left ventricular systolic function with an ejection fraction of 23% (previous EF of 55%). This progressed to global hypokinesis with an EF of 10% over the next week. Repeat MRI five-days after admission revealed significant improvement in the subcortical/cortical hyperintense signal abnormalities. Her acute neurological symptoms,

reversible neuroimaging findings, cardiac abnormalities and lack of significant response to corticosteroids were most consistent with PRES complicated by SCM and less consistent with lupus cerebritis.

Discussion

PRES is characterized by acute neurological abnormalities in the setting of subcortical, posterior hemisphere-predominant vasogenic edema on cerebral imaging.[1,2,3] Proposed pathophysiologic mechanisms include failed cerebrovascular autoregulation versus direct endothelial damage. Both mechanisms compromise the blood-brain-barrier, allowing for fluid extravasation[1]. SCM presents as transient cardiac wall dyskinesia with ventricular systolic dysfunction in the absence of obstructive coronary artery disease.[4,5] An emotional or physical stressor classically precedes the onset. Diagnosis requires visualization of wall abnormalities on echocardiogram or cardiac MRI, absence of clinically significant coronary artery disease, and signs of cardiac ischemia including ST-segment elevations, T-wave inversions, and/or elevated cardiac troponin.[4,5] While the underlying pathogenesis remains unclear, one theory suggests stressors trigger sympathetic activation resulting in catecholamine-mediated cardiotoxicity and microvascular dysfunction.[4,5,6] Both PRES and SCM are relatively rare clinical entities. Concurrence of the two suggests potential for a shared pathogenic mechanism. While their definitive etiologies remain unclear, both occur in the setting of vascular dysfunction.[7,8,9] This patient's concomitant SLE must be considered. Retrospective studies indicate the presence of co-existing autoimmune disease in upwards of 50% of PRES patients.1 Furthermore, multiple case reports document SCM in the setting of autoimmune disease.[10] It is possible that chronic inflammatory states, such as those seen in autoimmune diseases like SLE, lead to vascular dysfunction thereby predisposing development of PRES and/or SCM. Regardless of the cause, it is clear both clinical entities remain pressing matters.

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VIRGINIA POSTER FINALIST - CLINICAL VIGNETTE Gaurang Prabhu

Highlights of Nivolumab can cause bad PERM day; PERM- A rare complication secondary to immune checkpoint inhibitors.

Title

Highlights of Nivolumab can cause bad PERM day; PERM- A rare complication secondary to immune checkpoint inhibitors.

Authors

Gaurang Prabhu MD, Mark Flemmer MD

Introduction

Progressive encephalitis with rigidity and myoclonus (PERM) is a rare disorder in the spectrum of stiff person syndrome, characterized by rapid onset of stiffness and painful muscle spasms in addition to vertigo, ataxia, dysarthria and some cranial nerve involvement seen in select group of patients. In recent literature, PERM has been associated with use of immune checkpoint inhibitors. We report a 72-year-old male with a history of esophageal cancer on nivolumab leading to PERM.

Case Presentation

72-year-old male with history of CHF, HTN, invasive esophageal cancer on nivolumab with radiation therapy and culture negative marantic endocarditis presented with altered mental status and bilateral lower extremity pain and weakness. “He was jerky” according to his wife. Physical examination demonstrated decreased muscle strength in bilateral lower extremity along with bilateral ankle clonus, Hyperreflexia, positive bilateral hoffman's sign and myoclonus at his ankle with frequency of 10 times/minute. Patient was alert but not oriented. He denied any urinary or fecal incontinence. MRI of the brain/spine was unremarkable, EEG showed mild to moderate encephalopathy. Lumbar puncture showed mildly increased proteins at 126 with negative cytology. Autoimmune and infectious encephalitis work-up were negative. Furthermore, GAD and anti-glycine antibodies were also negative. Given the timeline of symptom onset accompanied by physical findings of bilateral lower extremity weakness, muscle rigidity, clonus and hyperreflexia a diagnosis of progressive encephalitis with rigidity and myoclonus (PERM) secondary to nivolumab was considered. Patient was started on a 5-day course of IVIG and IV steroids. 2 days into the treatment course it was noted that the patient

had an improvement in the mental status and decrease in muscle and rigidity and myoclonus with return to baseline.

Discussion

Immune checkpoint inhibitors are now widely used in treating a wide spectrum of cancers. Multiple case reports have been published talking about the wide spectrum of side effects secondary to immunomodulator therapy. The lack of ability of immune checkpoint inhibitors to distinguish between cancer and host cells leads it to be vulnerable to have a wide array of side effects. Nivolumab has been associated with PERM in few case reports in recent literature. The exact mechanism of action is unknown but may be related to direct inhibition of IL-2 on the dendritic neurons in the CNS. In general PERM is a disorder in the spectrum of stiff person syndrome. It has been associated with presence of GAD and anti-glycine antibodies but is not specific. Our patient was tested for GAD, anti-glycine antibody and other paraneoplastic workup was conducted all of which was negative. But based on the physical exam findings and response to treatment with IVIG and steroids suggested PERM to be the likely etiology of the presenting symptoms.

VIRGINIA POSTER FINALIST - CLINICAL VIGNETTE Mikhail Rassokhin, MD

Unmasking an Inflammatory Bowel Disease Mimicker: A Case of Gastrointestinal Behcet's Disease

Title

Unmasking an Inflammatory Bowel Disease Mimicker: A Case of Gastrointestinal Behcet's Disease

Authors

Mikhail A. Rassokhin, MD, PhD and Parth J. Parekh, MD, FACP

Introduction

Behcet's disease (BD) is a chronic relapsing and remitting systemic vasculitis thought to result from a genetic predisposition ultimately brought on by environmental triggers. Patients with BD may present with recurrent oral ulcers, skin lesions, uveitis, arthritis, abdominal pain, nausea, vomiting, diarrhea, or rectal bleeding. Patients are often misdiagnosed as having inflammatory bowel disease (IBD) due to the overlap in symptoms between the distinct entities. Here, we present a case of BD which highlights the need for clinicians to be cognizant of so-called 'IBD mimickers'.

Case Presentation

A 28-year old Caucasian male from the Eastern Europe with no significant past medical history presented with a 10-day history of bloody diarrhea. The patient was having upwards of 6 bowel movements a day, which he described as brown intermixed with blood and mucous coupled. He also complained of fevers to 39.4C as well as abdominal pain. Initial labs were significant for leukocytosis (19.1 x 103/ul) for which empiric antibiotics were started. CT of the abdomen demonstrated pancolitis. On day 3, despite antibiotic therapy, the patient remained febrile and denied any noticeable change in his symptoms. Stool studies were negative for infection. Fecal calprotectin was considerably elevated (lab value). Non-specific IBD was the initial working diagnosis. IBD serologies ordered were significant for a positive atypical p-ANCA. On day 4, the patient developed aphthous oral ulcers and pustular skin eruptions. Colonoscopy was performed which demonstrated diffuse severe pancolitis including ileocecal valve involvement. Biopsy revealed prominent neutrophilic inflammation including sizable crypt abscesses but no granulomas. A skin biopsy was performed which demonstrated epidermal pustules with

neutrophils and mixed deeper dermal inflammation with a prominent neutrophilic component. These findings, plus the presence of intermittent fevers, were not entirely consistent with the diagnosis of either ulcerative colitis or Crohn's Disease. This led to the suspicion of an 'IBD mimicker', namely BD. He was tested and ultimately found to be positive for human leukocyte antigen allele (HLA)-B51. Treatment with mesalamine and oral budesonide was initiated, and his GI symptoms resolved. Pathergy testing and immunomodulator therapy were deferred to the outpatient setting.

Discussion

Behcet's disease has been shown to involve almost any segment of the GI tract. Extra-intestinal manifestations of BD include uveitis, oral ulcers, erythema nodosum and arthritis. Endoscopy in BD patients tend to show large and often solitary ulcers at ileocecal junction that have round-to-oval or volcano-like shape. While pathognomonic testing remains lacking, there are suggested criteria outlined by the International Study Group. Thus, patients often remain undiagnosed or are misdiagnosed as having IBD. Fortunately, the treatment regimen is similar with use of steroids, immunomodulator, and biologic agents. To date, there is limited data about disease prognosis and treatment outcomes which makes selection of medical therapy a palpable challenge. Clinicians need to be cognizant about 'IBD mimickers' including Behcet disease, intestinal tuberculosis and gastrointestinal manifestations of other systemic vasculitides, when encountering a patient with symptoms suggestive of IBD.

VIRGINIA POSTER FINALIST - CLINICAL VIGNETTE Hayley K Rogers

Staph, Don't Go Breaking my Heart

Title

Staph, Don't Go Breaking my Heart

Authors

Hayley Rogers, MD; Dorys Chavez, MD; Adrienne Poon, MD, MPH

Introduction

Bacterial infections of the pericardial space are an uncommon cause of pericardial effusions. The reported incidence of this is

Case Presentation

A 71 year old man with a past medical history of end-stage renal disease on hemodialysis, hyperlipidemia, and diabetes mellitus presented with 5 days of weakness, dry cough, and dyspnea after missing multiple dialysis sessions. His vitals were stable and his exam was notable only for trace edema. Notable labs included troponin level of 3.21 ng/ml, BNP 23,600 pg/mL, creatinine level 15.6 mg/dL, BUN 118 mg/dL and potassium level of 6.8 mEq/L. He was found to have ST elevations in inferior-lateral leads and ST depressions in V1 and aVR leading to an emergent cardiac catheterization, which revealed no abnormalities. A subsequent echocardiogram showed a moderate sized pericardial effusion with no signs of tamponade or chamber collapse. It was determined that the etiology was likely uremic myopericarditis in the setting of missed dialysis. Despite urgent dialysis, his serial echocardiograms showed an increasing moderate to large pericardial effusion with a fibrous layer. Given evidence of hemodynamic compromise with hypotension and tachycardia, the patient underwent pericardiocentesis with aspiration of 510 mL of fluid. Analysis of the fluid revealed 46,060 white blood cells, 98% neutrophils and intracytoplasmic bacteria. Cultures grew pan-sensitive Staphylococcus aureus. The patient was started on Cefazolin with dialysis for four weeks. His blood cultures both peripherally and from his AV fistula were negative. After treatment course and ongoing dialysis, his follow-up echocardiogram revealed no further effusion.

Discussion

We describe a rare presentation of purulent pericarditis in a patient with dialysis and uremia. This patient's disease is unusual for several reasons, including his symptoms. Most notably, almost all reported patients with purulent pericarditis have fever, which this patient never developed. Only 50% of patients develop the classic signs of acute pericarditis(chest pain, friction rub, and pulsus paradoxus), with 25-37% having chest pain like this patient. No source of bacterial seeding was found in this patient, making it either a primary bacterial pericarditis or as a result of a transient bacteremia that was not captured on the cultures. Uremia can precipitate pericarditis due irritation of the toxins. Notably, this usually does not result in ST changes on EKG and rapidly improves with dialysis. Immune dysfunction also results from the uremic toxins, predisposing those patients to infection. Mortality in patients who are treated for purulent pericarditis is estimated to be 40%, while it is 100% for those who are untreated. This patients' atypical symptoms and relatively indolent course was a rare presentation of a deadly disease. It is important to consider infectious pericarditis in new pericardial effusions due to the rapid progression of the disease and high mortality rate.

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VIRGINIA POSTER FINALIST - CLINICAL VIGNETTE Kanishk Deep Sharma

Coil took my memory: A case of anterograde amnesia after stent-assisted coil embolization

Title

Coil took my memory: A case of anterograde amnesia after stent-assisted coil embolization

Authors

Kanishk D. Sharma, MBBS, Associate Member; Sami Tahhan, MD, FACP; Eastern Virginia Medical School

Introduction

As the use of advanced imaging becomes more widespread, there is a corresponding increase in the discovery of asymptomatic, non-ruptured cerebral aneurysms. Stent-assisted coil embolization of aneurysms is one of the latest modalities in treatment. Some of the well-known complications include thromboembolism and aneurysmal rupture, but many other consequences are yet to surface. Here we discuss unique sequelae resulting from an elective stent-assisted coil embolization and its implications.

Case Presentation

A 57-year-old African American woman with a past medical history of hypertension, type 2 diabetes mellitus, and pulmonary sarcoidosis underwent an MRI of the brain for evaluation of headaches. An incidental finding of a four-millimeter right-sided bilobed anterior communicating artery (AcoA) aneurysm was noted. The patient was then referred to Neurosurgery for evaluation. Stent-assisted coil embolization was performed and her post-op hospital stay was uneventful. The patient was then seen by her Primary Care Physician seven days after the procedure due to the emergence of profound memory difficulties and was sent to the ED for further workup. She couldn’t recall coming to the hospital, basic events that occurred earlier in the day, or her recent procedure. Her long-term memory remained intact. A repeat brain MRI revealed acute ischemia involving the anterior column of the fornix bilaterally as well as several tiny early subacute infarcts in the right corona radiata and centrum semiovale. Her transthoracic echocardiogram was negative for a patent foramen ovale, and subsequent stroke workup was also unremarkable. The patient was diagnosed with acute anterograde amnesia secondary to ischemic complications from her recent procedure. She

received occupational therapy and showed some improvement in her mentation during her hospitalization. She was discharged on dual antiplatelet therapy with plans to pursue cognitive and occupational therapy in the hopes of further improving her memory and functionality.

Discussion

Upon review, this may be the first report documenting anterograde amnesia with stent-assisted coil embolization. The fornix is a part of the hippocampus that helps to encode new episodic memory. The anterior columns of the fornix are supplied by the subcallosal artery, which arises from perforating branches off of the posterior ACoA. Occlusion or damage to these perforating arteries leads to a forniceal stroke. Two large prospective studies have shown that the risk of aneurysmal rupture only increases with a size of more than seven millimeters. Given that the size of this patient's aneurysm was four millimeters, a conservative approach would have been more beneficial. Such interventions, even though considered relatively safe, come with a variety of lesser-known complications about which patients need to be educated. This case highlights the burden of morbidity and mortality associated with undue interventions for incidental findings.

VIRGINIA POSTER FINALIST - CLINICAL VIGNETTE Zahra Tasneem

A Unique Case Of Eosinophilic Gastritis Masquerading As Peptic Ulcer Disease

Title

A Unique Case Of Eosinophilic Gastritis Masquerading As Peptic Ulcer Disease

Authors

Zahra Tasneem, MD Saad Mussarat, MD Venu G. Koduri, MD

Introduction

Eosinophilic gastritis (EG) is a rare and heterogeneous disorder characterized by eosinophilic infiltration of stomach. It can have various clinical presentations and its diagnosis is based on evidence gathered from pre-existing risk factors, laboratory results, and endoscopic findings. Little is known about the epidemiology, pathophysiology, and natural history of this disease. We present a case of EG presenting as refractory peptic ulcer disease.

Case Presentation

39-year-old male, with no significant past medical history, was referred from primary care physician to gastroenterology service for ongoing upper abdominal pain, malaise, and hematochezia over the course of last eight months. On presentation, he reported no improvement with prior therapies that included omeprazole and over the counter antacids. He denied any recent NSAID intake and alcohol abuse. He was hemodynamically stable with an unremarkable physical exam on this visit. Pertinent labs were significant for Hgb 12.4 g/dl, MCV 75.4 fL, low iron saturation 6.2 %, ferritin 40 ng/ml, peripheral eosinophilia (720 eosinophils per microL). Review of the chart showed chronic eosinophilia present for the last five years. Esophagogastroduodenoscopy (EGD) was performed for iron deficiency anemia and persistent epigastric pain which showed a deep ulceration about 5 x5 cm the along lesser curvature, and biopsies from mucosa were taken. Pathology was reported as gastric antral-type mucosa with mild to moderate chronic active gastritis, erosion, and abundant eosinophils involving epithelium and lamina propria. Colonoscopy was unremarkable. Based on these histologic findings, diagnosis of EG was made. Patient was started on prednisone course and was tapered down to 5mg daily maintenance dose. His follow up was significant for improvement in symptoms and normalization of peripheral eosinophilia. Repeat EGD after six weeks showed nearly healed ulcer. Histology showed mild chronic gastritis without eosinophilia.

Discussion

Eosinophilic gastritis is a rare disorder with low prevalence reportedly 5.1/100,000. Symptoms can be varied including include abdominal pain, vomiting, early satiety, diarrhea, and weight loss. It is sometimes associated with peripheral eosinophilia, iron deficiency, elevated serum IGE. There is a limited understanding of pathophysiology of this disease. Asthma and food allergies have been described as risk factors. Endoscopic appearance is non-specific and may at times be normal hence the importance of biopsy regardless of endoscopic appearance. It is important to have a low threshold for endoscopy in patients with persistent symptoms despite PUD management in appropriate clinical setting. Diagnosis requires presence of symptoms and demonstration of eosinophils on gastric biopsy. Corticosteroids are currently the mainstay of treatment. Our case is a rarely reported presentation of EG as large gastric ulcer leading to gastrointestinal bleed and consequent iron deficiency anemia.

WASHINGTON POSTER FINALIST - CLINICAL VIGNETTE CPT
Ada Hoffman, MD

Young Man with Dizziness and Presyncope

Title

Young Man with Dizziness and Presyncope

Authors

Ada Hoffman, MD, Associate, Madigan Army Medical Center Takor Arrey-Mbi, MD, FACC, Member ACP, Madigan Army Medical Center

Introduction

Dizziness and presyncope are commonly encountered symptoms associated with a broad range of medical conditions. We present a case where common symptoms led to the discovery of an uncommon diagnosis with significant implication for competitive sports.

Case Presentation

An 18 year-old man with mild asthma presented with several months history of intermittent positional lightheadedness and presyncope as well as fleeting, sharp chest discomfort. His symptoms had been most pronounced with standing upright and he denied a history of syncope. He had no significant medical conditions apart from mild intermittent asthma. He played soccer competitively while in high school without any difficulties. His family history was unremarkable and specifically negative for sudden cardiac death. His physical exam and laboratory evaluation were within normal limits. Initial ECG demonstrated sinus bradycardia (57bpm), broad-based T-waves and QTc 473ms in the supine position. Upon standing his QTc increased to 511ms. Additional testing to include transthoracic echocardiogram was normal. Congenital long QT syndrome (LQTS) was suspected and after shared decision making, patient was referred to geneticist for evaluation. Genetic testing revealed a pathogenic mutation in the KCNH2 gene, one of the three most implicated genes in long QT syndrome (KCNH2, KCNQ1, and SCN5A). Nadolol 40mg daily was initiated and patient was counseled to avoid QT prolongation medications and competitive sports given his QTc >500ms.

Discussion

Long QT Syndrome (LQTS) is a cardiac ion channelopathy typically associated with a structurally normal heart and a propensity for syncope, ventricular arrhythmias, seizures secondary to arrhythmias, and sudden cardiac death. Approximately 1 in 2,000 people are affected by LQTS. Mutations in 17 genes have been identified, however, 80% of congenital LQTS involve three most common forms, including KCNQ1 (LQT1; 35% to 40%), KCNH2 (LQT2; 25% to 30%), and SCN5A (LQT3; 5% to 10%). Patients with LQT1 and LQT2 typically have exercise-related arrhythmic events and events triggered by acute arousal like emotion or noise, with swimming-related events specific for LQT1. Patients with LQT3 are at highest risk of events at rest or sleep, and fewer events with exercise because their QTc shortens with increased heart rate. Patients with suspected LQTS should be restricted from all competitive sports until a comprehensive evaluation has been completed. Nonselective beta-blockers such as nadolol and propranolol are mainstay therapy since they reduce the risk of sudden cardiac death in these patients. Although uncommon, LQTS is a significant cause of sudden cardiac death in young competitive athletes. It should be considered in patients who present with palpitations, lightheadedness, dizziness, presyncope, syncope and aborted sudden cardiac death. Recognition of this syndrome is critical to institution of appropriate therapy and prevention of serious adverse events. “The views expressed in this article are those of the authors and do not reflect the official policy or position of Madigan Army Medical Center, the US Army Medical Department, the US Army Office of the Surgeon General, the Department of the Army, the Department of Defense, or the US government.”

WEST VIRGINIA POSTER FINALIST - CLINICAL VIGNETTE
Amro Daoud

Renovascular Hypertension with Superimposed Aortic Arch Baroreceptor Failure, Case Report and Literature review

Title

Renovascular Hypertension with Superimposed Aortic Arch Baroreceptor Failure, Case Report and Literature review

Authors

Amro Daoud, Bisher Mustafa, Zeid Khitan

Introduction

5% to 10% of patients labeled with primary hypertension may have an underlying cause. [1] Atherosclerotic renal artery diseases are considered among the most common causes of secondary hypertension. [1] Aortic dissection can cause a renovascular physiology that can lead to hypertension. [2,3] On the other hand, baroreceptors, such as carotid and aortic, are important regulatory mechanism of blood pressure and their disruption can lead to a labile one due to sympathetic over activity; an entity called neurogenic hypertension. [4-6]

Carotid baroreflex failure was described before. [8] In our case, we are describing baroreflex failure due to aortic arch surgery.

Case Presentation

An 83 year old female with past medical history of hypertension and past surgical history of thoracic aortic surgical repair due to type A aortic dissection 8 years prior to presentation, was admitted to hospital due to intermittent expressive aphasia. Physical examination revealed blood pressure 176/84 mmHg. There was no focal neurological deficit, and rest of physical examination was unremarkable. Laboratory tests and brain imaging studies were non-significant.

Since aortic surgical repair, she developed difficult to control blood pressure which was also noted during admission. During hospitalization, she was found to have renovascular pathology as a result of the old aortic dissection, in addition to probable superimposed defective aortic baroreceptor mechanism due to aortic arch surgery.

Her antihypertensive medication regimen was adjusted during admission and her blood pressure was brought under control.

Discussion

Maintenance of arterial blood pressure requires intact autoregulatory feedback system. Efferent outputs are generated in response to the sensed alterations in blood pressure through Renin-Angiotensin-Aldosterone-System (RAAS) and the sympathetic nervous system to help restore blood pressure. They act by modifying the peripheral vascular resistance and cardiac output.

Activation of RAAS in response to hypotension results in vasoconstriction and sodium and water retention. [8] Alternatively, an increase in arterial blood pressure will result in increased signals firing from the baroreceptors to the nucleus tractus solitarius (NTS) resulting in decreased sympathetic outflow to peripheral arterial system, heart and kidneys. [7, 9] This results in vasodilatation, decrease in cardiac output as well as decreased renin secretion.

In renovascular hypertension, kidney hypo-perfusion results in activation of RAAS [8, 10] and 8% of aortic dissection cases has associated renal malperfusion [10] as our patient does have to her right kidney. In this case, it is expected that functioning baroreceptors will exert its negative feedback loop to attenuate blood pressure in response to hypertension. In our patient, however, the interrupted afferent flow from the aortic baroreceptors to the NTS following aortic arch repair resulted in the exaggeration of hypertension.

In cases of baroreceptor failure, patients might experience hypotensive episodes with vasodilating drugs such as calcium channel blockers (which our patient was experiencing) [7], so we discontinued her home Amlodipine, and started Labetalol to counteract inappropriate sympathetic activation by the failed baroreceptors. Also, we resumed home Losartan to treat the other contributing factor of her hypertension, which is right renal stenosis, as RAAS blockade is one of the proven treatments to control renovascular hypertension. [11]

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WISCONSIN POSTER FINALIST - CLINICAL VIGNETTE Kelsey Holbert

A Wisconsin Blast from the Past: A Case of Blastomycosis ARDS

Title

A Wisconsin Blast from the Past: A Case of Blastomycosis ARDS

Authors

Kelsey Holbert

Introduction

Blastomyces dermatitidis is the fungus responsible for blastomycosis, an uncommon illness with an incidence of 1-2 cases per 100,000 persons in endemic states, but up to 40 cases per 100,000 persons in certain counties of Wisconsin.1-2 Manifestations of blastomycosis can range from asymptomatic exposure to fulminant pneumonia and acute respiratory distress syndrome (ARDS). Pulmonary involvement is most common but up to 40 percent of infections can also cause extrapulmonary manifestations, most commonly cutaneous, osteoarticular, genitourinary, or CNS. Given the range of presentations and relative rarity, delayed diagnosis is common and leads to significant morbidity and mortality in many patients.3

Case Presentation

A 23-year-old female with anxiety and obesity presented from an outside hospital with ARDS for ECMO consideration. She initially presented to an urgent care with cough after SARS-CoV-2 exposure. SARS-CoV-2 testing was negative and she was discharged, but returned to the ED the following day with productive cough and pleuritic chest pain. CT was negative for pulmonary embolism, but showed endobronchial mucus plugging and post-obstructive pneumonia and she was discharged with doxycycline. She returned four days later with persistent cough and dyspnea and was found to have worsening bilateral infiltrates on chest radiograph. Amoxicillin and albuterol were added to doxycycline. She was again discharged but returned less than 24 hours later with sepsis. She was admitted and started on azithromycin and ceftriaxone. A second SARS-CoV-2 test was negative. Three days into admission, she required BIPAP for worsening respiratory status and antimicrobials were broadened to piperacillin-tazobactam and levofloxacin, before she ultimately required intubation for hypoxic respiratory failure. On day of transfer, she was started on amphotericin given lack of improvement and report of a family dog with blastomycosis. On admission to our hospital, sputum fungal smear showed broad-based

budding yeast. She was proned, paralyzed, and treated with liposomal amphotericin B and dexamethasone. An empyema required chest tube placement and anuric renal failure necessitated renal replacement therapy. She was intubated for 18 days but eventually weaned to room air. At discharge, she had completed one month of amphotericin therapy and was transitioned to oral itraconazole, her kidney function had recovered, and she had stable respiratory status despite persistent cough. Today, she follows with infectious disease and pulmonology and is diligently trying to avoid COVID-19 while she regains her functional status.

Discussion

Ten cases of overwhelming infection with B. dermatitidis pneumonia complicated by ARDS were described in 1993 in the NEJM by authors at the same institution at which this patient was ultimately treated. Fifty percent of those patients died. Four of the five surviving patients were treated with high dose IV amphotericin in the first 24 hours of presentation, highlighting the importance of aggressive management in preventing fatal outcomes.4 Clinicians who practice in endemic areas should consider fungal etiologies of pneumonia, especially when patients are not improving on typical therapies. This patient had recently been fishing in an endemic area and while her sick dog was not likely the source of her own infection, it was a helpful clue in making a rare diagnosis.

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WISCONSIN POSTER FINALIST - CLINICAL VIGNETTE Blair L Tilkens

An unusual culprit of myositis

Title

An unusual culprit of myositis

Authors

Blair Tilkens, DO[1] and Lamya Boujelbane, MD[2]

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Introduction

Most commonly, inflammatory myopathy is recognized as dermatomyositis, polymyositis, immune-mediated necrotizing myopathy, or inclusion body myositis (1). However, more cases of anti-mitochondrial M2 antibodies (AMA) have been reported to be associated with inflammatory myopathy. Early recognition of the disease is important due to skeletal muscle atrophy and cardiac involvement. Fatty changes of the paravertebral muscles can lead to lordotic posture or dropped head (2). Cardiac involvement includes myocarditis, atrial or ventricular arrhythmias, or cardiomyopathy (3). We present a case of a patient with bilateral leg weakness and acute kidney injury secondary to rhabdomyolysis who was diagnosed with AMA associated myositis.

Case Presentation

A 67 year old female with a history of hypertension, atrial fibrillation, hyperlipidemia, and chronic kidney disease stage 2 presented with complaints of bilateral lower extremity weakness worsening over the past month. The patient was obese, afebrile, and hemodynamically stable. The physical exam was significant for 2/5 strength of the lower extremities bilaterally, 5/5 strength of the upper extremities bilaterally, and absent lower extremity reflexes. Labatory results were significant for creatinine 2.9 (baseline ~1.1), creatine kinase (CPK) 93,243, c-reactive protein 5.8, erythrocyte sedimentation rate 94, AST 2,759, ALT 1,138, alkaline phosphatase 340, total bilirubin 1.7, aldolase 144.4, and troponin 0.27. The patient was admitted and started on intravenous fluids to treat rhabdomyolysis. Despite, aggressive fluids,

her labs continued to rise with creatinine 3.92, CPK 114,130, AST 9,581, and ALT 1,138. With concerns for polymyositis, an antinuclear antibody (ANA) with reflex and polymyositis antibody panel were performed but resulted negative. The patient underwent electromyography demonstrating evidence of necrotizing myopathy. Another differential was statin induced myositis given her use of atorvastatin. The result of the IgG 3-hydroxy-3-methylglutaryl-coenzyme A reductase antibody was negative. Finally, an antimitochondrial antibody test resulted in elevated IgG AMA at 58. The patient underwent a muscle biopsy of the rectus femoris confirming the diagnosis of myositis. An echocardiogram was performed demonstrating an ejection fraction of 60% without any regional wall motion abnormalities. With recommendations from rheumatology, the patient was treated with high dose prednisone with a taper for 20 weeks, intravenous immunoglobin monthly for 6 months, and azathioprine. Her kidney and liver function returning to baseline. She was discharged to a rehabilitation facility where she regained her strength and began to ambulate on her own.

Discussion

Cases of AMA-associated myositis have been identified more frequently. It is usually a chronic disease course with muscle atrophy and often with cardiac involvement (2). Our patient had a relatively rapid development without any evidence of muscle atrophy. She did have mild troponin elevation that indicated possible cardiac involvement. However, she had no symptoms of myocarditis and her echocardiogram demonstrated normal cardiac function. AMA-associated myositis is also commonly present with primary biliary cirrhosis (PBC) (4). This patient did have elevation in alkaline phosphatase at presentation, but it rapidly declined with fluid resuscitation and she never had symptoms to suggest PBC. This is a classic case of inflammatory myopathy and demonstrates the importance to consider less common causes of myositis such as AMA-associated myositis.

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CHAPTER WINNERS – CLINICAL VIGNETTE

Arizona Clinical Vignette Poster Finalist - Matthew Farley

Title

Overdrive: T-Cells Gone Rogue

Authors

Matthew M. Farley, MD

Introduction

A 36-year-old previously healthy female presented with lymphocytic colitis, idiopathic thrombocytopenic purpura, middle ear soft tissue density, dermatitis, splenomegaly/axillary lymphadenopathy, and follicular bronchiolitis. Genomic sequencing for primary immunodeficiency disorders revealed a mutation in CTLA-4. Considering her clinical manifestations and the CTLA-4 mutation, she was diagnosed with CTLA-4 haploinsufficiency with autoimmune infiltration (CHAI). Treatment with sirolimus and abatacept was initiated and she showed significant clinical improvement.

Case Presentation

Patient presented to Allergy & Immunology clinic after developing the above mentioned diagnoses. At the time of presentation, the differential was broad including infectious (e.g., fungal, viral, bacterial, mycobacterium) vs. autoimmune (e.g., vasculitis, Sjogren's, sarcoidosis, IgG4 disease) vs. lymphoproliferative/immunodeficiency disorders (e.g., lymphoma, plasma cell disorders, CVID). All infectious and rheumatologic workup was negative. Immunologic evaluation showed normal SPEP, mildly decreased IgG, normal IgG4, and small decreases in plasmablasts/memory B cells on immunophenotyping. The lack of a unifying diagnosis prompted the ordering of an InVitae Primary Immunodeficiency Panel. Genetic sequencing identified a variant of uncertain significance in CTLA4, Exon 2, c.439A>G (p.Thr147Ala). Her clinical manifestations and new genetic sequencing results were consistent with a diagnosis of CTLA-4 haploinsufficiency with autoimmune infiltration (CHAI). In CHAI, patients have heterozygous loss-of-function mutations in CTLA-4. [1] CTLA-4 is a critical T-cell inhibitor receptor expressed on Tregs and CD8 T cells that functions to suppress the cell-mediated immune response. Therefore, when this receptor is absent, T-cell operate unchecked. Patient was started on treatment with Abatacept and sirolimus. After several months of treatment, she showed remarkable clinical and radiographic improvement. Thus, the treatments will be continued.

Discussion

To date, there are 23 published cases of CHAI. All of the previous cases presented with similar manifestations including auto-antibody mediated cytopenias, lymphadenopathy, splenomegaly, hypogammaglobulinemia, and lymphoid infiltration of non-lymphoid organs. [1] The treatment regimen of Abatacept and Sirolimus was selected with the assistance of experts at the National Institute of Health (NIH) as they have successfully treated 8 patients with this combination. Abatacept was chosen because it is a CTLA-4-Ig fusion protein. Sirolimus is widely known to suppress T-cell functions. [2] For severe, refractory cases, hematopoietic stem cell transplant (HSCT) is an option. [3] After this case presentation, clinicians should consider CHAI in patients presenting with lymphocytic infiltration of non-lymphoid organs and other autoimmune features. It should be recognized that genetic testing is useful when immunodeficiency is suspected and the other tests are not definitive. Lastly, Abatacept and sirolimus may suppress T cell activity/proliferation that drives the underlying disease pathogenesis.

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Arkansas Clinical Vignette Poster Finalist - Cameron Sandefur

Title

Unusual Presentation of Acute Viral Pericarditis

Authors

Cameron Sandefur, DO & Amanda Sale, MD

Introduction

Pericarditis is a result of inflammation to the pericardial sac surrounding the heart. It can result from various causes, some of which include: infection, drugs, malignancy, injury, radiation, or simply idiopathic. The incidence of pericarditis is only 0.2 to 0.5 percent in hospitalized patients (1). Patients typically present clinically with pleuritic chest pain that improves with leaning forward. Patients can also develop pericardial effusions which can be life-threatening.

Case Presentation

A 27-year-old white male with medical history significant for 1 episode of pancreatitis presents to the ER complaining of sharp, epigastric and RUQ pain that radiates to his back. The pain began a few days prior and is associated with nausea, vomiting, diaphoresis, shortness of breath, and a dry cough. His exam is notable for RUQ tenderness without guarding. Vitals showed a temperature of 101.7 F, HR 111, BP 130/85, and O2 96% on room air. Labs revealed WBC 9.3. Electrolytes and kidney function were unremarkable. LFTs were slightly elevated. Lipase was <20.

He underwent evaluation for suspected cholecystitis. Abdominal ultrasound showed mild gallbladder wall thickening and trace ascites. CT abdomen/pelvis with contrast revealed inflammatory changes, but no gallstones. The pancreas showed no inflammation. HIDA scan showed a patent common bile duct and cystic duct with a normal ejection fraction, ruling out cholecystitis. Interestingly, the CT incidentally revealed a moderate to large sized pericardial effusion. An echocardiogram confirmed this, and there were no signs of tamponade.

Further discussion revealed the patient had been bitten by a tick a month prior. This was followed 1 week later by a subjective fever and left sided chest pain that radiated to his left shoulder. It was accompanied by dyspnea on exertion and night sweats. His fever remitted with Tylenol until about 3 days prior to presentation to the ER.

Further labs, including ESR and CRP were elevated at 56 and 20.1, respectively. Tick titers were sent out that returned negative. An ANA was negative.

Unfortunately, the patient elected not to have a viral panel ordered due to cost.

Ultimately, the patient was felt to have a viral pericarditis and was discharged home to continue taking NSAIDS and Colchicine. A follow-up echocardiogram 1 month later revealed only a trace pericardial effusion with almost complete symptom resolution.

Discussion

Acute pericarditis is diagnosed in approximately 5% of patients who arrive to the ED with non-ischemic chest pain (2). Pericarditis has a number of etiologies; however, nearly 80-90% of cases are considered idiopathic, presumed of viral origin (3). Pericarditis is a clinical diagnosis requiring two of the following findings: typical sharp, pleuritic chest pain, a pericardial friction rub on exam, ECG changes (typically widespread ST-segment elevation), and a new or worsening pericardial effusion (3).

Approximately 95% of patients with pericarditis present to the ED with chest pain. Our case was unusual given our patient's predominate complaint was abdominal pain, so it is important to consider pericarditis as an initial differential for abdominal pain because a delay in pericardial evacuation from an effusion could lead to fatal outcomes.

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California Clinical Vignette Poster Finalist - Garrett Cohen, MD

Title

Rash - The Initial Presentation of Angioimmunoblastic T-Cell Lymphoma - A Real Head Scratcher

Authors

Garrett Cohen (1), Vincent Delgado (1), Whayoung Lee (2), Sherif Rezk (2), Maria Peralta (1), and Afshan Baraghoush (1) 1. Department of Internal Medicine, UC Irvine Health, Orange, CA 2. Department of Pathology & Laboratory Medicine, UC Irvine Health, Orange, CA

Introduction

Angioimmunoblastic T-cell lymphoma (AITL) is an uncommon, aggressive subset of peripheral T-cell lymphoma. Recent reports estimate the incidence in the United States to be roughly 0.05 cases per 100,000 person years, comprising 1-2% of all non-Hodgkin lymphomas (1,2). Patients typically present with nonspecific symptoms suggestive of a systemic illness, making for a difficult, often delayed diagnosis. Herein, we describe a challenging identification of AITL centered around cutaneous manifestations. As AITL carries an overall poor prognosis, early and accurate diagnosis is crucial to improve survival and optimize quality of life.

Case Presentation

A 90-year-old female with a history of hypertension, chronic kidney disease, heart failure, and asthma initially presented to an outside hospital with shortness of breath and cough. She was diagnosed with pneumonia and incidentally found to have Coombs-positive autoimmune hemolytic anemia, for which she completed a course of antibiotics and a corticosteroid. During outpatient follow-up, she was directed to the emergency department because she developed worsening renal function, thrombocytopenia, and a new rash. Initial vital signs were stable, and physical exam was notable for a diffuse, maculopapular, non-blanching, erythematous rash involving the brow, chest, back, abdomen, groin, and thighs without mucosal involvement. Laboratory findings were significant for a platelet count of 59,000 and evidence of hemolytic anemia. A punch biopsy performed by the dermatology service showed superficial perivascular and interstitial dermatitis with eosinophils and extravasated erythrocytes, negative for direct immunofluorescence. The hematology and oncology service was consulted for the patient's Coombs-positive autoimmune hemolytic anemia and recommended continued work-up for underlying malignancy given the constellation of signs and symptoms. Computed tomography of the chest, abdomen, and pelvis revealed extensive lymphadenopathy concerning for lymphoma. Despite multiple discussions with the patient, she declined excisional lymph node biopsy and elected to continue work-up in the outpatient setting. A few weeks later, she

underwent fine-needle aspiration of a right cervical lymph node, but results showed no specific immunophenotypic abnormality. Shortly thereafter, excisional biopsy of a right neck lymph node was performed, and results were consistent with AITL. The patient was given several different treatment options, but declined therapy and decided to pursue hospice care.

Discussion

This case highlights a unique presentation of AITL and underscores the difficulty of confirming the diagnosis. Cutaneous manifestations similar to that described for this patient occur in roughly 50% of cases (3). The presence of skin findings in conjunction with an underlying hemolytic anemia and diffuse lymphadenopathy should alert clinicians of the possibility of this unique disease process. Furthermore, confirming an early and accurate diagnosis is critical in order to expedite therapy. As described in this report, both skin biopsy and fine-needle aspiration of a lymph node were inconclusive. Excisional lymph node biopsy is the gold standard and should be performed whenever feasible.

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California Clinical Vignette Poster Finalist - Lauren Haggerty

Title

Eight Years of Recurrent, Chronic Tuberculous IRIS: The Importance of Ongoing Microbiology Testing

Authors

Lauren Haggerty, MD Edward Cachay, MD

Introduction

Patients with HIV may develop immune reconstitution inflammatory syndrome (IRIS) upon initation of antiretroviral therapy (ART). Symptoms typically resolve with treatment of the infectious process triggering IRIS. We present a case in which symptoms have persisted for several years.

Case Presentation

A 51 year-old male with well controlled HIV presented with non-painful, right cervical lymphadenopathy in July 2020. He denied constitutional and respiratory symptoms. He was diagnosed with AIDS and started ART in 2012. Six weeks following ART initiation, he developed left cervical lymphadenopathy. The cervical lymph node aspirate and sputum culture grew mycobacterium bovis. He was diagnosed with disseminated M. bovis in the setting of IRIS. His TB treatment course was complicated by paradoxical TB IRIS, which manifested as a left hand necrotizing granuloma and ring-enhancing lesions in his brain (2013). He completed 24 months of TB treatment in 2014 with complete resolution of all lesions. Two years later (2016), he noticed new left axillary lymphadenopathy, and low dose prednisone was started for presumptive ongoing IRIS causing recurrent scrofula. His lymphadenopathy worsened or new scrofula appeared every time steroids were tapered. The patient developed right cervical and infraclavicular lymphadenopathy in 2019 and left inguinal lymphadenopathy in February 2020. Biopsies and aspirations of all lesions had unrevealing cytology, AFB, and cultures. Upon presentation, vital signs were within normal limits. Lymph node exam was notable for a 2 cm sized lymph node in the posterior right neck. It was non-tender to palpation, and there was no drainage. His CD4 count was 280 cells/microL, HIV viral load undetectable, and CRP 0.32 mg/dL. Lymph node aspirate yielded rare acid-fast bacilli, MTD PCR was positive, and Gene-XPRT was negative for evidence of rifampin resistance. Sputum, urine, stool, and blood AFB gram stain and cultures were negative. The patient started a new mycobacterium bovis course with improvement in symptoms.

Discussion

HIV-associated IRIS is classified as “unmasking” when it leads to a new HIV-associated condition that was not evident before ART initiation, which is how this patient initially presented in 2012. IRIS can also manifest as a paradoxical worsening of a known pre-existing disease, as we suspect is now occurring with the patient’s recurrent scrofula. The mainstay of management is the treatment of the underlying infection. Other therapies include prednisone, NSAIDs, thalidomide, and TNF alpha inhibitors. The continued presence of symptoms over eight years is remarkable, as IRIS usually resolves with complete treatment of the underlying infection. This case raises the question of a sub-clinical M. bovis infection despite two years of TB treatment, causing chronic IRIS, as the presence of ongoing antigen may trigger a continuous pathogen-delayed inflammatory reaction. Paradoxical IRIS is culture-negative by definition and is treated with anti-inflammatory strategies. Subclinical residual mycobacterial diseases with positive cultures require additional TB therapy. There are no case reports of chronic mycobacterial IRIS, as is the case with this patient.

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California Clinical Vignette Poster Finalist - Conan Liu

Title

A Leaky Case of “Recurrent Sepsis”

Authors

Conan Liu, MD; Jeffrey Stenger, MD, FACP; Amit Gupta, MD; Kristen Kelley, MD

Introduction

Idiopathic systemic capillary leak syndrome (ISCLS) is a rare condition characterized by recurrent episodes of the three “H’s” - hypotension, hemoconcentration, and hypoalbuminemia. Since it was first described by Clarkson in 1960, less than 500 cases have been reported worldwide. However, this likely underestimates this condition’s true prevalence as it is frequently misdiagnosed as septic shock, anaphylaxis, or polycythemia vera. Early recognition of ISCLS is important as severe complications such as flash pulmonary edema and compartment syndrome are common and associated with high rates of mortality.

Case Presentation

A 57-year-old morbidly obese man with a history of systolic heart failure presented to the hospital after an episode of near syncope and abdominal pain radiating to his back. On initial presentation, he was hypotensive with a BP of 72/61 and had 3+ pitting edema and cold extremities bilaterally. Labs revealed leukocytosis with a WBC of 19, hemoglobin of 17, and albumin of 2.9 which later trended down to 2.3. He was treated for presumed sepsis with empiric antibiotics and fluid resuscitation. However, after 5 liters of fluid he continued to be hypotensive and repeat labs revealed a WBC of 33.3 and hemoglobin of 20.2. Notably, the patient was consistently afebrile and a comprehensive infectious workup was negative. His echocardiogram showed a stable EF of 40%, and workup for pancreatitis was also negative. The patient had three similar episodes of hypotension, leukocytosis, and hemoconcentration over the past 1.5 years. Each time he had been treated for presumed sepsis and improved with IV antibiotics, however a clear infectious source was never identified. On this admission, he improved with aggressive IV fluid resuscitation hospital days 1-3 followed by high doses of furosemide on subsequent days. Further workup during his stay was significant for an M-spike on SPEP which is often seen in patients with ISCLS. His hospital course was complicated by acute kidney injury, upper GI bleed, and ischemic colitis leading to E. coli bacteremia on hospital day 8. He was discharged on hospital day 15.

Discussion

ISCLS is a diagnosis of exclusion which should only be considered once more common conditions such as sepsis and anaphylaxis have been ruled out. The disease process consists of prodromal, extravasation, and recovery phases. Although rare, ISCLS is an important condition for physicians to be aware of as delays in diagnosis are frequent and contribute to increased mortality. Physicians must quickly recognize the beginning of the recovery phase in order to discontinue fluid administration and begin diuresis. Recent increases in the number of reported cases of ISCLS suggest that this condition may be more prevalent than previously thought, and there is now some data supporting the use of VEG-F inhibitors and IVIG to reduce the severity and frequency of attacks.

California Clinical Vignette Poster Finalist - Brittney Quyen Pham, MD

Title

Recurrent Abdominal Venous Stasis Masquerading as Cellulitis

Authors

Brittney Pham, MD and Reece Doughty, MD

Introduction

Patients with ascites are at risk of spontaneous bacterial peritonitis (SBP). Paracentesis of hospitalized patients with ascites should be considered to diagnose SBP, although abdominal wall cellulitis is a relative contraindication. We present a patient who had venous stasis of his abdominal wall, initially mistaken as cellulitis/SBP.

Case Presentation

A 57-year-old man with alcoholic cirrhosis and ascites presented for recurrent abdominal pain and erythema. Notably, he underwent partial bowel resection for incarcerated hernia 3 months prior and had been admitted twice for similar symptoms. On exam, his abdomen was distended and tender, with shifting dullness and abdominal wall erythema. As in preceding admissions, he was treated empirically for SBP/cellulitis with ceftriaxone and vancomycin. Paracentesis was initially deferred given risk of spreading infection and empiric therapy. He had no change in appearance nor symptoms with appropriate antibiotics for 5 days. Lack of improvement and no other infectious signs called into question the diagnosis of cellulitis/SBP. Given similar course on prior admissions, antibiotics were discontinued and paracentesis was performed on hospital day 6 with removal of 3.7 liters of fluid. PMNs in the ascitic fluid were not elevated, arguing against SBP. Abdominal wall erythema improved immediately, with resolution by the following day. After concurrent recovery in pain and skin changes, he was discharged and scheduled for outpatient paracenteses.

Discussion

Paracentesis is required to diagnose SBP and is also indicated for patients with new ascites, hospitalized patients with ascites, and therapeutic intervention. Relative contraindications include cellulitis at the needle insertion site, coagulopathies, fibrinolysis, ileus or bowel distension, and intra-abdominal scarring. Risks and benefits must be weighed when contemplating invasive procedures. In the setting of abdominal distension and discomfort when

paracentesis is not plausible, empiric therapy with antibiotics may be appropriate if suspicion for SBP is high. However, if no improvement after appropriate therapy, alternative diagnoses should be considered. In our case, episodes without response to antibiotics that improved following fluid removal suggested that mechanical relief from paracentesis was the key treatment. We hypothesize that the patient's impaired venous outflow from abdominal wall surgery was exacerbated by recurrent pressure from ascites, resulting in decreased abdominal wall venous outflow and erythematous appearance. This clinical presentation is similar to stasis dermatitis of the lower extremities, in which dermal inflammation and valvular incompetence may be falsely interpreted as infection. Most research on healthcare spending and inappropriate diagnosis of cellulitis has been focused on lower extremities, but may be extrapolated to the abdomen. The misdiagnosis of cellulitis has resulted in 50,000-130,000 unnecessary hospitalizations and $195 million-$515 million in avoidable healthcare expenditures annually. This case illustrates venous stasis as another mimicker of cellulitis (pseudocellulitis). Characteristics such as erythema, pain, swelling, and warmth are commonly used to diagnose cellulitis. However, they represent generalized inflammation and are not specific to cellulitis. Without standardized criteria to diagnose cellulitis, physicians must rely on clinical experience to guide decision making. This case serves to expand our differential for a chief complaint of abdominal pain and erythema in an effort to minimize patient morbidity and excessive healthcare spending.

California Clinical Vignette Poster Finalist - Gayatri Suresh Kumar

Title

Probiotics Gone Wrong: Lactobacillus plantarum causing Aortic Valve Infective Endocarditis

Authors

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1Department of Internal Medicine, 2Division of Infectious Diseases 3University of Louisville School of Medicine, Louisville, KY

Introduction

Lactobacillus plantarum endocarditis caused by probiotics is rare. It is usually seen in the immunocompromised population, patients who have had prior surgery, or those with predisposing heart disease. Lactobacillus is a facultative anaerobic gram positive rod that is a normal commensal of the gastrointestinal and genitourinary tract. However, it is also commonly seen in probiotics and dairy products. Probiotic use in an immunocompromised person can predispose to disseminated infection with bacteremia and endocarditis. We report a case of probiotic-induced endocarditis.

Case Presentation

A 67-year-old female patient with a past medical history of bladder cancer had a cystectomy and an ileal conduit placement that was complicated by a perforated bowel, prompting revision of the ileal conduit. A few days after discharge, the patient developed increased purulent drainage from the midline incision site, associated with fever and chills. She had a temperature of 102.8 F, a blood pressure of 86/68 mm Hg, a heart rate of 102 beats/min, and a respiratory rate of 25 breaths/min. She was resuscitated with fluids and was empirically started on intravenous vancomycin and piperacillin/tazobactam. A CT scan of the abdomen and pelvis with contrast revealed an enterocutaneous fistula with a suprapubic and left paracolic abscess. The patient subsequently had an IR-guided drain placed into the suprapubic and left paracolic collection. Two blood cultures grew L. plantarum. Cultures of the intraabdominal fluid grew Streptococcus anginosus. Antibiotics were changed to daptomycin and ampicillin. The patient had been regularly taking a probiotic supplement that consisted of 33% L. plantarum. A transesophageal echocardiogram demonstrated a 0.6 x 0.2 cm mobile echodensity on the aortic valve, consistent with aortic valve endocarditis. The patient’s condition improved, and she was discharged on the same antibiotic regimen.

Discussion

Lactobacillus species causes infective endocarditis in less than 0.5% of cases of bacteremia leading to the development of endocarditis. Consuming a probiotic containing L. plantarum in the context of bladder cancer served as risk factors in our patient. This case highlights the importance of recognizing that consumption of L. plantarum species can cause severe infection resulting in endocarditis.

Florida Clinical Vignette Poster Finalist - Zachary Field

Title

A Rare Case of Methemoglobinemia from Over-the-Counter Vagisil Cream

Authors

Zachary Field, Sarah Cheyney

Introduction

Methemoglobinemia is a life-threatening condition that results from increased methemoglobin production. As methemoglobin has an increased affinity for oxygen, potentially lethal hypoxia and functional anemia can occur. Benzocaine is commonly used as a topical anesthetic and can be found in many over-the-counter products marketed for self-application. Methemoglobinemia occurring after topical benzocaine use on the perineum of a perimenopausal woman has never been reported.

Case Presentation

A 50-year-old woman presented to the ED with skin discoloration. The day prior, she noticed that her lips and fingertips were turning purple. On admission, vital signs were normal aside from an oxygen saturation of 89% on room air. Aside from the skin discoloration, her only acute complaint was vaginal itching. The patient was admitted two months prior for diverticulitis and was treated with metronidazole and cefdinir. She subsequently developed severe, chronic vaginal itching believed to be attributed to her recent antibiotic use. She had been using Vagisil cream 5 times a day over the past 3 weeks, which was significantly more than the manufacturer's recommendation. Labs were most significant for a methemoglobin level of >28.0%. She was diagnosed with methemoglobinemia and treated with methylene blue. Over the next few hours, her symptoms and laboratory values normalized. She was watched overnight in the hospital and discharged the following day.

Discussion

During normal human physiology, methemoglobin makes up less than 1% of the hemoglobin in the body. Built in mechanisms both protect against and reduce the effects of oxidative damage on red blood cells. The major pathway uses cytochrome-b5 reductase, which reduces 95-99% of the methemoglobin produced[1]. Disruption of this enzyme, or when the oxidative burden overwhelms the cellular capability for reduction, induces methemoglobinemia[1]. Oxidative stressors such as benzocaine, which is found in Vagisil, leads to the removal of an electron from

iron in hemoglobin to create methemoglobin. As methemoglobin accumulates with repeated applications, the rate of methemoglobin accumulation surpasses the endogenous mechanisms built in to reduce it. Benzocaine is found in many over-the-counter products such as Aspercreme, Orajel, and Biofreeze. While cases of methemoglobinemia have been reported with these products, this case is particularly unique because of the mechanism of delivery. Orajel, for example, is a product applied to the oral mucosa, where systemic absorption is generally quite good. Contrast that with the vaginal mucosa. Many factors affect systemic absorption such as the thickness of the epithelial layer, as well as the volume, viscosity, and pH of the vaginal fluid[2]. During the menstrual cycle, the epithelial layer thickens by 200-300 micrometers, further decreasing absorption[2]. For these reasons, systemic absorption is generally not considered a major contributing factor, making this case particularly rare. This is the first reported case in the world of methemoglobinemia induced by Vagisil cream in a perimenopausal woman. During menopause, the amount of fluid produced is reduced by as much as 50%[2]. Additionally, the thinning of the vaginal epithelium, which occurs during menopause, may make systemic absorption more likely. It is quite possible that the patient's perimenopausal status increased her susceptibility to developing methemoglobinemia.

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Georgia Clinical Vignette Poster Finalist - Ayesha Khanduri

Title

Severe acute mitral valve regurgitation in a COVID- 19-infected patient

Authors

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Introduction

The ongoing SARS-CoV-2 (COVID-19) pandemic has presented many difficult and unique challenges to the medical community. As this novel virus continues to propagate, we find new clinical manifestations. This respiratory virus can also cause cardiovascular, gastrointestinal, renal, hematologic and neurological organ system dysfunction however the pathophysiological mechanisms underlying acute myocardial injury are not well understood.

Case Presentation

We describe a unique case of an active and healthy 64-year-old COVID -19 positive male who presented with pulmonary edema and acute respiratory failure. His medical history was significant for atrial flutter, status post ablation in 2017. At that time an echocardiogram revealed mild mitral valve regurgitation with a normal left ventricular ejection fraction (LVEF>55%). He was initially diagnosed with acute respiratory distress syndrome (ARDS). Later in the hospital course, his pulmonary edema and respiratory failure worsened as result of severe acute mitral valve regurgitation secondary to direct valvular damage from suspected COVID-19 infection. The diagnosis was made via echocardiogram and confirmed on cardiac catheterization, which also ruled out ischemic causes for valve failure. The patient then underwent emergent surgical mitral valve replacement. The native valve was sent for histopathological evaluation which revealed myxomatous degeneration and a unique inflammatory infiltrate composed of T lymphocytes and histiocytes. Immunohistochemistry identified these T-cells as the CD4 helper subtype. There was no significant acute inflammation or neutrophils, which is commonly seen in acute bacterial endocarditis. These findings suggest a subacute to chronic nature of the inflammatory process. Valve and blood cultures were negative for bacterial, viral, and acid-fast bacilli (AFB). The 16s Ribosomal RNA test was negative. These histopathological findings are similar to the lymphocytic infiltrates and inflammatory cells seen in prior cardiopulmonary autopsy sections of COVID-19 patients described in the literature. In a recent paper done by Fox et al. relevant pulmonary findings in COVID-19 positive autopsy reports revealed mild to moderate lymphocytic infiltrates composed

of CD4+ and CD8+ lymphocytes. Furthermore, histological sections of cardiac autopsy revealed that lymphocytes were adjacent to surrounding degenerating myocytes, which may represent an early manifestation of viral myocarditis. Chen et al. hypothesized that pericytes that have high levels of ACE-2 receptors are targets for viral induced cardiac injury and may result in capillary endothelial cell dysfunction, including microvascular dysfunction. We propose that if capillary endothelial cell dysfunction occurs adjacent or surrounding the valvular apparatus, acute valvular insufficiency is a possible mechanism of viral injury. Thus, we conclude that our patient's acute mitral valve regurgitation was secondary to COVID-19 induced myocardial injury.

Discussion

This case highlights the potential for COVID-19 infection causing acute valvular damage. In these patients, a broader differential for pulmonary edema and respiratory failure must be considered to ensure timely and appropriate treatment.

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Idaho Clinical Vignette Poster Finalist - Carlee Fountaine

Title

Under PRESsure: A Case of COVID-19 Induced Posterior Reversible Leukoencephalopathy

Authors

Carlee Fountaine, MD

Introduction

Posterior reversible leukoencephalopathy (PRES) is a syndrome of clinical and radiographic findings characterized by headache, confusion or reduced consciousness, visual changes and seizures (often the first sign) accompanied by characteristic imaging findings of posterior white matter edema on MRI.[1] The diagnosis is supported by CSF studies with elevated protein and no pleocytosis.[4]

Case Presentation

A previously healthy man in his 60's presented after being found unresponsive and convulsing. Notably, the patient had contracted COVID-19 two months prior during which time he was admitted for a short period and discharged home with supplemental oxygen and a course of dexamethasone. He gradually weaned off the oxygen and seemed to have improved to his baseline health when his family member went to check on him and found him lying in bed, incontinent of urine, and having convulsions. He was brought to the emergency department via EMS and was noted to have an additional three episodes of tonic-clonic convulsions. He remained unresponsive between these episodes and was therefore intubated for airway protection and treated with levetiracetam and lorazepam. Vital signs on admission were notable for a temperature of 39.3C. Physical exam revealed hypertonicity, hyperreflexia and clonus. Initial lab evaluation was notable for positive SARS-CoV2, elevated transaminases and mild leukopenia. He underwent lumbar puncture which revealed WBC 0, RBC 73, protein 319 (H), and glucose of 80. CSF meningitis/encephalitis panel and SARS-CoV2 were negative. CT head, initial MRI brain and spine were unremarkable. Diagnosis remained unclear with little clinical change three days into admission. Repeat lumbar puncture again revealed elevated protein and repeat MRI brain revealed bilateral parietal white matter T2 hyperintense signal changes concerning for PRES. The patient then rapidly improved over the course of his admission with little intervention, was converted to oral antiepileptics and discharged home.

Discussion

This case demonstrates a patient with classic PRES findings of seizure, posterior white matter edema and CSF with elevated protein. The pathogenesis of PRES is unclear but is felt to be related to breakdown of the blood brain barrier. Proposed mechanisms include hypertension and endothelial dysfunction as seen in patients with renal disease, eclampsia or undergoing chemo/immunotherapy. Additionally, PRES has been linked to hypomagnesemia and sepsis.[1,2] COVID-19 infection has been implicated in several cases of PRES, possibly related to endothelial dysfunction as well as shifts in blood pressure.[5,6] PRES patients will most often experience complete recovery with management of the hypothesized cause, i.e. treat hypertension, sepsis, etc.[3] This case serves as an important reminder that COVID-19 affects many body systems including the nervous system. Those patients with known or suspected COVID-19 infection and neurologic changes may benefit from MRI and CSF studies.

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Illinois Clinical Vignette Poster Finalist - Rose Chisenga

Title

Cutaneous Blastomycosis Mimicking Breast Malignancy

Authors

Rose Chisenga, MD, Zita Erbowow-Becksen, MD

Introduction

Blastomycosis is a fungal infection caused by Blastomyces dermatitidis. Breast Blastomycosis is uncommon and can clinically mimic breast malignancy leading to misdiagnosis and treatment delays. Blastomycosis is known to mimic multiple pathologies and can be misdiagnosed as neoplasia, pyogenic gangrenosum, Nocardiosis, mycobacterial infection, immunologic skin disorders, and other mycoses. The main objective of this case report is to highlight the significance of high suspicion for mycotic infections, early tissue biopsy, and prompt treatment.

Case Presentation

A 50 y/o female presented with complaints of a left breast lesion for 1 year. It started as a nodule which later ulcerated becoming progressively tender, erythematous, and more extensive affecting more than half of her breast. She received multiple trials of topical and oral antibiotics without improvement. She also reported a foul-smelling discharge and occasional left breast itchiness. A review of systems including constitutional symptoms was unremarkable. The patient had a prior history of Type 2 Diabetes Mellitus, Hypertension, Morbid obesity, and Hyperlipidemia. Her family history was remarkable for breast carcinoma in her grandmother (diagnosed after age 60). She had predominantly lived in the mid-western part of the United States. On physical examination, vitals were within normal limits, and the patient was noted to have a verrucous appearing growth on her left breast measuring approximately 20 cm x 10 cm with raised irregular borders and foul-smelling discharge. There was no notable erythema, and the nipple appeared normal. Palpation revealed no breast lumps or lymphadenopathy. Initial workup including complete blood count, chemistry panel, and inflammatory markers was unremarkable. Fungal antibodies and blood cultures were negative. Mammography showed the growth confined to the skin with no findings suggestive of breast carcinoma. Left breast skin core biopsy revealed findings consistent with Blastomycosis with no evidence of malignancy. Tissue fungal cultures were positive for Blastomycosis, methicillin-susceptible Staphylococcus aureus, and Klebsiella oxytoca. CT thorax showed no evidence of pulmonary disease. The final diagnosis was extensive left breast Cutaneous Blastomycosis with superimposed bacterial infection. She was treated with Amphotericin B for 7 days and discharged on oral Itraconazole

for 12 months. Additionally, she received a 14 day course of augmentin for her bacterial superinfection. On 1 month follow up, the patient showed significant improvement.

Discussion

As seen from this case, Cutaneous Blastomycosis can mimic several pathologies, including breast malignancy. The case highlights the importance of keeping a low threshold of suspicion for Cutaneous Blastomycosis and the utility of prompt tissue biopsy and culture in the appropriate clinical setting. Treatment with Amphotericin B followed by Itraconazole is highly effective. Most cases respond well to monotherapy with oral itraconazole for 6-12 months. Nevertheless, disseminated Blastomycosis including CNS cases require Amphotericin B prior to initiation of oral itraconazole.

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Illinois Clinical Vignette Poster Finalist - Kenneth Joseph

Title

Laughter: Why It's Not the Best Medicine

Authors

Kenneth Joseph, MD; Charmi Patel MD; Ryan Stefancik DO; Nehal Patel MD; Ghaith Shaaya MD

Introduction

Spontaneous pneumomediastinum (SPM) is a rare occurrence, predominantly seen in young males between the ages of 13-35 years-old, and pregnant women. The pathophysiology, known as Macklin effect, involves increased intrathoracic pressure which causes alveolar rupture, leading to air dissection throughout the bronchovascular sheath and eventually extending into the mediastinum. Here we present a unique case of SPM, that was almost worsened by our intervention.

Case Presentation

An 18-year-old male Navy Recruit, presented with progressive shortness of breath, following an intense laughing fit. His work of breathing increased suddenly and he later developed chest and neck pain. He had no other contributing or precipitating factors. On arrival, he was noted to be tachypneic and tachycardic. He placed on 4L NC for air-hunger and treated with a albuterol. The ICU team was called to evaluate the patient for concerns of possible airway compromise. Initiation of non-invasive mechanical ventilation was considered by the emergency physician, however the patient's respiratory effort normalized after initial treatment. Laboratory findings were notable for a mild leukocytosis. The emergency physician read the chest x-ray to be concerning for a left infiltrate and started the patient on antibiotics due to concern for pneumonia. The patient was admitted to the medicine floor for further management. Due to the atypical nature of the presentation and concern of possible foreign body aspiration, a CT chest and soft tissue of neck was performed. The study reveled severe pneumomediastinum and pneumopericardium with subcutaneous emphysema in the neck. Though he was not hypoxic, pulmonology recommended supplemental oxygen and avoiding factors that would increase intrathoracic pressure, followed by repeat imaging in four days. Due to concern for the possibility of patient clinically deteriorating, patient was transferred to a center with CT surgery available. There, patient had serial imaging completed, which was stable, and patient was ultimately discharged back to base without further intervention.

Discussion

Although the course of SPM is often benign and self-limiting, life-threatening causes such as esophageal/tracheal perforation, trauma, or thoracic perforation must be quickly identified or ruled out. Extrinsic culprits for SPM include underlying lung disease, tobacco or inhaled drug use, irritant inhalation, upper airway infection or corticosteroids. While intrinsic factors that increase intrathoracic pressure include emesis, cough, intensive exercise, or labor. During our research, no cases have been reported where SPM is precipitated by laughing. Treatment for stable SPM is analgesics and supplemental oxygen therapy regardless of oxygen saturation status on room air. This is a humorous case of the often dangerous complications of an acute increase in intrathoracic pressure, and a grave warning to providers who routinely think the next step in management of respiratory distress is always positive pressure support. In this case, had the patient been placed on BiPAP, he could have experienced increased harm. As first line providers, we must be aware of cases like these and keep the risk of positive pressure ventilation in mind.

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Indiana Clinical Vignette Poster Finalist - David Manring

Title

An Interesting Case of Otitis Media

Authors

David Manring, MD; William G. Carlos, MD

Introduction

The diagnosis of rare and complex conditions is often delayed or missed because of anchoring bias and premature closure. Our case demonstrates the importance of keeping a broad differential in mind even when dealing with the simplest of complaints.

Case Presentation

A 31-year-old Hispanic male presented to the ED with the following symptoms: 5 weeks of right ear pain, 4 weeks of cough with blood-tinged sputum, 3 days of fatigue, eye redness, nasal congestion, arthralgia and night sweats. On chart review, it was found that he had 4 recent ED visits with a primary complaint of right ear pain; each time he was diagnosed with otitis media and sent home on oral antibiotics. On presentation this time, he was afebrile, heart rate and blood pressure were normal, respiratory rate was 22, and he had a normal oxygen saturation on room air. Physical examination was significant only for an erythematous tympanic membrane on the right, injected sclera, and bilateral rhonchi on auscultation of the lungs. Initial labs were notable for a WBC count of 20,000 and a urinalysis with 50 RBC/HPF. His chest radiograph revealed a cavitary lesion in the right upper lobe. Following admission to the hospital a CT chest showed multifocal opacities with cavitations. Given his history of moving from Mexico several years ago, TB was suspected. However, sputum AFB returned negative on 3 consecutive days. Extensive testing for HIV, streptococcus, legionella, fungal organisms, brucellosis, Q fever, lupus, and anti-glomerular basement membrane disease all returned negative. Blood cultures and echocardiography were also unrevealing. On hospital day 5, bronchoscopy showed evidence of diffuse alveolar hemorrhage and ANCA testing was sent. On hospital day 9, the C-ANCA antibody returned markedly elevated, confirming the diagnosis of granulomatosis with polyangiitis (GPA). After several days of IV methylprednisolone, he was discharged home on oral steroids. At 1 month follow up, repeat CT showed complete resolution of the cavitary lung lesions, and his symptoms had improved significantly.

Discussion

GPA is a small vessel vasculitis caused by C-ANCA autoantibodies and characterized by the following classic triad: upper respiratory tract disease, lower respiratory tract disease, and glomerulonephritis. It is a rare disease with an incidence of only 12 cases per million individuals per year. Manifestations are protean and can involve the ears, sinuses, eyes, upper and lower airways, kidneys, joints and skin. As this case illustrates, GPA can initially present with a simple complaint. In conclusion, relying too heavily on primary findings can prevent consideration of alternative diagnoses lurking beneath the surface. It is important to take a step back and reconsider the diagnosis with each new piece of clinical information.

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Iowa Clinical Vignette Poster Finalist - Molly Ropte, DO

Title

Not Kidney-ing Around: A Curious Case of Staph aureus-associated Glomerulonephritis

Authors

Molly Ropte, DO Mark Belz, MD

Introduction

As Staph aureus infections, including MRSA, have become increasingly common, so too has the incidence of glomerulonephritis directly precipitated by this pathogen. Koyama, et al. first described 10 cases of IgA-dominant acute post-infectious glomerulonephritis following MRSA infection in 1995. Several similar case reports have been published since then. Features that differentiate this disease entity from other post-infectious glomerulonephritides and IgA nephropathy include co-dominant IgA and C3 staining on renal biopsy, variable hypocomplementemia, and Staph infection several weeks to months prior to onset of acute renal failure in an older patient population. Our case highlights a patient who developed Staph-associated glomerulonephritis following MRSA septicemia. It is important for clinicians to be able to recognize this distinct form of glomerulonephritis to ensure swift and proper management in order to salvage renal function.

Case Presentation

A 56 year old male with a history of chronic enterocutaneous fistula presented to the ED with bilateral lower extremity edema and pain with difficulty walking for 3 days. He attempted increasing his home diuretic without improvement. On arrival to the ED he was afebrile and hemodynamically stable. Exam revealed a large right lower abdominal wound without surrounding erythema or drainage, symmetric non-pitting lower extremity edema with changes of chronic venous stasis, and an open left heel wound without drainage. Initial labs were notable for potassium 2.7 mmol/L, creatinine 1.4 mg/dL (baseline 0.9), procalcitonin 0.73 ng/mL, CRP 41.5 mg/dL. His diuretic was held on admission with resolution of AKI. CT abdomen/pelvis showed T12 diskitis and osteomyelitis. Drainage of a right knee effusion demonstrated MRSA. Blood cultures were collected and also returned positive for MRSA, so empiric vancomycin was started. Shortly thereafter he developed a palpable purpuric rash on the lower extremities which eventually spread to his trunk and arms. On hospital day 12 he developed gross hematuria and significant AKI with proteinuria which progressed rapidly, ultimately requiring hemodialysis. Further workup revealed IgA 562.8 and p-ANCA 1:160. ANA, anti-GBM, and Hepatitis B and C antibodies were negative. C3 and C4 levels were normal. Renal

biopsy showed proliferative IgA nephropathy with crescentic glomerulonephritis and focal features of vasculitis with 2-3+ IgA and 2+ C3 staining on immunofluorescence. The patient was started on steroids and rituximab and continued a prolonged antibiotic course. His renal function eventually recovered, and hemodialysis was discontinued.

Discussion

Our patient presented with an ANCA-associated pauci-immune rapidly progressive glomerulonephritis triggered by Staph aureus infection. His renal biopsy showed what has been described in the literature as an IgA-dominant acute post-infectious glomerulonephritis in which IF staining is predominant for IgA or co-dominant with C3. These patients can have normal serum complement levels, thus differentiating this presentation from typical post-infectious glomerulonephritis. Due to the overlapping P-ANCA vasculitis, immune suppression was indicated in addition to antibiotics for his infection, though renal failure improved with antibiotics alone in most cases of Staph-aureus associated glomerulonephritis previously reported. As this disease presentation differs from IgA nephropathy, immune suppression is controversial and not always indicated.

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Maine Clinical Vignette Poster Finalist - Nellie Wood

Title

A gentleman with a "softball in my chest": A Case of Oligocentric Castleman Disease

Authors

Nellie Wood, MD

Introduction

Castleman disease is a rare lymphoproliferative disorder characterized by angiofollicular lymph node hyperplasia, and often associated with HHV-8 infection. There is often an accompanying cytokine-mediated inflammatory response resulting in systemic symptoms of varying severity. Prior to the advent of effective treatment modalities, it was often a fatal disease.

Case Presentation

A 55-year-old man presented with two months of fever and night sweats and was found to have an anterior mediastinal mass with confluent mediastinal lymphadenopathy. He was hospitalized for additional work-up. His course was further complicated by a constellation of systemic symptoms, including acute kidney injury, thrombocytopenia, dyspnea with bilateral pleural effusions, and abdominal ascites. A PET scan revealed low-grade uptake not typical of high-grade lymphoma, and biopsy via VATS was indeterminate. Ultimately, after consultation with multiple subspecialists and a transfer to a regional hospital with specialist pathology review, a diagnosis of idiopathic (non-HIV-associated) oligocentric, hyaline vascular variant Castleman Disease with systemic symptoms was made. His symptoms improved substantially with initiation of appropriate treatment (in this patient's case, R-CVP).

Discussion

This case represents an atypical presentation of a rare lymphoproliferative disease characterized by lymph node hyperplasia and overproduction of circulating cytokines. Left untreated, the prognosis is poor; response to a chemotherapeutic regimen is often favorable. It is therefore important for this rare disease to be considered in a patient with systemic symptoms and lymphadenopathy once other infectious, autoimmune and malignant processes have been ruled out.

Maryland Clinical Vignette Poster Finalist - Roxana R Amirahmadi

Title

Cosmetic Powder Use and Pulmonary Talcosis: A Case Report

Authors

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Introduction

We breathe in the world around us and it can make a lasting impact on our lungs. Talc, a silicate particle, has been largely described as an inhalational hazard associated with mining, construction, and ship-yard work. Industry workers with recurrent occupational exposure to talc can eventually develop talc-silicosis and talc-asbestosis. Talc may also spread hematogenously to the lungs in intravenous drug users who self-inject talc-containing oral tablets. However, talc is also widely used in household objects, like ceramics, paper, and cosmetics. It is the causative agent of a rare type of pneumoconiosis that is difficult to diagnose. Patients with pulmonary talcosis may present with nonspecific symptoms, including cough and progressive dyspnea. If left unrecognized, the disease may progress to pulmonary hypertension and fibrosis. Here we discuss a patient who developed pulmonary talcosis from inhalation of cutaneously applied cosmetic powder, an especially rare mode of exposure to talc.

Case Presentation

A 52-year-old woman with no smoking or intravenous drug use history presented with dyspnea on exertion in 2018. Initial CT chest showed diffuse centrilobular ground-glass nodules bilaterally. Her autoimmune work up revealed positive p-ANCA, but inconclusive transbronchial biopsies. Presumed diagnosis of Granulomatosis with Polyangiitis was made and she was prescribed prednisone and cyclophosphamide. The patient then had multiple hospitalizations for pneumonia with worsening cough, weight loss, and functional status. On presentation for failure to thrive 1 year later, CT chest showed bilateral centrilobular ground-glass nodules with upper lobe predominance and a left-sided pleural effusion. Differential diagnosis included rheumatologic, malignant, hypersensitive, infectious, and neuroendocrine etiologies, but were inconsistent with history and labs, including repeat negative p-ANCA. Transbronchial biopsy showed high talc burden consistent with inhalation talcosis. Titanium deposits were also present in the lung tissue. On further questioning, the patient explained that she had regularly

used talc-containing face powder for several years prior to initial presentation, but had stopped using face powder for about 1 year. After drainage of her pleural effusion, her dyspnea improved and she was discharged home. She passed away 1 week later but the circumstances around her passing are unknown.

Discussion

Although commonly found in household products, talc is often overlooked as a cause of inhalation pneumoconiosis. Pulmonary talcosis caused by cosmetic powder is even more unexpected. The discovery of titanium was also significant, as it revealed that the talc exposure was likely due to commercial product use given that titanium is a common additive to commercially sold talc to give it a white color. Diagnosis is challenging, as the symptoms of pulmonary talcosis are nonspecific, including dyspnea, cough, weight loss, anorexia, and diaphoresis. The duration and amount of talc exposure necessary to cause symptoms are variable. Among documented cases, there have been patients who manifested symptoms only months after exposure, as well as those who became symptomatic up to four decades after exposure. It was not until biopsy that our patient's history of talc-use was elicited. While imaging and pathology can confirm pneumoconioses, a detailed history is needed to guide the work-up and eventual discovery of pulmonary talcosis.

Maryland Clinical Vignette Poster Finalist - LT Nicole S Lieberman, MD

Title

A Hypothalamic Hitch: Multiple Sclerosis as a rare cause of relapsing-remitting Diabetes Insipidus

Authors

N. Samara Lieberman, MD, ACP member; Kenneth Dalton, MD; Kimberly Fabyan, MD, ACP member Walter Reed National Military Medical Center – National Capital Consortium, Bethesda, MD

Introduction

Multiple Sclerosis (MS) is an immune-mediated demyelinating disease affecting the central nervous system. While sensory and motor complications are common manifestations, MS-associated endocrine dysfunction can also occur. We present a rare case of sub-radiographic hypothalamic dysfunction due to multiple sclerosis causing an isolated episode of antidiuretic hormone deficiency, or central diabetes insipidus (DI).

Case Presentation

A 65-year-old woman with a 20-year history of secondary progressive MS was admitted with symptomatic relapse notable for dysarthria and progression of right lower extremity weakness. Her hospital course was complicated by persistent hypernatremia, hypothermia (Tmin 31.4 C) and associated polyuria with relative adipsia. Urine studies demonstrated hypo-osmolar urine with decreased sodium excretion consistent with DI. Desmopressin challenge resulted in free water retention consistent with central DI. Notably, there was no dysfunction of the anterior pituitary on laboratory evaluation. Gadolinium-enhanced MRI of the hypothalamus and sella did not demonstrate new T2 hyperintense lesions, while preservation of T1 hyperintensity of the posterior pituitary confirmed its function, consistent with sub-radiographic hypothalamic nuclei involvement. Regular administration of intranasal ddAVP titrated to serum sodium and urine output resulted in normalization of the patient's serum sodium level. On subsequent outpatient follow-up, hypothermia had resolved, and the patient reported a gradual decrease in her requirement for ddAVP. Repeat laboratory evaluation showed remission of diabetes insipidus, following an expected course of an MS relapse with clinical improvement upon return of neuronal function.

Discussion

Given the robust response to desmopressin along with dysregulation of temperature control, clinical localization in this case supports hypothalamic dysfunction. Temperature regulation is controlled by the preoptic area and dorsomedial hypothalamus, while vasopressin neurons regulate the supraoptic nucleus and paraventricular nucleus of the hypothalamus. These nuclei are susceptible to demyelinating lesions as has been demonstrated at autopsy in a prior case series. Hypothalamic MS lesions can therefore be sub-radiographic and hence challenging to diagnose. This rare case shows that a high index of suspicion is required for the investigation of MS-related derangement of hypothalamic function and diagnosis of associated central DI.

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Maryland Clinical Vignette Poster Finalist - Elena Segre, MD

Title

Diagnosis of Fibromuscular Dysplasia after Presentation with Spontaneous Coronary Artery Dissection

Authors

Elena Segre, MD; John Blickle, MD; Todd Looney, MD; Ardalon Farhat-Sabet, MD; Matthew Jezoir, MD

Introduction

Spontaneous coronary artery dissection (SCAD) is a leading cause of acute myocardial infarction (MI) in young women, and most often presents in patients without significant risk factors for coronary artery disease. In contrast with atherosclerotic coronary artery disease, SCAD may be related to arteriopathies such as fibromuscular dysplasia (FMD); as many as 75% of patients diagnosed with SCAD are later diagnosed with FMD. Appropriate diagnostic workup in primary care for FMD after a diagnosis of SCAD is imperative to optimize care.

Case Presentation

A 41-year-old active duty female with medical history only significant for current tobacco use presented to the emergency department with 72 hours of exertional left sided chest pain radiating down the left arm. Initial workup was notable for an EKG with diffuse ischemic T waves in leads V2-V5 (Wellen's T waves) and an elevated troponin. The patient was diagnosed with non-ST elevation acute coronary syndrome (NSTE-ACS). She subsequently underwent coronary angiography which demonstrated a linear filling defect in the mid left anterior descending artery consistent with SCAD. Percutaneous intervention was not indicated, and the patient was discharged home on guideline directed medical management to include dual-antiplatelet therapy (DAPT). During outpatient follow-up with primary care, the patient underwent one-time head to pelvis cross sectional imaging to screen for fibromuscular dysplasia. Head and neck magnetic resonance angiography (MRA) revealed a proximal left internal carotid artery (ICA) dissection and pseudoaneurysm. The patient was referred to vascular surgery and diagnosed with FMD. Given that she was already on DAPT for SCAD, no additional intervention was indicated. Close interval follow-up CTA demonstrated stability of the ICA dissection.

Discussion

SCAD is a common cause of ACS in young women without typical risk factors; most of these patients are later diagnosed with FMD. Appropriate workup following SCAD is within the scope of practice of a general internist and is imperative to diagnose FMD and identify any other arteriopathies. Standard treatment consists of antiplatelet therapy, hypertension management and smoking cessation counselling. The prognosis for patients who do not develop complications from stroke is favorable. In a military environment, active duty patients may warrant restrictions such as limitations on flight status or change in worldwide deployment availability due to the risk of further dissection requiring prompt medical or surgical intervention, which may not be available in forward deployed environments.

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Massachusetts Clinical Vignette Poster Finalist - Anish Bhatnagar

Title

Collateral Damage in the COVID Pandemic: A Case of a Fatal Homemade COVID Remedy

Authors

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Introduction

Ingestion of cleaning solvents is a rare cause of unintentional poisoning in adults. Given the infrequent occurrence, cases are poorly characterized in the literature. Among the growing misinformation spreading along with SARS-CoV-2, there is an increasing trend towards home remedies resulting in more reports of toxic ingestion, per a recent report from the Centers for Disease Control and Prevention. Here, we highlight a case of a patient with fatal complications from toxicity associated with ingestion of a COVID prevention home remedy consisting of a cleaning solvent.

Case Presentation

A 59-year-old man with medical history significant for hypertension was brought in by emergency medical services for four days of altered mental status, malaise, and body aches. Per his daughter, he was ingesting a home “cleansing regimen” intended to protect against SARS-CoV-2 infection; the regimen contained an unknown household cleaner. On arrival to the emergency department, he was obtunded, vomiting, and had a diffusely tender abdomen. Labs demonstrated a sodium 163 mEq/L (corrected to 192 mEq/L), chloride 118 mEq/L, bicarbonate 6 mEq/L, glucose 1313 mg/dL, lipase 2666 IU/L, calculated osmolality 430 mOsm/kg, measured osmolality 460 mOsm/kg, anion gap 39, and a venous blood gas 7.13/25/46 (pH/pCO2/pO2). COVID PCR swab was negative x2. Additional labs were notable for an extended alcohol panel positive only for low levels of acetone (30 mg/dL). Computed tomography of the abdomen demonstrated diffuse pancreatic enlargement with significant surrounding fat stranding, compatible with acute pancreatitis. Rapid sequence intubation was performed for concern of airway protection, and the patient was transferred to the Intensive Care Unit. The patient was initially treated with an insulin drip and isotonic volume repletion, with close monitoring of electrolytes. In the setting of worsening clinical status, exploratory laparotomy was performed and showed numerous areas of bowel and pancreatic ischemia. On the third day of hospitalization, the patient went into asystolic arrest and died.

Discussion

This case highlights multiple unique clinical pearls. Firstly, the most likely ingestion was sodium hypochlorite ("traditional bleach"). Severe toxicity is associated with mixed hypernatremic and hyperchloremic acidosis, and significant gastrointestinal tract corrosion, similar to this patient's presentation. Secondly, though the patient's elevated anion and osmolar gaps were concerning for a toxic alcohol ingestion, his alcohol panel was negative. This case is a unique reminder that severe electrolyte derangements can also lead to these abnormalities, and an elevated osmolar gap is not itself sufficient for diagnosis of toxic alcohol ingestion. Finally, historical trends during the 1918 and 2009 H1N1 pandemics showed similar tendencies towards home remedies, many of which also carried unintentional, detrimental side effects. Traditionally, physicians have ignored such unsubstantiated information, but with increasing individuals exposed to and acting on such reports, there is an increasing burden placed on physicians to protect vulnerable patient populations.

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Minnesota Clinical Vignette Poster Finalist - Hadiyah Audil, MD

Title

Copper Deficiency-Induced Anemia and Neutropenia

Authors

Hadiyah Y. Audil, MD, Alia Gupta, MBBS, Animesh D. Pardanani, MBBS, PhD

Introduction

The prevalence of obesity has been estimated at 13% worldwide and nearly 40% in the US. Bariatric surgery is effective for obese patients and is becoming more prevalent; in 2017, approximately 580,000 people underwent bariatric surgery, with 228,000 cases being performed in the US alone. Such procedures include Roux-en-Y gastric bypass (RYBG), wherein a small proximal gastric pouch is created and anastomosed to the small intestine. This bypassing of the alimentary tract predisposes to micronutrient and mineral deficiencies. Guidelines therefore recommend that patients undergo routine post-operative monitoring for nutritional deficiencies and daily supplementation with a minerals-containing multivitamin, calcium, and vitamins D and B12.

Case Presentation

A 49-year-old female presented with two weeks of progressive dyspnea. She was status post RYGB 18 years ago, and was on daily B12 and folate supplementation only. Labs on admission were remarkable for macrocytic anemia (Hgb 6.2, MCV 105.2) and neutropenic leukopenia (WBC 1.7, ANC 240); on chart review, CBC from nine months prior was normal. Physical exam was unremarkable and review of systems was negative for blood loss and constitutional B symptoms. She was given one unit of packed red blood cells with appropriate response in hemoglobin and some symptom improvement; Hematology was consulted due to concern for myelodysplasia. Peripheral smear showed slight anisopoikilocytosis. Evaluation for GI blood loss, hemolysis, liver disease, and hypothyroidism was unremarkable. Although B12 and folate were normal, serum copper was

Discussion

Copper deficiency occurs in 10-15% of patients following gastric bypass surgery, but remains under-recognized. Further risk factors for acquired hypocupremia include other malabsorptive conditions, total parenteral nutrition lacking sufficient copper, excessive zinc ingestion, and chronic dialysis. Clinical manifestations include anemia, neutropenia, and neurologic deficits

(such as ataxia, myeloneuropathy, and cognitive deficits), the latter of which was not seen in our patient but often mimics symptoms of B12 deficiency. Serum copper levels can confirm the diagnosis and bone marrow biopsy also has diagnostic utility, with abnormalities including erythroid hyperplasia, vacuoles in myeloid precursors, iron-containing plasma cells, and ringed sideroblasts. Treatment typically relies on copper repletion. Importantly, although labs may resemble iron deficiency anemia, iron supplementation can cause excess iron to compete with copper absorption and worsen hypocupremia. With the rising prevalence of bariatric surgeries, copper deficiency remains an important pathophysiologic process to consider and diagnose in the correct clinical context.

Minnesota Clinical Vignette Poster Finalist - Rachael Whitley Starcher

Title

The Deadly Hoover: A curiouser and curiouser case of disappearing platelets

Authors

Rachael W. Starcher MD, Elizabeth Hutchinson MD, John Godwin MD, Andrea Roast MD

Introduction

Primary (idiopathic) immune thrombocytopenia (ITP) is a diagnosis of exclusion seen most commonly in females with a bimodal age distribution. Secondary ITP results from drugs, toxins, autoimmune diseases, malignancies, and infections.1,2 Differentiating the two requires both clinical intuition and patient trust in revealing furtive hobbies, which could include possible exposures.

Case Presentation

A 42-year-old male with a history of tobacco and methamphetamine use presented with two days of cough, dyspnea, mouth pain, and epistaxis. Initial work-up revealed interstitial pneumonia, thyroiditis, and hypereosinophilia (3.9 109/L) with severe thrombocytopenia (3 10^9/L) dropping to 0 10^9/L following platelet transfusion. Platelet counts improved with treatment for ITP including IVIG and steroids, but work-up for secondary etiologies revealed nothing. On hospital day 17, a family member called, recommending testing for mercury poisoning, but no additional information could be obtained. Unfortunately, by then, the patient was aphasic from a spontaneous intracerebral hemorrhage. Markedly elevated mercury levels in blood (>160.0 ug/L) and urine (>80.0 ug/L) resulted. The patient completed chelation therapy and showed both mental status improvement--which apparently was not all attributable to his stroke--and normalized platelets without further transfusion. He discharged to rehab on hospital day 68.

Discussion

Clinical syndromes of mercury toxicity vary, depending upon duration and chemical form of mercury exposure. The classic “mad hatter” neuropsychosis and renal failure are the most common presentations of mercury toxicity.3–5 With mercury vapor inhalation, pulmonary and neurological symptoms often predominate.3 While elemental mercury at room temperature can evaporate spontaneously, exposure to heated surfaces – even agitation through vacuuming

– increases toxicity risk.6–9 Rare case reports exist where inhalational and transdermal mercury toxicity occurred after vacuuming and tidying household spills, also resulting in hypereosinophilia and thrombocytopenia.6–8,10 Rodent models suggest these findings, along with thyroiditis, are immune-mediated processes that rely on genetic susceptibility.11–17 Direct activation of T-cells for IgE production and alteration of peptides that lead to Class II HLA immune platelet destruction are the most supported mechanisms for the blood dyscrasias seen. This resembles gold toxicity where, notably, bone marrow megakaryocyte proliferation is consistent with immune- driven platelet destruction.7,18–21 Unlike many causes of ITP—including some caused by gold—chronicity was not reported in mercury-induced thrombocytopenia following chelation therapy.19,22 Inhalational mercury toxicity has rare case reports, including ours, of a reversible ITP-like syndrome.6,8,23 Clues to an etiology other than primary ITP included concurrent eosinophilia, epidemiologic factors, and acute pulmonary symptoms. In similar situations where the classical ITP hat does not fit perfectly, hobby and exposure history may assist in finding a patient's true diagnosis. While mercury toxicity itself is rare, recent studies reveal that climate change is potentiating environmental mercury levels worldwide.24–34 With mercury levels in seafood on the rise and wildfires releasing mercury safely stored in plant life, chronic mercury toxicity may become a greater public health concern.

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Missouri Clinical Vignette Poster Finalist - Zain Raza, MD

Title

An Unusual Case of Chronic Cough – Broncho-Esophageal Fistula

Authors

Raza, Zain. Chaudhary, Salman I. Washington University School of Medicine

Introduction

Cough is a common presenting complaint, accounting for 30 million clinical visits annually in the United States. While most chronic cough has a benign etiology such as postnasal drip or GERD, chronic cough can also be the first manifestation of oropharyngeal or structural dysphagia. We present the case of a patient with a broncho-esophageal fistula whose initial symptom was chronic cough.

Case Presentation

Our patient is a 69-year-old male with a past medical history of COPD and non-small cell lung cancer. His malignancy was treated with chemoradiation 4 years prior to presentation and complicated by esophageal stricture. He developed cough 6 months before admission. His cough persisted throughout the day and worsened with oral intake. More recently his dysphagia progressed to liquids and he felt a “choking” sensation with swallowing. Acid suppression and intranasal steroids did not improve his symptoms. Physical exam was only notable for decreased muscle mass and laboratory evaluation revealed mild anemia. PET-CT surveillance imaging 3 months before admission suggested a new carinal metastasis. He was admitted for bronchoscopy and EGD which showed right main bronchial invasion by his carinal metastasis and severe esophageal stricture. Barium swallow demonstrated an influx of contrast from the esophagus into the right mainstem bronchus. Inability to traverse the esophageal lesion prevented esophageal stenting so the patient was made strictly nil per os and started on tube feeding via gastrostomy with improvement of cough. Several weeks after discharge the patient and family opted for hospice care and he passed shortly after.

Discussion

As demonstrated by this case, chronic cough associated with oral intake warrants evaluation for dysphagia and associated aspiration. For adults with malignancy-associated tracheoesophageal and broncho-esophageal fistula, treatment is primarily palliative with survival often measured in weeks to months. Esophageal stenting limits aspiration and tracheal stenting is often

performed to prevent airway compression but can be limited by technical challenges in stent deployment.

Missouri Clinical Vignette Poster Finalist - Christopher P Williams

Title

Crystals Causing Confusion?: A Case of Crowned Dens Syndrome

Authors

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Introduction

Crowned dens syndrome is a rare manifestation of calcium pyrophosphate deposition disease (CPPD) resulting from acute inflammation due to calcium pyrophosphate crystal deposition near the odontoid process (dens) of the C2 vertebra. This crystal deposition forms a crown-like appearance around the dens on CT imaging. Clinical presentation can include fever, elevated inflammatory markers, neck pain, and, rarely, acute encephalopathy. The following case describes an atypical presentation of crowned dens syndrome involving acute encephalopathy in the setting of chronic CPPD.

Case Presentation

A 79-year-old African American male with a past medical history of mild cognitive impairment, osteoarthritis and a family-reported diagnosis of rheumatoid arthritis, not on active therapy, presented to the hospital with a one-week history of progressive encephalopathy and inability to ambulate secondary to acute on chronic bilateral knee pain. Physical examination on admission revealed a somnolent patient oriented only to self and unable to provide a review of systems, bilateral knee effusions, and 3/5 strength in bilateral lower extremities. No neck stiffness was noted. The patient had a mildly elevated temperature (99.3 degrees Fahrenheit) on admission. Admission laboratory studies were notable for ESR >130 and CRP 21.8. No leukocytosis or left shift was present on admission CBC. Urinalysis was unremarkable. Right knee arthrocentesis demonstrated WBC 8900 with 74% neutrophils, consistent with inflammatory arthropathy. No crystals or organisms were identified. Bilateral knee radiographs demonstrated bilateral menisci calcification consistent with CPPD arthropathy. The patient was initially started on empiric IV ceftriaxone therapy in the emergency department, but antibiotics

were discontinued when infectious workup, including blood cultures and lumbar puncture, returned negative. The patient underwent a non-contrast CT of the cervical spine, which demonstrated calcific densities adjacent to the C2 odontoid process. Given the patient's altered mentation in the setting of a CPPD arthropathy flare and classic CT findings, a presumptive diagnosis of crowned dens syndrome was made. The patient was started on 20mg IV methylprednisolone BID with significant improvement in mental status and arthralgias within 24-48 hours. Per chart review, patient was at his normal baseline at the time of hospital discharge.

Discussion

Few examples of crowned dens syndrome causing encephalopathy in the absence of neck stiffness or subjective complaints of neck pain exist in the literature. The exact incidence of crowned syndrome is unclear; however, two studies found a 5% incidence in elderly patients presenting with acute neck pain based on radiographic findings. While uncommon, crowned dens syndrome should be considered in patients with a history of CPPD, evidenced by chondrocalcinosis on wrist, knee, or pelvic x-rays, presenting with encephalopathy in the setting of elevated inflammatory markers and negative infectious workup. Treatment of crowned dens syndrome includes corticosteroids and NSAIDs in patients without contraindications to NSAID use.

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Montana Clinical Vignette Poster Finalist - Brittany Christensen, MD

Title

Hypercalcemia of 17.2 Developed over 6 Weeks: Milk Alkali or Myeloma?

Authors

B. Christensen, MD and S. Gerstner, MD, FACP, Billings Clinic Internal Medicine Residency, Billings, MT

Introduction

Acute, severe hypercalcemia is not typically associated with multiple myeloma; however, it can be a sequela of the disease, especially if the patient is taking concurrent calcium supplementation. If treatment of suspected milk alkali syndrome does not result in an appropriate response, multiple myeloma should be part of the differential diagnosis.

Case Presentation

We present the case of a 76-year-old female with dry mouth, constipation, fatigue, and paraspinal muscular tenderness, found to have severe hypercalcemia in the ED. She took multiple laxatives the night prior for her constipation, which resulted in profuse diarrhea and vomiting. Recent history also includes diagnosis of osteopenia of bilateral femoral necks and lumbar spine 6 weeks prior after DXA scan, with increased calcium and vitamin D supplementation thereafter. Calcium normal at that time. Initiated lisinopril 2 weeks prior to presentation. Physical exam was remarkable only for pain to palpation of lumbar paraspinal muscles; she was alert and oriented with no neurologic deficits. Preliminary evaluation showed calcium 17.2, ionized calcium critically elevated at 2.12, PTH low normal at 19.6, albumin 4.8, vitamin D 25-OH 36.8, bicarbonate 33, TSH 0.768, alkaline phosphatase 112, creatinine 1.86 from baseline 0.79, potassium 3.7, hemoglobin 13.4, WBC 18.8. AKI was attributed to her acute volume depletion secondary to GI losses. Calcium recheck was 15.3 with PO4 of 4.0 after receiving 1L normal saline bolus. Chest radiograph showed no evidence of hilar lymphadenopathy. Calcium improved only to 12.9 with aggressive hydration, with subsequent increase to 13.8 when infusion rates were slowed. She received a dose of pamidronate, with calcium reduced to 11.1, and she was discharged home. On follow up, her PTHrp was normal, vitamin D 1-25 OH was low at

Discussion

Although myeloma is typically associated with more slowly developing, chronic, mild to moderate hypercalcemia, it can be associated with profound acute hypercalcemia. In suspected milk alkali syndrome, if patient does not respond as expected with aggressive hydration, consider other causes such as myeloma. Because multiple myeloma requires time sensitive treatment, we would recommend early testing of SPEP, UPEP, and free light chains, as these results can take longer to return, especially if these tests cannot be done locally.

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Nebraska Clinical Vignette Poster Finalist - Anne Heenan, MD

Title

Complicated MSSA Bacteremia Following an Influenza Vaccination Site Infection

Authors

Anne Heenan, MD; Lauren Keim, MD; Ann Pearson. Department of Internal Medicine, University of Nebraska Medical Center, Omaha, Nebraska.

Introduction

A healthy 75-year-old male suffers from multiple complications of MSSA bacteremia as a result of infected site from influenza vaccine. This case highlights the need for further investigation of vaccine administration techniques. Providers must recognize potential complications from parenteral medications to minimize complications.

Case Presentation

A 75-year-old male presented with acute onset of altered mental status, dysarthria, and agitation after two weeks of intermittent fevers. On initial evaluation, he was disoriented with incomprehensible speech. He was moving all extremities with equally reactive pupils. Laboratory findings were significant for WBC of 18,000 and procalcitonin of 2.25ng/mL. Head CT revealed a hemorrhagic infarction of the left parietal lobe. Blood cultures grew methicillin sensitive staphylococcus aureus. Mental status improved and was nearly back to baseline after three days of antibiotics and non-operative stroke management. Patient was found to have a 1cm x 3cm area of fluctuance over his deltoid muscle with associated tenderness and erythema where he had received his influenza vaccine four weeks prior. This fluid collection was drained; cultures grew MSSA. Persistently positive blood cultures prompted further investigation of potential sources. MRI of the spine and left wrist due to mild pain and stiffness showed T11-T12 osteomyelitis with epidural abscess and ulnar joint effusion. These were drained operatively and cultures grew MSSA. A TEE was done for new murmur which showed a 1.4cm x 0.4cm vegetation on his mitral valve. He was treated with an extended course of cefazolin with outpatient follow-up with cardiothoracic surgery. The patient had a medical history of hyperlipidemia; no history of intravenous drug use.

Discussion

This patient’s bacteremia with seeding in his spine, wrist, and mitral valve is thought to be secondary to skin infection from influenza vaccine. His initial presentation with hemorrhagic

stroke is attributed to septic embolization. While cellulitis is the most common infectious event after administration of vaccines, case reports have identified bacteremia, osteomyelitis, meningitis, and necrotizing fasciitis secondary to parenteral injections. The majority of these infections are due to Staphylococcus aureus. There have been case reports of transmission of infectious agents such as MRSA and mycobacterium linked to a single vaccine administrator. There are varying standards internationally for skin disinfection guidelines prior to injections. Current WHO recommendations do not require cleaning the injection site unless the skin is visibly soiled or dirty. OSHA guidelines do not require gloves to be worn during vaccine administration. CDC guidelines recommend standard hand hygiene but do not have standards for patient skin sterilization. Small studies have shown varying effectiveness in disinfection rates using isopropyl alcohol and other sterilization techniques. Further research regarding sterilization technique and associated patient outcomes is warranted. Clinicians should consider parenteral injections as a potential source of infection in patients with cellulitis and complicated infections.

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Nevada Clinical Vignette Poster Finalist - Andrew Yatteau

Title

The Cardiac Mask: A Case of Myocarditis Disguising Eosinophilic Granulomatosis with Polyangiitis (EGPA)

Authors

Andrew Yatteau MD, Choua Thao MD

Introduction

This clinical vignette presents a case of myocarditis as a flare of eosinophilic granulomatosis with polyangiitis (EGPA, formerly Churg-Strauss syndrome), a serious complication of this rare disease. EGPA is an autoimmune vasculitis that primarily affects the lungs and skin. Asthma and pulmonary disease are the principal features of this condition, typically preceding the vasculitic stage by 8-10 years1,2. Extrapulmonary involvement includes cardiovascular, neurologic, gastrointestinal (GI), renal, and musculoskeletal systems3. GI involvement typically presents as abdominal pain and diarrhea with an underlying eosinophilic gastroenteritis. Cardiovascular involvement is perhaps the most serious complication, responsible for approximately half of deaths from EGPA, and can include heart failure, valvular disease, pericarditis, and myocarditis4.

Case Presentation

A 53-year-old woman with history of EGPA presented to the hospital with severe substernal pressure-like chest pain worsened with exertion, and relieved with nitroglycerin infusion. Prior to presentation, the patient experienced several months of abdominal cramping and persistent, non-bloody diarrhea, 8-10 times per day. EKG (fig.1) revealed diffuse ST-depression and troponin T was elevated at 577 ng/L (ref 6-19 ng/L). Figure 1: EKG taken on presentation, note diffuse ST-depression She was immediately taken for cardiac catheterization which showed no evidence of coronary artery disease, and normal left ventricular function. Complete blood count differential revealed 68% eosinophils (ref 0-6.9%) with absolute eosinophils at 14.7k/uL (ref 0-0.51k/uL). For the previous three years, she had been on cyclophosphamide and prednisone with effective suppression of her disease. Due to the high risk of prolonged cyclophosphamide treatment, several attempts had been made to transition to mepolizumab (IL-5 inhibitor) or azathioprine. However, the patient preferred to stop taking cyclophosphamide and prednisone. After 3-4 weeks without treatment she began to have abdominal pain and diarrhea, representing gastrointestinal involvement of untreated EGPA. Her presentation of chest-pain, ST-depression and elevated troponin without coronary artery

disease is consistent with myocarditis associated with a flare of EGPA. A high-dose glucocorticoid treatment was initiated, and her eosinophil count normalized and troponin levels fell. Abdominal pain and diarrhea also resolved. She was transitioned to oral prednisone for maintenance therapy and discharged from the hospital in stable condition with plans to initiate mepolizumab.

Discussion

The presentation of chest pain, ST-changes and elevated troponin is a familiar and common one; however, in this case, it represented a serious exacerbation of a rare disease. In patients with autoimmune vasculitis, we must recognize that common disease presentations may have an uncommon underlying cause. Identification is key for appropriate treatment and effective patient care.

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New Mexico Clinical Vignette Poster Finalist - Britte E Lowther, MD

Title

A Prolonged Course of Cyclosporiasis in an Immunocompetent Host

Authors

Britte Lowther, DO Michael Bell, MD

Introduction

Cyclosporiasis is an intestinal illness caused by the microscopic parasite Cyclospora cayetanesis and acquired by consuming food or water contaminated with the parasite. Symptoms do not always develop, but most commonly include anorexia, nausea, vomiting, fatigue, abdominal cramping, fever, watery diarrhea, and weight loss. Symptoms may present as a single self-limited episode or a prolonged waxing and waning course lasting weeks to months. The most severe cases have been described in the setting of HIV. The case below describes an immunocompetent host with a prolonged course and possible pancreatitis.

Case Presentation

A 53-year-old male with past medical history of non-insulin dependent diabetes mellitus, sleep apnea, hypertension, tobacco dependence, and obesity presented to the emergency room with a one day history of nausea, three episodes of vomiting, crampy abdominal pain, and diaphoresis (7/10/18). He admitted to recent travel to Juarez, Mexico and purchasing fresh berries from a street vendor. A CBC and CMP were unremarkable except for a slightly elevated AST (42). A diagnosis of viral gastroenteritis was made and he was discharged home. He presented to emergency room again on day 8 (7/17/18) and day 10 (7/19/18) from illness onset. During both of these encounters, he described 8-10 watery, non-bloody bowel movements, crampy abdominal pain, and no vomiting. A CT of the abdomen pelvis at that time did not demonstrate any significant findings, however a diagnoses of pancreatitis was made based on his mild lipase elevation (150) and epigastric pain. He received symptomatic care and was discharged home. Stool studies were pending at this time. On day 16 (7/25/18), the ova and parasite sample collected on day 9 (7/17/18) resulted positive for oocytes resembling Cyclospora. This was reported by the public health department on day 20 (7/31/20) and the patient was placed on nitazoxanide 500mg b.i.d., completing a three day course. The decision for this antibiotic may have been made on the incorrect interpretation of the data as cryptosporidium. The patient's symptoms dissipated significantly with initiation of the antibiotic, and complete resolution of his clinical symptoms was documented on day 50

(8/29/18). He did not have follow up labs until day 85 (10/3/2), however he was noted to have complete normalization of his lipase (49) and liver function studies (AST 32, ALP 11, ALT 38). He was non-reactive for HIV-1 and 2.

Discussion

Cyclospora diarrhea in an immunocompetent host averages 19-43 days, and symptoms usually resolve within 2-3 days of starting first line therapy with TMP-SMX. The case above describes a prolonged course (50 days) and resolution of symptoms upon treatment with nitazoxanide, considered second line therapy.

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New York Clinical Vignette Poster Finalist - Demian Omeh, MD

Title

A Case of Anomalous Origin of the Right Coronary Artery from the Left Sinus of Valsalva

Authors

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Introduction

The incidence of anomalous coronary arteries (CA) is reported as 0.03-0.3% of the population with 25-32% of the patients presenting with sudden death.[1] Anomalous origin of a CA with inter-arterial course is a possible cause of myocardial ischemia, infarction, syncope, and sudden cardiac death, especially in young patients.[2] We present a case of anomalous origin of the right CA (RCA) arising from the left sinus of Valsalva (SOV) with an inter-arterial course, manifesting as syncope in a young otherwise healthy female.

Case Presentation

A 33-year-old female presented after a syncopal episode. On physical exam, her vital signs were normal, and the remainder of the exam unremarkable. EKG showed sinus bradycardia at 38bpm, T-wave inversion in leads II, III, aVF, V3-V6. Coronary computed tomographic angiography (CCTA) was obtained as part of the evaluation. CCTA revealed a dominant RCA that originates from the left coronary SOV with an acute angle take-off and a narrowed slit-like orifice at its origin, coursing between the main pulmonary artery (PA) and aorta (Ao), and continued in the right AV groove. She underwent a pharmacologic nuclear stress test, due to poor exercise tolerance, which was normal. The decision was made not to proceed with surgical correction.

Discussion

The cause of the symptoms in this patient can be multifactorial. They include compression of the CA between the Ao and the PA, dilation of the PA and Ao during exercise produces compression of the CA and may cause ischemia. Other causes are a slit-like ostium and an acute angle of exit from the aorta.[3] Diagnosis is usually made by CCTA. Stress testing with imaging can

be used to correlate the anatomical and physiological abnormalities. Treatment options include surgical approach, stenting, and medical therapy.[4] Our patient had 3 reasons for her symptoms: inter-arterial course, acute angle of exit, and slit-like ostium. In light of a normal nuclear stress test, our patient did not undergo surgical revascularization at this point. Evaluation of patients with unexplained aborted sudden cardiac death or those with unexplained life-threatening arrhythmia, coronary ischemic symptoms, or syncope should include assessment of coronary artery origins and course.

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New York Clinical Vignette Poster Finalist - James r Pellegrini Jr, MD

Title

EXTREME HYPERSENSITIVITY TO ENDOGENOUS PROGESTERONE

Authors

James R. Pellegrini Jr., MD, James Kang, MD, Rezwan F. Munshi, MD, Samuel Olson, MSIII, James R. Pellegrini, MD, Myron Zitt, MD

Introduction

Progestogen hypersensitivity (PH) is a rare disorder of unknown incidence and prevalence in which hypersensitivity-like symptoms are triggered by exposure to either endogenous progesterone or exogenous progestins. Formerly known as autoimmune progesterone dermatitis (APD), the condition has been increasingly referred to as PH due to a body of evidence suggesting its pathogenesis is most likely an IgE-mediated reaction and not due to the production of autoantibodies. We present a case of this rare disorder in a patient who never used exogenous progesterone.

Case Presentation

A 41 year old African-American female patient presented to the Allergy clinic complaining of swelling of her lips, tongue and face for the past few years. Other symptoms included difficulty swallowing, and changes in her voice. The patient denied shortness of breath, rash, visual changes, sneezing, rhinorrhea, cough, or wheezing. At the time of initial office visit the patient had no known allergies. She reported that these symptoms have been recurring every month a few days after her menstruation period, coinciding with the ovulation window. Skin testing was performed revealing positive results against progesterone. Having never been on any medication containing progesterone, it was concluded that her allergy was to endogenous progesterone. The patient was initiated on prednisone 20mg orally every month for symptomatic control and was also given two epinephrine auto-injectors in case of emergency. Allergy shot immunotherapy was initiated to immunize to progesterone, however the patient did not respond appropriately. After a long course over 9 years to conservatively treat her rare allergy, she was ultimately referred to Gynecology for planned oophorectomy.

Discussion

PH is a very rare disorder that has little to no known incidence and prevalence in the U.S population. To our knowledge, there are fewer than 200 reported cases worldwide. Presentation has a heterogeneous range of dermatological and systemic symptoms including, but not limited to, urticaria, angioedema, pruritic clustered vesicular rashes, anaphylaxis, wheezing, and chest tightness in response to exposure to progestogens. Diagnosis of PH involves a careful history taking that temporally associates symptoms with exogenous progesterone administration or the progesterone surge of luteal phase of the menstrual cycle. Generally, treatment is aimed at relief of hypersensitivity symptoms and ovulation suppression with the use of antihistamines, steroids, monoclonal antibody therapy, and oral contraceptives. For patients with severe symptoms who do not respond to the above therapies or desire pregnancy, cases of immunizing to progestogens with intramuscular, oral, and intravaginal progesterone have been reported to be successful. Definitive treatment to refractory cases is oophorectomy. We present this case in an attempt to raise awareness amongst clinicians about this rare allergy to endogenous progesterone that was refractory to standard therapies such as H1-antagonist, corticosteroids, and even Allergy shot immunotherapy ultimately requiring surgical intervention.

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North Dakota Clinical Vignette Poster Finalist - Emmanuel Fohle

Title

Spontaneous Splenic Rupture Secondary to Tularemia Following a Cat Bite

Authors

Emmanuel Fohle, M.D/MPH., Bradley Smith, MD, Dubert Guerrero, MD

Introduction

Splenic rupture is an uncommon occurrence in the absence of trauma. It is potentially life-threatening and often challenged by a delay in diagnosis. [1] Common infectious causes of spontaneous splenic rupture include infectious mononucleosis, cytomegalovirus (CMV), human immunodeficiency virus (HIV) and malaria. [2] In this report, we present a 42-year-old male who sustained a cat bite which manifested initially as an ulceroglandular lesion on his left forearm, axillary lymphadenopathy, and later spontaneous splenic rupture requiring emergent embolization. Tularemia presenting as spontaneous splenic rupture is a rare presentation only having been reported once in literature. [3]

Case Presentation

A 42-year-old male initially presented to the emergency room with persistent fevers, myalgia and ulceroglandurar wound on the base of his left thumb. Seven days prior to this presentation, he was bitten by a kitten which succumbed to illness though a necropsy was not done. He was treated with a course of antibiotic for presumed cat-scratch disease but later returned with worsening symptoms including abdominal and back pain, left lymphadenopathy and near syncope. CT abdomen and pelvis showed splenomegaly with subcapsular splenic rupture and large hematoma. He underwent emergent splenic angiogram with embolization. Serology test was negative for bartonella and brucella, but positive for tularemia. He was treated with doxycycline, given rabies and tetanus toxoid with immunoglobulin injections and recovered.

Discussion

The etiology of spontaneous splenic rupture can be categorized into six main categories including neoplastic, infectious, inflammatory, drug-induced, mechanical and idiopathic. Various infectious agents have been associated with spontaneous splenic rupture including EBV, HIV, Plasmodium species, Salmonella and much more.[1] Among the zoonoses, disseminated Bartonella henselae is well documented in literature to present with splenic involvement as a complication.[2] However, spontaneous splenic rupture due to tularemia is

rare. A previously published case report in the Annals of Internal Medicine in 1946 described a case of splenic rupture tularemia after autopsy. Our review of literature revealed no other case of tularemia induced splenic rupture in recent years. Tularemia from a cat scratch or bite is rare and accounts for less than 2% of all cases of tularemia [3]. Clinical manifestations of tularemia include ulceroglandular, oculoglandular, oropharyngeal, pneumonic, typhoidal and intestinal forms. Ulceroglandular tularemia accounts for the most common form of manifestation and is characterized by sudden onset of fever, chills, myalgia following initial infection, followed by a localized ulcer at the site of inoculation and regional lymphadenopathy.[4] we present a case of 42-year-old male with atraumatic spontaneous splenic rupture as a complication of tularemia. This case adds another infectious agent that can be associated with spontaneous splenic rupture. This case highlights the need for clinicians to broaden the differential diagnosis and include tularemia when evaluating patients with regional lymphadenopathy and splenic involvement following a cat bite

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Oklahoma Clinical Vignette Poster Finalist - Ali Jafry, MBBS MD

Title

The Devil in a New DRESS Syndrome

Authors

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Introduction

DRESS syndrome is a severe drug-induced hypersensitivity reaction usually triggered by anti-epileptic medications. It carries an annual incidence of 1/100,000 individuals and a mortality rate of up to 10%. [1] We present a unique case of relapsing DRESS syndrome initially masquerading as red man syndrome.

Case Presentation

A 32-year-old male was admitted with flu-like symptoms and a maculopapular rash on the trunk and face. He was receiving systemic antibiotics (vancomycin, ceftriaxone, metronidazole) for infective endocarditis for 4 weeks and previously took amoxicillin-clavulanate for a dental abscess as well. He reported pruritus with vancomycin infusion, prompting discontinuation of vancomycin with concerns for "red man syndrome". Despite this, the morbilliform eruption continued to worsen, coalescing and extending to involve > 50% of his body surface area, including the extremities. Eosinophilia, hepatosplenomegaly, acute kidney and liver injuries prompted consideration of DRESS syndrome. Extensive autoimmune and infectious workup was unremarkable. All antibiotics were discontinued after a repeat echocardiogram ruled out ongoing endocarditis, and systemic glucocorticoids were initiated with subsequent improvement. Punch biopsy revealed interface dermatitis with eosinophilic infiltrates; a high RegiSCAR score confirmed the diagnosis of DRESS. Vancomycin, metronidazole and amoxicillin-clavulanate were flagged as severe allergies and the patient made a full recovery.

Discussion

DRESS syndrome is a severe drug reaction, requiring early diagnosis and withdrawal of offending agents. Reactivation of herpesviruses may play a role in pathogenesis. [2] Supportive care and steroids remain the mainstay of treatment. We illustrate that DRESS is a great clinical mimicker and that less common culprits (e.g. amoxicillin or metronidazole) may be overlooked as causes of DRESS. As is sometimes said, “the devil is in the details”.

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Oklahoma Clinical Vignette Poster Finalist - Aamina Shakir, MD

Title

Hitting the gas: Delayed neuropsychiatric syndrome of carbon monoxide toxicity presenting as audiovisual hallucinations

Authors

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Introduction

Delayed neuropsychiatric syndrome (DNS) is a constellation of neurologic and/or psychiatric deficits that develop days to weeks after carbon monoxide (CO) poisoning. These include cognitive deficits, movement disorders, mood/affective disorders, and psychotic disorders. Pathogenesis involves a combination of CO-mediated ischemia and direct neurotoxicity. There is no known treatment, so prevention is paramount. Most patients spontaneously recover.

Case Presentation

A 65-year-old man with history of cadaveric kidney transplant (on tacrolimus/prednisone/mycophenylate mofetil) presented with two weeks of auditory/visual hallucinations (AVH). He previously visited the emergency department immediately after symptom onset; during that visit he also had epistaxis and right-sided mouth twitching. Paramedics had reported a gas burner in his home, so CO level was checked and was mildly elevated to 3.3% at the time. DNS was suspected given temporal association of epistaxis, AVH, and oral automatism with elevated CO level. Initial labs, CT/MRI head, and EEG were unremarkable. EKG showed QTc prolongation to 510 ms. Repeat CO level remained elevated at 3.0%. Urine toxicology was positive for cannabis, which patient ascribed to accidentally consuming a relative's edibles; he denied marijuana use and his longtime nephrologist corroborated this. Heavy metal screen, TSH, and broad infectious workup including atypicals (JC/BK virus, etc., given transplant status) were negative. Immunosuppressant doses were unchanged for years. Wife reported heating the home with the gas stove, causing CO leak. As alternate etiologies were excluded, patient was diagnosed with DNS possibly aggravated by cannabis ingestion.

Discussion

DNS encompasses a broad spectrum of abnormalities, including dementia, seizures, parkinsonism, chorea, mania/depression, hallucinations/delusions, and even death, following an asymptomatic interval of ~2-40 days after acute CO intoxication. No standardized diagnostic criteria exist, so DNS is largely a diagnosis of exclusion. It complicates ~10-25% of CO poisonings. Pathogenesis involves both neuronal hypoxemic tissue ischemia due to carboxyhemoglobin (COHb) production, and direct CO-mediated neurotoxicity. CO induces mitochondrial dysfunction, apoptosis, and inflammation. Resulting oxidative stress and lipid peroxidation cause white matter demyelination. Risk factors for DNS include white matter ischemia on CT/MRI (although many patients have normal imaging), depressed consciousness, duration of CO exposure, and QTc prolongation. Importantly, degree of COHb elevation does not predict risk or symptom severity. Comorbid alcohol/drug use may predispose to DNS. No definitive treatment exists for DNS; prompt correction of acute CO intoxication with 100% oxygen may help prevent it. Hyperbaric oxygen therapy, antioxidants such as N-acetylcysteine, and anti-inflammatory agents such as steroids are currently under investigation. Symptom-based adjunctive therapies may be used, i.e. amantadine for parkinsonism or antipsychotics for psychosis. Most cases self-resolve within months. Conclusion: DNS is a potentially serious complication of CO poisoning with no known treatment. Clinicians should mitigate risk by rapidly recognizing and treating acute CO intoxication, as well as understanding predictive clinical/laboratory parameters.

Pennsylvania Clinical Vignette Poster Finalist - Michelle Andrion

Title

Can The Gut Be Used in The Treatment of Advanced Chronic Kidney Disease? –Using Specialized Probiotics in Patients For Whom Dialysis is Not an Option

Authors

Michelle Dyan A. Andrion MD, Richard W Snyder DO. Department of Internal Medicine. St Luke's University Health Network – Anderson Campus, Easton PA

Introduction

There has been ongoing research regarding the relationship between the intestinal microbiome and its role in chronic kidney disease. For many individuals with advanced chronic kidney disease, dialysis may not be considered as a viable option given age other co-morbid illnesses. In addition, the individual may either not wish to pursue dialysis as an option or seek to delay its onset until absolutely necessary. Probiotics are being studied, not only for their effects on the intestinal microbiome, but also for their effects on other organs including the brain and the kidney. The use of a kidney based probiotic (Renadyl) shows significant promise as a potential option for patients with advanced kidney disease. We present the long-term clinical follow-up of two patients on a kidney based probiotic.

Case Presentation

We present a 62 year old female with a history of developmental delay. She is non-verbal and resides in a group home. She has diminished muscle mass at baseline and current average weight is between 85-90 pounds. She was started on the kidney based probiotic five years ago when her creatinine (Cr) was 3.0 mg/dL and her weight was approximately 70 pounds. Given her development delay, dialysis was not felt to be a viable option. While non-verbal, she displayed what was felt to be uremic symptoms as she was not eating and also demonstrated increased lethargy. Since starting on the kidney based probiotic, her Cr has stabilized in the 1.5-1.8 mg/dL range for the past 5 years. She has an excellent appetite, is very interactive, and is thriving at the group home. We present a 78 year old male with a history of Stage IV CKD. He was started on the kidney based probiotic two years prior when his Cr was 4.5 mg/dL. He reported nausea, decreased appetite and increased fatigue. At that time, the option of dialysis was discussed, including home based modalities. He was adamant about not wanting to start dialysis and actively sought other potential options. His Cr stabilized for 2 years with an average Cr in the mid 3.0 range with improvement of his symptoms.

Discussion

There are many patients for whom dialysis is either not an option or who simply do not wish to pursue it. The use of a specialized probiotic may hold promise in this regard as another potentially viable treatment option. It has been hypothesized that an unhealthy microbiome may lead to excessive production of toxic metabolites. They likely injure the gut epithelium and increase intestinal permeability. When released into the circulation, they promote chronic inflammation which may worsen kidney function over time. This probiotic was tolerated well with no significant side effects noted. Further studies are needed for more conclusive results.

Pennsylvania Clinical Vignette Poster Finalist - Daniel Egan

Title

A Rash By Any Other Name: A Case of Borderline Tuberculoid Leprosy Masquerading as Systemic Lupus Erythematosus.

Authors

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Introduction

Leprosy, or Hansen's Disease, represents a wide clinical spectrum of diseases caused by either Mycobacterium leprae or Mycobacterium lepromatosis. This case illustrates the challenge in diagnosing Hansen's Disease and maintaining an appropriate index of suspicion with a thorough history and physical.

Case Presentation

A 53 year old gentleman with no past medical history presented to his primary care doctor with concerns of intermittent pain in his extremities and a salmon-colored rash on his left flank. He was having swelling and pain in his right index finger, left palm, and left wrist. He reported a 30 pound weight loss over the past three months and hair loss involving the area around his right knee. Additional history revealed that he had emigrated from Kenya two years prior. His skin exam showed an annular, erythematous plaque along his left flank, as well as hyperpigmentation along the medial aspect of both feet. He underwent an extensive workup, including a complete metabolic panel and blood count which were unremarkable. A rheumatologic panel showed positive antinuclear antibodies, elevated anti-RNP antibodies and SS-B antibodies. The patient's symptoms continued to worsen, including right-sided facial weakness, loss of taste, and numbness in his lower extremities. Prior to initiating treatment for presumed Lupus via IVIG and high-dose steroids, he was referred to an infectious disease clinic. Given a suspicion for leprosy, he underwent a left foot skin biopsy, which was unremarkable. An additional right sural nerve biopsy showed endoneurial and perineurial inflammation with acid-fast bacilli on Fite Stain, consistent with Borderline Tuberculoid Leprosy. With assistance

from the National Hansen's Disease Foundation, he was initiated on a multi-drug treatment regimen and his symptoms had gradually started to resolve upon follow-up visits.

Discussion

Neglected tropical diseases present a diagnostic challenge to providers. Hansen's Disease can present with many different cutaneous, soft tissue, and neurologic findings. These presentations revolve around the interplay between a host's cell-mediated immune response and the underlying mycobacterial infection (6). It is important to note that there have been cases in which leprosy has masqueraded as mixed connective tissue disease or autoimmune disease (1, 2, 4). With the progressive and sometimes waxing and waning symptoms, confusion can arise as to whether a patient has an underlying mycobacterial infection versus an ongoing lupus flare (1). Various antibodies have been found to be positive in patients with leprosy, including antinuclear antibodies (ANA), anti-neutrophil cytoplasmic antibodies (ANCA), rheumatoid factor (RF), and anti-cyclic citrullinated peptide antibodies (anti-CCP) (5). Our patient did have a positive ANA, though overall non-specific antibody panel. The National Hansen's Disease Program is a vital source of clinical support for both physicians and patients. They work to provide clinicians with assistance for managing leprosy patients, as well as providing informational, medication packets, and outreach to patients (3). As seen in this patient, Leprosy remains an important neglected tropical disease and making an accurate and definitive diagnosis often requires an intensive look at one's history, physical presentation, and maintaining an index of suspicion so as to not purely rely on laboratory values.

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Pennsylvania Clinical Vignette Poster Finalist - Eric Peterson

Title

Metastatic Non-Hodgkin Lymphoma Presenting As ST Elevation Myocardial Infarction

Authors

Eric Peterson, D.O (1), Fahad Gul, M.D (1), Daniel Puga M.D. (1), Jessica M. Stempel, M.D. (1) (1) Department of Internal Medicine, Einstein Medical Center, Philadelphia

Introduction

HIV-seropositive patients are at substantial risk for developing cancer compared to HIV-negative individuals1. Non-Hodgkin lymphoma (NHL) is the most frequent neoplastic cause of death in patients with HIV1. Diffuse large B-cell lymphoma (DLBCL) represents nearly 75% of NHL cases in HIV patients and is usually aggressive with widespread extranodal involvement at time of diagnosis. Cardiac involvement is rare, and few case reports describe clinical presentation and treatment outcomes. We present the case of a middle-aged male with HIV found to have newly diagnosed stage IV DLBCL presenting as acute ST elevation myocardial infarction (STEMI).

Case Presentation

A 57-year-old male with known history of HIV diagnosed 20 years prior noncompliant with antiretroviral therapy (ART), cocaine abuse, and chronic hepatitis B (HBV) presented to our institution with one day of epigastric pain and nausea. Electrocardiographic findings were consistent with ST-segment elevation in leads II, III, AVF and ischemic changes in leads V2 through V6 (Figure 1) with a troponin elevation of 1.13 ng/ml (normal: 0.00-0.03). Intravenous heparin, aspirin, clopidogrel, and atorvastatin were started. Emergent left heart catheterization revealed no acute occlusion with 70% stenosis of the left circumflex artery in the mid-segment with excellent distal flow. The left anterior descending artery had intramyocardial run with severe systolic constriction. No intervention was performed and the patient was treated medically. Continued severe abdominal pain post-procedure prompted a CT scan (Figure 2) which revealed free intra-abdominal air secondary to a perforated viscous with findings of suspected malignancy affecting the heart, small bowel, mesenteric lymph nodes, and the pancreas. He required an exploratory laparotomy, small bowel resection for a small bowel perforation from a necrotic tumor, and excision of a large bulky mesenteric mass. Surgical pathology results revealed non-germinal center stage IV DLBCL with mutations including BCL6 positivity in chromosome 3, FISH positivity, and immunoglobulin age heavy chain arrangement in chromosome 14q. CT head was negative for intracranial involvement. Bone marrow biopsy

showed no evidence of metastatic infiltration. The patient was given granulocyte-colony stimulating factor and intrathecal methotrexate and started on standard therapy with Rituximab-Etoposide, Prednisone, Vincristine, and Cyclophosphamide without doxorubicin given cardiac involvement. In regards to his HIV, the patient was started on tenofovir with emtricitabine and dolutegravir for both HIV and HBV. The patient has currently undergone multiple rounds of chemotherapy with cardiac MRI demonstrating remission of cardiac disease.

Discussion

We report the case of a patient with untreated HIV who presented with STEMI and was incidentally diagnosed with stage IV DLBCL with cardiac infiltration. Cardiac involvement is very rare and typically correlates with advanced and aggressive DLBCL. Our case highlights the importance of recognizing both common and rare manifestations of HIV-related lymphomas, and importance of rapid initiation of intensive treatment with multi-agent therapy for improved outcomes.

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Pennsylvania Clinical Vignette Poster Finalist - Haris Zia, MD

Title

Falsely elevated point-of-care (POC) glucose measurements in coronavirus disease 2019 (COVID-19) patient treated with high dose intravenous (IV) vitamin?C:?A?case report?

Authors

Haris Zia MD, Diana Pinkhasova MD

Introduction

High dose?intravenous?(IV)?vitamin C?has been increasingly used?in the treatment of?hospitalized patients with COVID-19.? Vitamin C has been reported to affect the accuracy of POC glucose testing?obtained with glucometers?using?glucose dehydrogenase?(GDH)-based methods.?This interference is attributed to the antioxidant properties of vitamin C which can cause falsely elevated POC glucose measurements resulting in aberrant values. We present a patient with insulin-dependent diabetes mellitus (IDDM) type-2 hospitalized with COVID-19?who was treated with high doses of IV?vitamin C. This case report highlights the previously reported but often unrecognized interference of IV vitamin C with?POC?glucose?testing. The importance of this case report is to call attention to the fact that the spuriously elevated?glucometer readings can result in overtreatment with insulin and life-threatening hypoglycemia if not recognized.

Case Presentation

An 83-year-old male with?a history of diabetes mellitus type 2, coronary artery disease,?and?hypertension presented to the emergency room (ER) with complaints of progressively worsening shortness of breath and?weakness.? His oxygen saturation was reduced to 80% prompting the initiation of oxygen delivery via nasal cannula. Testing for COVID-19 was positive and he was admitted to the hospital where treatment with IV dexamethasone 8 mg and high dose IV vitamin C?(3500 mg IV every 6 hours)?was initiated. Insulin therapy with 10 units of?glargine at bedtime, 7 units of lispro three times a day, and?high dose correction insulin scale was started.?Following initiation of the IV vitamin C, discrepancies between the POC?and laboratory plasma glucose?values were observed.? This was attributed to the high doses of vitamin C interfering with POC glucose testing, and further glucose monitoring was done with laboratory glucose testing. Following discontinuation of IV vitamin C, there was concordance between POC and laboratory plasma glucose measurements.?

Discussion

This case illustrates that POC glucose testing provides falsely elevated glucometer readings in COVID-19 patients treated with high dose IV vitamin C.? Thus, glucose monitoring should be done with laboratory plasma glucose levels in these patients to avoid life-threatening hypoglycemia.?This can be prevented by using POC glucose testing with glucometers?with?minimal interference. There is a need for technical improvement in current glucometers to?minimize interference with antioxidants like high dose IV vitamin C.? Until these technological advancements, it is important for clinicians to be aware of this interference as a way of avoiding over-treatment with insulin.

Puerto Rico Clinical Vignette Poster Finalist - Maria Rodriguez-Santiago

Title

A Rapidly Progressive Pemphigus Vulgaris in a black Puertorrican Patient: Early recognition of disease in dark skin patients, saves lives

Authors

María A. Rodríguez-Santiago MD, Javier Garcia-Marín MD, Alfredo Lamela-Domenech MD, María Vega-Martínez MD.

Introduction

There is a well-known shortage of racial diversity in medical textbooks and literature contributing to race-based health care inequalities (1). The lack of images and evidence within literature concerning Pemphigus vulgaris (PV) in patients with dark skin tone leads to a delay in diagnosis, thus having a negative impact on the patients' management and overall prognosis.

Case Presentation

This is the case of a black 58 years old female with medical history of tobacco and alcohol abuse who developed a "rash" described as a painful non-pruritic blistering ulcers in the inner oral mucosa with associated erythema and brown-yellowish crusting around the lips beginning six months prior to evaluation. Patient visited multiple physicians and emergency rooms receiving the diagnosis of Impetigo treated with topical Mupirocin. Rash progressed in a craniocaudal distribution involving the chest, abdomen and back. Subsequently, worsened with dysphagia, odynophagia, poor oral tolerance, weight loss and general malaise. Physical examination showed large eroded, crusted patches and plaques at different stages of healing over >30% of body surface involving the eyes and mouth. Skin biopsy revealed intraepidermal vesicular disease with acantholysis and Direct immunofluorescence (DIF) was positive for IgG deposition within the suprabasilar area of epidermis, consistent with PV. In view of extensive disease, she was started on high dose steroids pulses and intravenous immune globulin to complete 5 days each. Rituximab therapy was contraindicated due to ongoing bacteremia. Skin lesions improved within days, showing re-epithelization and post inflammatory dyspigmentation. Unfortunately, malnutrition, immunosuppression and catabolic state, led the patient into septic shock requiring broad spectrum antibiotics, vasopressors and mechanical ventilation. The patient died after 21 days at the Intensive care unit.

Discussion

Pemphigus vulgaris is a challenging clinical diagnosis because it can be confused with a wide array of blistering diseases. The most frequently involved area is the oral cavity which may be the only site of involvement from six to twelve months without any other skin lesions (2). There are few images and scarce literature describing initial presentation per-skin-tone of PV in patients with dark skin color. Moreover, there is a lack of representation of dark skin tones in medical literature overall. In a US survey, 47% of all Dermatologist and Dermatology residents reported insufficient exposure and pertinent teaching materials concerning clinical presentations in dark skin (3). This issue is not only manifesting as poorer patient's satisfaction rate, but in poorer survival rates. While the factors that cause racial health-care disparities are complex, perhaps our deficient medical education regarding the scarce representation of dermatological diseases in dark-skinned tone patients and ethnics minorities is perpetuating this problem. Thus, defeating the purpose of preparing clinicians for treating a diverse population. This case report serves as an educational resource by providing images of a rare skin disease in people with dark skin with the purpose of filing major gaps in medical literature, highlighting the importance of timely recognizing PV in patients with dark skin and hopes to create awareness among physicians.

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South Dakota Clinical Vignette Poster Finalist - Mansi Oberoi

Title

Progressive multifocal leukoencephalopathy in a patient with chronic lymphocytic leukemia not on chemotherapy

Authors

Mansi Oberoi, Raksha Kulkarni, Muhammad Arsalan Arshad, Smitha Narayana Gowda, Tony Oliver; University of South Dakota Sanford School of Medicine, Sioux Falls, SD

Introduction

Progressive multifocal leukoencephalopathy (PML) is an uncommon, highly fatal infection caused by the reactivation of John Cunningham polyomavirus (JCV) in immunodeficient patients. It has been reported in chronic lymphocytic leukemia (CLL) patients on or after chemotherapy but unusual to find in untreated patients. We report a rare case of a patient with CLL, not on immunosuppressive therapy who was diagnosed with PML.

Case Presentation

A 78-year-old female diagnosed with CLL four years ago, under surveillance but never received chemotherapy was admitted after a fall and progressively worsening confusion with memory impairment for the past 2-3 weeks. The review of systems was otherwise negative as per the family. On examination, she was alert and oriented to self but not to place or time, had limited memory of recent events, apparent word-finding difficulty, and was following commands inconsistently. Laboratory workup revealed leukocytosis with white blood cell count (WBC) of 120,000 (Ref: 4000-11,000/ul) and mild thrombocytopenia with platelet count of 134,000 (Ref: 140,000-400,000/ul). Her CT head showed a low-density focus in the left frontal white matter without any evidence of intracranial bleed. Subsequent magnetic resonance imaging (MRI) brain with and without contrast demonstrated areas of patchy hyperintensity in the white matter of both hemispheres on T2/FLAIR images. Cerebrospinal fluid (CSF) analysis showed normal WBC, protein, slightly elevated red blood cell at 2/uL. Further workup revealed a negative test for syphilis, herpes simplex virus, Lyme antibodies along with negative bacterial, viral, fungal, and PCR acid-fast bacilli cultures but positive CSF polymerase chain reaction (PCR) for JCV. Additional serologic tests including human immunodeficiency virus and autoimmune panels were negative. Her clinical presentation, a negative workup for other etiologies, positive CSF PCR for JCV, and MRI brain findings led to the diagnosis of PML. Due to her progressively worsening symptoms, fatal nature of the disease, and toxic potential of therapy, the family opted for comfort measures.

Discussion

Primary infection with JCV is common, usually asymptomatic, and occurs in childhood. Suppression of cellular immunity due to diseases like HIV, lymphoproliferative disorders, or immunosuppressive therapies leads to reactivation of the virus leading to demyelination and neuronal death, often resulting in death within 2 to 15 months (1). The only known effective therapy is immune reconstitution early in the disease, which is quite difficult to achieve in patients with lymphoproliferative malignancies (2). The innate immunosuppressive nature of CLL may have been responsible for the clinical manifestations of PML in our patient. CONCLUSION: Due to the rapid deterioration and fatal course, a high degree of clinical suspicion for PML in patients with CLL and neurological manifestations should be considered. Further studies exploring the surveillance strategies and the possibility of immune reconstitution in CLL patients are needed.

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Tennessee Clinical Vignette Poster Finalist - Benjamin Emery, MD

Title

Getting a Handle on the Situation: An Uncommon Cause For A Common Presentation

Authors

Benjamin Emery MD MPH, Elizabeth Allyn Glover MS3, Juan-Carlos Malpartida MD, Mukta Panda MD, Department of Internal Medicine, University of Tennessee, Chattanooga

Introduction

The syndrome of Headache and Transient Neurological Deficits with Cerebrospinal Fluid Lymphocytosis (HaNDL) is a rare and self-limited aseptic meningitis. Believed to be caused by a viral-triggered autoimmune response with cortical spreading depression, it shares a similar pathophysiology with migraine. However, the unique triad illustrated by HaNDL's title enables providers to differentiate it from other common headache syndromes.

Case Presentation

Our patient is a 27-year-old Caucasian female who presents with one week of fluctuating but progressive frontal headache, vomiting, an episode of peripheral vision loss, and increasing somnolence. History includes untreated Hashimoto's, frequent otitis media, and a recent tick bite. She enjoys rose gardening, denies sexual activity or prior STIs. She had a similar presentation one year prior, LP showing WBC 953 with 99% lymphs, glucose 65, protein 99. She was diagnosed with viral meningitis and symptoms resolved in two weeks. On this presentation she was hemodynamically stable, uncomfortable but non-toxic. Exam showed a systolic murmur, left-sided hearing deficit, healing punctate lesions on lower extremities, and no nuchal rigidity or mastoid tenderness. MRI and CTA brain revealed only a left mastoid effusion. LP had normal opening pressure, WBC 625 with 95% lymphs, glucose 63, protein 44. Meningitis and encephalitis panels, VDRL, HSV, RPR, and cytology were negative. Her headache improved within 48 hours. Given the combination of headache, transient visual defects, and lymphocytic pleocytosis, she was diagnosed with HaNDL. At a subsequent clinic visit she reported continued headaches. Further questioning also revealed symptoms of expressive aphasia and limb motor deficits prior to admission.

Discussion

HaNDL is a diagnosis of exclusion and often requires an extensive workup to differentiate it from life-threatening conditions. MRI may show reduced venous signal representing focal hypoperfusion, in contrast to the enhanced venous signal of migraine. CSF findings can distinguish HaNDL from drug-induced meningitis which typically shows neutrophilic predominance, and neoplastic meningitis which is differentiated by cytology. HaNDL CSF typically reveals a WBC count >100 with >90% lymphocytes, normal glucose, and elevated protein. Mollaret's Meningitis shares a lymphocytic pleocytosis but usually shows HSV in the CSF. ICHD-3 criteria require transient hemiparesthesia, dysphagia, or hemiparesis lasting >4hrs, mimicking stroke and the sensorimotor aura of hemiplegic migraine. However, as in our patient's case these symptoms may not be all readily apparent on presentation and should be explicitly elicited in this history. Importantly, imaging and laboratory testing alone are not definitive, and must be interpreted alongside the clinical presentation. Clinicians treating headache should keep HaNDL on the differential, eliciting a detailed history including transient symptoms.

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Texas Clinical Vignette Poster Finalist - Gaspar Del Rio Pertuz

Title

Spontaneous Coronary Artery Dissection After Multiple Bee Stings: A New Manifestation of Kounis syndrome

Authors

Gaspar Del Rio-Pertuz, Jose Correa-Guerrero, Emilio Abuabara-Franco, Erwin E. Argueta-Sosa, Mostafa Abohelwa, Kanak Parmar, Cristina Morataya, Annia Cavazos, Nicholas G Kounis, Kenneth Nugent

Introduction

The Kounis syndrome is defined as the ocurrence of acute coronary syndrome following an anaphylactic or anaphylactoid reaction. Bee stings as the trigger of Kounis syndrome have rarely been reported in the literature. We report a case of spontaneous coronary artery dissection (SCAD) as the cause of the myocardial infarction following bee stings.

Case Presentation

History of Presentation: A 33-year-old male patient presented to the emergency department complaining of chest pain radiating to the back. It started immediately after multiple bee stings, 14 hours prior. During the first medical assessment, he was conscious; vital signs included blood pressure of 120/70 mm/Hg, a regular heart rate of 110/min, and a respiratory rate of 22/min. On the skin evaluation, he had erythematous papules on upper and lower limbs concordant with bee stings. Past Medical History: The patient had no predisposing cardiac risk factors, such as a smoking history, hypertension, or diabetes. Differential Diagnosis: Prinzmetal Angina, Pericarditis, Acute Coronary Syndrome. Investigations: ECG showed ST elevation in anterior and lateral leads (aVL V2,V3,V4) (Figure 1) and his troponin I was positive (2.4 ng/ml). Transthoracic echocardiography demonstrated hypokinesia of lateral and septal segment of the left ventricle and an ejection fraction of 55%. Management: In the emergency room, he was started on medical therapy with enoxaparin, dual antiplatelet therapy, and high dose statin. Coronary arteriography was performed, which revealed a dissection of the proximal left anterior descending artery (Figure 2); Primary Coronary Intervention (PCI) with balloon dilation was executed without any complication. The patient was asymptomatic after cardiac catheterization, and the cardiac enzymes decreased to normal levels. He was discharged after four days on aspirin.

Discussion

Previous reports of Kounis syndrome triggered by honeybee stings in adults, included cases in which the acute coronary syndrome was either due to vasospasm or atherosclerotic plaque rupture. Based on our literature review, this is the first case report of an acute coronary syndrome due spontaneous coronary artery dissection in the presence of multiple bee stings. More studies are needed to clarify the mechanism by which bee venom can lead to acute coronary syndromes.

Texas Clinical Vignette Poster Finalist - Tusharkumar Pansuriya

Title

Acute reversal of systolic dysfunction after atrial flutter ablation

Authors

Tusharkumar Pansuriya MD1, Hytham Rashid DO MPH1, Sowmya Puthalapattu MD1, Syed Raza MD FACC1 1. HCA Houston Healthcare, Kingwood, TX

Introduction

Tachyarrhythmia is a reversible cause of cardiomyopathy in most cases. It usually takes several months to improve systolic function after establishing adequate heart rate control (1,2). We present a unique case of atrial flutter induced cardiomyopathy, in which severe systolic dysfunction improved within three days after the ablation procedure.

Case Presentation

49 year-old-male with a medical history of hypertension and type 2 diabetes mellitus presented to ER with exertional dyspnea, orthopnea, paroxysmal nocturnal dyspnea, leg swelling, and dry cough for two weeks. Social history was remarkable for using cigarettes, marijuana, and cocaine. Physical examination revealed bilateral crackles, decreased breath sounds, and lower extremity edema. Vitals were BP of 180/117 mmHg, heart rate of 123/min, oxygen saturation of 98% on room air. Troponin series were less than 0.012 ng/ml, and brain natriuretic peptide was 652 pg/ml. EKG showed atrial flutter. Chest X-ray showed cardiomegaly with central pulmonary vascular congestion, right side pleural effusion. Echocardiogram on admission showed an ejection fraction (EF) of

Discussion

Studies have shown that it requires around 3-6 months to improve heart function after achieving a controlled heart rate in tachyarrhythmia induced cardiomyopathy (1,2). As per conventional management, a patient with EF < 35% goes home on a life vest for three months (3). However, in our case, EF improved from

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Utah Clinical Vignette Poster Finalist - Ben Harris, MD

Title

Platypnea-Orthodeoxia Syndrome in a Patient with Right Heart Failure.

Authors

Benjamin RE Harris MD, Jon Harrison MD, Anwar Tandar MD, Line Kemeyou MD

Introduction

Platypnea Orthodeoxia Syndrome (POS) is a rare form of hypoxemia characterized by dyspnea in the upright position accompanied by arterial desaturations that resolve with recumbency.

Case Presentation

A 72-year-old male with known arrhythmogenic right ventricular dysplasia (ARVD) presents to the hospital with worsening hypoxia and dyspnea from an outside hospital. Work-up had suggested worsening right heart failure and transfer was completed for consideration of advanced heart failure therapies. Prior to this hospitalization, the patient was completing very strenuous hikes at elevation in Montana. Physical exam showed a saturation of 90% on 3 liters of oxygen (a new oxygen requirement) with the remainder of his vital signs being normal. The patient required 4 to 5 liters of oxygen when sitting upright and was subjectively more short of breath. The patient was laying flat and not in respiratory distress, with clear lungs on auscultation. There was a I/VI holosystolic murmur heard best at the right lower sternal border on auscultation, and a jugular venous pulse 6 cm above the sternal angle. His laboratory values were only significant for a BNP of 396. His chest radiograph was normal. A transthoracic echocardiogram (TTE) showed a normal ejection fraction, severe right atrial and right ventricular dilation with “wide open” tricuspid regurgitation, and no shunt. The patient was diuresed, but unfortunately his oxygen requirements went up to 15L via an oxymask. A right heart catheterization (RHC) showed normal filling pressures and a cardiac index of 1.1. The patient was transitioned of high-flow nasal cannula. A repeat TTE showed a right-to-left shunt on the bubble study, though no clear source of the shunt. A CT chest was negative for an arteriovenous malformation. A transesophageal echocardiogram was then performed and showed a 6.1 mm x 1.8 mm “stretch PFO” with doppler confirmation of the right-to-left shunt. During this procedure, the patient decompensated and milrinone was started after a RHC showed a cardiac index of 1.6. The patient continued to decompensate requiring intubation, with intermittent runs of ventricular tachycardia. The patient was taken to the catheterization lab where a PFO occluder device was placed within the PFO. The patient was then rapidly weaned from all forms of oxygen within 6 hours of placement of the device. The patient was

discharged on day 14 of his hospital stay without supplemental oxygen, two days after the intervention.

Discussion

Our patient was diagnosed with platypnea orthodeoxia syndrome, and his symptoms resolved after his PFO was closed. The PFO was not closed initially because it was thought that this was acting as an outlet valve for his worsening right heart failure. Multidisciplinary discussions between the heart failure team, cardiac imaging, interventional cardiology, and cardiothoracic surgery yielded the decision to close the PFO prior to further work-up for advanced therapies. Our patient lived a normal life until his right heart failure worsened about 1 year after our intervention, at which time the patient was transitioned to hospice.

Vermont Clinical Vignette Poster Finalist - Ali D Jandal

Title

Steroid Responsive Immune Checkpoint Inhibitor Associated Cholestatic Hepatitis

Authors

Ali Jandal MD, Malla Keefe BS, Amer Abu Alfa MD, Ximena Jordan-Bruno MD, Ben Irvine MD

Introduction

Immune checkpoint inhibitors are associated with several autoimmune reactions including elevated liver function tests. However, documented cases of ICI hepatitis include elevated transaminases with mild changes in alkaline phosphatase (ALKP).

Case Presentation

A 72 year-old woman with a past medical history of type II diabetes mellitus, heart failure, pulmonary embolism on apixiban, and recently diagnosed non-small cell lung cancer presented to oncology clinic for follow up after 1 cycle of nivolumab and ipilumumab. Before treatment, her baseline labs included an AST 27, ALT 19, ALKP 117, and total bilirubin (Tbili) of 0.8. MR Abdomen at time of diagnosis revealed benign hepatic cysts without evidence of metastasis. Three weeks following treatment with nivolumab and ipilumumab she presented to her oncologist for fatigue, loss of appetite, and a 10-15 lbs weight loss. She denied abdominal pain. Physical exam was not done as this was a televisit. Labs were repeated and showed an AST 220, ALT 190, ALKP of 2343, GGT 802, and Tbili of 12.5. She was also found to have an acute kidney injury with elevation of her creatinine from 0.83 to 2.33. An abdominal ultrasound showed cholelithiasis without evidence of acute cholecystitis or biliary duct dilation. The patient was sent to the emergency department (ED) for further evaluation. Physical exam in the ED was negative for abdominal pain or distention. The patient was given 125 mg IV methylprednisolone and subsequently admitted to the medical oncology service. The following day repeat CT abdomen showed cholelithiasis without biliary ductal inflammation or gallbladder inflammation. Repeat labs showed improvement with AST 160, ALT 180, and ALKP of 1785. The patient received supportive care for 4 days without further steroids. She was discharged with close follow-up by oncology. Labs at discharge were AST 72, ALT 110, ALKP 1188, Tbili 3.7, and creatinine of 0.90. The patient saw her oncologist 3 days after discharge to discuss her chemotherapy regimen. She was asymptomatic, however, her labs showed an AST 410, ALT 391, ALKP 1829, Tbili 13.2. She was transferred as a direct admission to medical oncology. Repeat abdominal ultrasound showed no new findings. Hepatitis serologies, anti-nuclear antibodies, anti-smooth muscle antibodies, and anti-mitochondrial antibodies were negative.

She was started on 2 mg/kg of IV methylprednisolone for 1 day and then transitioned to 1 mg/kg oral methylprednisolone for 3 days. A liver biopsy was done on hospital day 2 and was still pending at discharge. She was discharged on hospital day 4 with an AST 66, ALT 178, ALKP 1406, and total bilirubin of 3.7 with oral steroids and oncology follow-up.

Discussion

This case provides an example of a cholestatic hepatitis responsive steroids likely due to treatment with immune checkpoint inhibitors not previously reported.

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Virginia Clinical Vignette Poster Finalist - Lovepreet Kaur

Title

Sarcoma Presenting as Extramedullary Hematopoiesis

Authors

Lovepreet Kaur, DO, (LT, MC, USN), PGY-1, Naval Medical Center Portsmouth, VA

Introduction

Extramedullary hematopoiesis is the phenomenon of blood cell production occurring in any organ outside of the bone marrow and is usually considered a pathologic process after fetal development. Although EMH itself is mostly asymptomatic, it can be a key indicator of a more insidious process. The presented case describes the rare manifestation of EMH in sarcoma and allows us to explore the associated diagnostic dilemmas.

Case Presentation

49yo female with a history of Hodgkin's Lymphoma treated with splenic radiation therapy presented with massive splenomegaly in the setting of a nine-month history of abdominal pain and constipation. Splenectomy was performed and tissue pathology revealed the normal splenic tissue to be almost entirely replaced by an unencapsulated mass with several foci of extramedullary hematopoiesis. Despite the splenectomy, the patient continued to exhibit vague abdominal symptoms which led to the discovery of an intestinal mass. This mass was initially thought to be another site of extramedullary hematopoiesis or enlarging lymphoid tissue secondary to a myeloproliferative disorder and the appropriate workup was initiated. During the short interval of this patient's workup, the mass had grown substantially and unfortunately revealed itself to be an advanced intestinal leiomyosarcoma causing ascending cholangitis and GI outlet obstruction ultimately requiring pancreaticoduodenectomy.

Discussion

The more common etiologies of EMH include hemolytic anemias, myeloproliferative disorders, bone marrow metastases and Paget's disease. Although rare, studies have shown that solid tumors can also induce EMH with breast cancer being the most common culprit. Through this case we review the pathogenesis of EMH and consider the benefit of keeping sarcoma on the differential list when working up EMH in order to catch dangerous malignancies earlier.

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Virginia Clinical Vignette Poster Finalist - Matthew S Miller, MD

Title

"Just Let Me Die" Caring for an actively suicidal and psychotic patient with ST Elevation Myocardial Infarction

Authors

Matthew S Miller

Introduction

The morbidity and mortality of ST elevation myocardial infarction (STEMI) have decreased significantly with the efficacy of percutaneous coronary intervention (PCI). PCI however requires a willing patient to cooperate during the procedure and after. It has been shown previously that patients with severe mental illness receive significantly less cardiac interventions compared to those without psychiatric disease1. We discuss here the ethical and medical considerations of treating an actively suicidal and psychotic patient suffering from STEMI.

Case Presentation

Mr. J was a 67 year old male with a history of coronary disease with a remote stent placed in his left anterior descending (LAD) artery. He was brought to the emergency department by EMS and police with chest pain. The patient had been getting progressively paranoid and suicidal when he pulled out a knife and threatened to kill himself and his wife. An altercation with the police resulted in him getting tased twice. The patient then began complaining of chest pain and ECG showed ST elevations in V1-V4. He was STEMI alerted and brought to our ED. He was promptly evaluated by the CCU team and interventional cardiology. While still complaining of chest pain, he refused cardiac catheterization and repeatedly spit out the P2Y12 inhibitor given to him. He told the cardiology team "just let me die". Due to his agitation and lack of consent, he was deemed unsafe for catheterization and psychiatry was consulted for capacity evaluation. Shortly after being deemed to lack capacity, the patient decompensated into cardiogenic shock, then PEA arrest. After a prolonged course of CPR, during which the patient received thrombolytic therapy and heparin, he was taken to the CCU with poor prognosis. Miraculously, neurological status was intact and he was treated aggressively with IV vasopressors and hemodialysis. He recovered near fully over the coming weeks, though with a reduced ejection fraction of 30% with akinesis of his anterior wall. Psychiatry continued to follow and ultimately deemed his condition to be a major depressive episode with psychotic

features. By time of discharge his mood had markedly improved with antipsychotics and antidepressants.

Discussion

This case highlights the difficulty of weighing patient autonomy, beneficence and non-maleficence in the high acuity event of an ST elevation MI. While cardiac catheterization would have been the treatment of choice for a complete occlusion of the LAD, it is also an invasive procedure done under conscious sedation. With an agitated patient, proceeding with the intervention safely would have required fully sedating the patient against his will. Placing a stent also places the patient at high risk for in-stent thrombosis if he is unwilling to take an oral P2Y12. Ultimately his course highlights the dangers of leaving an acute STEMI untreated and the importance of weighing these ethical principles with a patient in their family to make swift decisions regarding medical care.

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Washington Clinical Vignette Poster Finalist - CPT Robert E Spiller, MC USA

Title

Urea(lly) Got Me

Authors

CPT Robert Spiller, DO, Internal Medicine PGY-2, Madigan Army Medical Center LTC Christopher Colombo, MD, Critical Care Medicine, Madigan Army Medical Center MAJ Phillip Lindholm, MD, Gastroenterology, Madigan Army Medical Center

Introduction

Urea cycle disorders (UCDs) occur in approximately 1 in 35,000 births. Although typical presentations are often fatal in the neonatal period, UCDs can present acutely in adults during periods of high catabolic stress (e.g. pregnancy, sepsis, surgery). Atypical presentations make up ~50% of UCD cases, often occurring in females who are carriers for the X-linked recessive disorder, ornithine transcarbamylase deficiency, the most common UCD. However, partial activity of any enzyme within the urea cycle can result in patients going undiagnosed until periods of high catabolic activity. We present a 23 year old female four days postpartum with severe agitation and hyperammonemic crisis requiring intubation, ultimately found to have citrullinemia type I (CTLN1).

Case Presentation

A 23 year old female presented to the ER four days postpartum for agitation and confusion. Earlier in the day, she had been breastfeeding her child in the NICU when the patient's mother noticed that she was having word finding difficulties. Neither the patient nor her mother were significantly alarmed and the patient returned home. When her boyfriend returned home several hours later, he noticed her pupils to be significantly dilated, along with inappropriate laughter and repetitive speech. Upon ER arrival, exam was notable for 8mm pupillary dilation bilaterally and marked confusion. Her condition quickly deteriorated and she became unresponsive (GCS of 4), prompting intubation. Initial evaluation suggested acute liver failure: AST 86 U/L, ALT 96 U/L, albumin 2.6 g/dL, INR 2.2 and ammonia 149 umol/L. Head CT/MRI were unremarkable, urine drug screen, acetaminophen, and salicylates were negative and RUQ ultrasound showed hepatic steatosis. Acute fatty liver of pregnancy (AFLP) was presumed, as she met minimum criteria for the disease. She became responsive the following morning and was subsequently extubated, prior to lactulose administration. While her ammonia levels fluctuated despite lactulose (72-400 umol/L), she remained asymptomatic during her

hospitalization. However, her albumin, INR and AST/ALT did not normalize. An amino acid panel showed high citrulline and low argininosuccinate, diagnosing CTLN1. She was started on arginine supplementation and transferred to a tertiary center for glycerol phenylbutyrate, a nitrogen scavenger, and liver transplant evaluation. After starting the medication and diet modification, her AST/ALT began to downtrend, albumin returned to pre-morbid levels and she was discharged.

Discussion

We present a case of a rare disease, masquerading as an uncommon presentation of an uncommon illness. While UCDs are relatively uncommon (CTLN1: 1/250,000), they can have fatal complications when presenting during adulthood, and may mimic AFLP with liver enzyme elevation, delirium and hyperammonemia. Unlike AFLP, which usually presents during the third trimester and resolves after delivery, UCD patients will typically not recover without dietary modifications and/or medication. Distinguishing between these diseases, among other causes of peripartum hyperammonemia, can be potentially lifesaving.

Washington Clinical Vignette Poster Finalist - James H Wykowski

Title

A new diagnosis of a genetic metabolic disorder presenting as post-partum altered mental status.

Authors

James Wykowski, Carolyn Keller, Karolina Kucybala

Introduction

Urea cycle disorders rarely present in adults. In adults, recognizing the neuropsychiatric symptoms that can arise in times of catabolic stress as a manifestation of a metabolic pathway deficiency requires a high index of suspicion. Yet, patients are often at high risk of progression to transplant-dependent liver failure, coma, and death, and time to diagnosis represents a crucial determinant of ultimate outcomes.

Case Presentation

A 23 year old G1P1 woman presented to the ED with acute altered mental status four days post-partum from her first pregnancy. She required intubation due to severe agitation. As a part of her initial altered mental status workup the team obtained an ammonia level, which was profoundly elevated. Her LFTs were otherwise normal. She was initiated on lactulose therapy to promote ammonia excretion, and a low-protein diet to prevent further ammonia accumulation. Her ammonia level and mental status subsequently normalized. While her mental status improved, her LFTs then began to elevate, doubling daily and peaking at an AST of 2,161 and ALT of 2,519. Her INR was initially normal, but also prolonged to 2.2. Her initial workup, including EBV, HSV and CMV serum viral PCRs, viral hepatitis testing, ANA, ceruloplasmin, iron studies, acetaminophen and salicylate levels, was all unrevealing. Subsequent amino acid level testing demonstrated elevated glutamine level of 1,670.4 umol/L (372.8-701.4), Citrulline level of 1,512.5 umol/L (15.6-46.9), and an undetectable argininosuccinate level

Discussion

Checking ammonia levels has appropriately fallen out of favor in patient with known cirrhosis and altered mental status. However, in the proper clinical context checking serum ammonia remains an appropriate part of the evaluation of altered mental status. While typically diagnosed in infants, urea cycle disorders can be unmasked in adults. This is often, but not

always, in the setting of severe physiologic stress such as pregnancy, malignancy or major surgery. Understanding the complexities of these disorders may be beyond the scope of many general internists, but a high index of suspicion, proper clinical evaluation, and a prompt referral to medical genetics can prevent significant morbidity and mortality.

West Virginia Clinical Vignette Poster Finalist - Glenn Hudson Beard

Title

Brachial Plexopathy Associated with Lyme Disease: A Challenging Clinical Presentation

Authors

G. Hudson Beard, M.D. (Associate) Rashida Khakoo, MD, MACP

Introduction

Brachial plexus neuritis (also known as Parsonage-Turner Syndrome) is a rare neurologic disorder associated with infectious and noninfectious causes. Some of the viral infections associated with brachial plexus neuritis include but are not limited to HIV, varicella zoster, hepatitis E, parvovirus, and coxsackie. There have also been recent reports of cases associated with Lyme disease.

Case Presentation

A physically active 62-year-old male developed bilateral shoulder pain and left forearm numbness in September 2019. He was diagnosed with a muscle sprain and given a steroid injection. The numbness spread to his right upper extremity, and his shoulder pain was refractory to multiple analgesic modalities. By mid-October, he developed upper extremity muscle atrophy, right-winged scapula, and shortness of breath when lying down. He reported no known tick bites. On further review of history, the patient recalled having a circular rash with no central clearing on his left upper extremity early in September 2019. On November 6, 2019, both IgG and IgM Western blot for B. burgdorferi were positive; however, the HIV screen was negative. MRI of the brachial plexus showed edema of rotator cuff muscles. EMG demonstrated findings suggesting bilateral brachial plexopathies. He was initially given doxycycline. However, due to the severity of his symptoms, the therapy was changed to a 28-day course of IV ceftriaxone. His symptoms significantly improved with ceftriaxone. His pain and numbness have now resolved, but he continues to have weakness and right-sided winged scapula a year after his symptoms started.

Discussion

Patients with brachial plexus neuritis are often misdiagnosed at initial presentation as having mechanical injuries, e.g., muscle sprain or bursitis. Delay in appropriate diagnosis can result in significant issues, including diaphragmatic paralysis. Neuropathic pain that is not located in the

same nerve territory as the sensory loss is a key finding. If brachial plexus neuritis is considered, checking for associated infections is especially important because some require specific anti-infective treatment.

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Wisconsin Clinical Vignette Poster Finalist - Anatoliy Nechyporenko, MD

Title

IDENTIFICATION AND MANAGEMENT OF IDIOPATHIC CAPILLARY LEAK SYNDROME, A RARE CAUSE OF DISTRIBUTIVE SHOCK

Authors

Anatoliy Nechyporenko; Kirsten Lipps; Ryan Lok; James Runo. University of Wisconsin Hospital and Clinics, Madison, WI

Introduction

In 1960, Dr. Bayard Clarkson identified the first case of Idiopathic Capillary Leak Syndrome (ICLS). In his report, he described an otherwise healthy 34-year-old woman who experienced 22 episodes of severe third-spacing and resultant shock, with the final "attack" leading to her demise [1]. Since this report, approximately 150 cases of ICLS have been described [2] in the medical literature. Here, we report a case of an otherwise healthy adult male with a typical presentation of ICLS.

Case Presentation

66-year-old man with multiple prior hospitalizations for undifferentiated shock had presented with pre-syncope, dyspnea, non-productive cough, and malaise of 4-days duration in setting of a recent viral upper respiratory tract infection (URI). Since presenting to the emergency department, he had rapidly decompensated, demonstrating severe hypotension, hypoalbuminemia, and hemoconcentration. Shortly thereafter, our patient experienced an episode of pulseless electrical activity requiring resuscitation while in the intensive care unit. Return of spontaneous circulation was achieved, and he subsequently underwent aggressive supportive management. With intravenous (IV) fluid resuscitation, vasopressor support, and initiation of stress-dose corticosteroids, his hemodynamic and metabolic statuses have normalized. Of note, he experienced rhabdomyolosis, a common complication of fluid redistribution but no compartment syndrome or pulmonary edema. He survived his hospitalization, and was discharged home to follow up in the outpatient setting.

Discussion

ICLS "episodes" are characterized by three phases, including a non-specific prodrome of viral illness, followed by the extravasation phase marked by a triad of severe hypotension,

hypoalbuminemia, and hemoconcentration, and culminating in the final recovery phase, defined by fluid redistribution and resultant risk of intravascular hypervolemia [3-5]. It is suspected that an underlying monoclonal gammopathy may contribute to the condition [4][6]. Given its rarity and strong resemblance to other etiologies of distributive shock and systemic inflammatory responses, ICLS is probably underdiagnosed [1][3][4][7]. Severe manifestations of ICLS may be alleviated with early recognition and aggressive supportive care, which includes fluid resuscitation and vasopressor support [8-10].

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CHAPTER WINNERS – CLINICAL VIGNETTE

Arizona Research Poster Finalist - Dania Shah

Title

Role of telemedicine in healthcare delivery during COVID-19- a retrospective study

Authors

Dania Shah, MD1, Wesley Peng2, Rustan Sharer, MD3, Paul Sieckmann, MD4, James Whitfill, MD3, Craig Norquist, MD2, Priya Radhakrishnan, MD2, 3 HonorHealth, Internal Medicine 1 HonorHealth, Academic Affairs2 HonorHealth Medical Group3

Introduction

Telemedicine, refers to the practice of medicine from a distance with the aid of technology, typically videoconferencing or assisted by telephone. Adoption of telemedicine was a part of the COVID-19 public emergency declaration to provide care for patients safely .1,2 Despite advances in technology, there is wide gap in access to healthcare between White Americans and communities of color. 3 The current pandemic serves as an opportunity for telemedicine to provide equitable care. 4,5 To evaluate telemedicine adoption and utilization trends during COVID19 pandemic within a medical group with special focus on under-represented minority population.

Methods

We examined our telemedicine data and stratified based on age, ethnicity, and visit type; a 2-prop z-interval was performed analyzing all general encounters.

Results

From March 2020 onwards, we offered video visits in conjunction with telephone. The total number of virtual visits delivered that month were 70,089. Of these, 22,132 (31.58%) were video visits and 47,957 (68.42%) were tele-visits. Patients identified as Hispanic or Latino showed a 40.5% increase (p-value < 0.0001) and Black Americans p-value < 0.004) showed a 22% rise in the total number of visits with video and telephone visits compared to pre-implementation. This difference was statistically significant. Interestingly, there was a steep rise in no-show rates in the group 65+ from March to May but the rates significantly declined and reached a steady state.There was significant drop in the no-show rates in the African American and Medicaid population by 4.9% and 5%, respectively after the telemedicine implementation.

Conclusion

Our study shows virtual visits improved the ability to provide care for communities of color, by over 40% which shows that telemedicine can breaks barriers in health care delivery and decrease health inequity. It could be attributed to the fact that minority groups lack access to transportation and availability and thus, virtual visits have empowered them to receive the adequate care that they need. We also see that once individuals 65+ overcome the difficulty with adapting to technology, they did well with telemedicine indicating that if elderly community is provided with appropriate tech support they will in fact prefer virtual visits over office visits.

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Arkansas Research Poster Finalist - Shiyu Wang

Title

Investigation of Neutrophil to Lymphocyte Ratio as a prognostic marker for Infectious Arthritis

Authors

Shiyu Wang, MD1, Anthony Kunnumpurath, MD2, Roy Kamoga, MD, FACP2 1Internal Medicine Resident, White River Health System, Batesville, AR , 2Faculty, White River Health System, Batesville, AR

Introduction

- Infectious Arthritis (IA) can be a very acute and destructive disease depending on the source and location of infection - Medical emergency: Possible irreversible damage to infected joint and death - Diagnostic markers: Synovial fluid aspiration (WBC) count above 50k, over 90% polynuclear WBCs, Lactate over 10 mmol/L, Gram stain positivity5 - No prognostic markers to assess disease severity and morbidities after diagnosis is made3 - NLR (Neutrophil to Lymphocyte Ratio): Number of neutrophils divided by the number of lymphocytes, driven by release of endogenous cortisol and catecholamines during times of physiologic stress4 - Proven to be an effective and acute maker or systemic bacteremia and sepsis1,8 - Very rapid: Elevated in under 6 hours for any form of physiologic stress4,8 - NLR has not been extensively studied in relation to IA as a prognostication tool

Methods

- Patient records were retrospectively analyzed over a 5-year period (2015 to 2020) - Patient records were tracked with ICD10 codes - Complete Blood Count with Differential (CBC w/ Diff) performed within 6 hours of admission for IA - Statistical analysis was performed with Pearson Correlation Coefficient (PCC) analysis between NLR and primary endpoints

Results

- A total of 36 patients met inclusion criteria - NLR was positively correlated with increased number of total days antibiotics that were given (R = 0.540) and increased length of stay (R = 0.403) and was statistically significant (p value of 0.0017 and 0.025 respectively) - NLR did positively correlate with number of surgeries performed (R = 0.221) but was not statistically significant - Limitations: Prospective study to validate NLR’s prognostication value - Confounding disease processes concurrent with IA may falsely increase total days of Abx and LOS

Conclusion

- NLR can tentatively be used as a marker for determining increased antibiotic use and LOS in patients with IA - More investigation needs to be performed to see if NLR truly can be used as a prognosticating tool for morbidity in IA - Provides potential for further exploration and research into this topic of which there are currently none

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California Research Poster Finalist - Jaskiran Khosa

Title

Decoding Code Status: Resident Comfort in Leading Code Status Discussions After Focused Training

Authors

Chong Kim MD; John Leong DO; Steven Lin DO; Tavia Rucker MD; Shreyas Srinivas MD, Elijah Weber PhD; Philomena Cho MD

Introduction

The quality of code status discussions led by Internal Medicine resident trainees at the time of hospital admission can be limited by resident confidence in framing such discussions. Studies suggest that residents infrequently discussed resuscitation goals despite preexisting curriculum in code status discussion[1]. Limited data exists on self-evaluation of individual comfort among Internal Medicine residents who undergo targeted training on leading code status discussions on hospital admission[1]. We present an observational survey-based study to evaluate the impact of a code status curriculum on Internal Medicine residents' confidence and competence in code status discussion at the time of hospital admission.

Methods

We designed a focused code status curriculum involving quarterly lectures spanning three months. This included didactic conferences, simulated code status discussions with both standardized and palliative patients, and interactive feedback from patients and faculty. Resident attendance averaged 77%. Pre- intervention and post-intervention questionnaires were administered to Internal Medicine resident trainees (n=18) evaluating baseline comfort scale. Pre- and post-intervention quizzes (n=18) were also administered. The primary outcome was the objective assessment of resident comfort pre- and post-intervention. The secondary outcome was resident skill in CPR discussion assessed by appropriate CPR recommendations documented in electronic medical records during hospital admissions from July 2019 to June 2020. The control group for comparison was studied June 2020 prior to intervention.

Results

Pre-intervention quiz scores for were 71.7%, 66.6%, and 81.6% for PGY-1, PGY-2, and PGY-3 residents respectively (n=6 per PGY class). Post-intervention quiz scores were 90% for each PGY class. 40% of residents reported the most significant barriers to code status discussions prior to

intervention were lack of knowledge and focused training as deduced by the Likert Scale. 72% (n=18, 6/6, 5/6, 2/6 for PGY 1, 2, 3 respectively) selected “extremely willing” to lead code status discussions at admission on the post-intervention survey. 100% of residents (n=18) reported increased comfort in code status discussions post-intervention

Conclusion

Our study demonstrates that residents are more comfortable in leading code status discussions at the time of hospital admission with a focused practical three month curriculum. Interestingly quiz scores equalized among PGY classes post-intervention. This suggests a lack of experience for junior residents can be overcome with focused training. Increased confidence may improve leadership in clinically appropriate CPR recommendations at time of admission across PGY level. This may ultimately translate to improved respect for patient preferences. Further studies are needed to characterize the duration of self-perceived comfort.

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California Research Poster Finalist - Rebecca Linfield, MD

Title

Cost Transparency Affected Expensive Drug Prescribing and IV to PO Substitution

Authors

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Introduction

Healthcare costs in the United States continue to increase, largely driven by the high cost of pharmaceuticals. Cost transparency, the act of showing the cost of drugs to providers, has been proposed as a method of reducing healthcare costs, but its effectiveness has not been studied on a large scale.

Methods

We tracked the volume of the top 50 medications in the Stanford Health Care network before and after the introduction of cost transparency in the electronic medical record on August 1, 2017, with a second group on June 27, 2018. We sought to determine if this intervention would generate at least a 10% decrease in the orders of expensive medications (greater than $200 per dose) and at least a 10% decrease in intravenous (IV) prescriptions when the oral (PO) substitute was available.

Results

We show a 5% decrease in the volume of expensive medications ordered in the 12 months following the intervention and a 25% decrease in IV medications during the same time frame, with the decrease in IV volumes roughly matched by increase in PO volumes. This led to ~$225K in cost savings.

Conclusion

We believe that cost transparency can be a low-intensity intervention to decrease unnecessary prescribing and increase the learning in our healthcare system.

California Research Poster Finalist - Nihar Patel

Title

Advancing Health Equity through EHR-based Smoking Cessation

Authors

Nihar Patel MD, Amy Alabaster MS, Kelly Young-Wolff PhD, Somalee Banerjee MD MPH

Introduction

Smoking has been linked to considerable morbidity and mortality with significant racial differences in associated illness amongst the American population. Tobacco cessation programs have been shown to improve smoking cessation outcomes and improve population health. However, utilization has not been uniform. This study assesses changes in smoking cessation interventions and patient quit attempts after the implementation of an electronic health record (EHR) based smoking cessation intervention and tests for differences in outcomes by patient race/ethnicity.

Methods

In 2015, Kaiser Permanente Northern California (KPNC), a large integrated health system, implemented an EHR based forced stop to clinician workflow requiring provision of smoking cessation counseling, inpatient nicotine replacement therapy (NRT), and outpatient NRT to documented smokers admitted to a KPNC hospital. That policy change enabled a natural experiment on the effects of an EHR intervention on NRT orders and smoking cessation counseling. This is a retrospective difference in differences cohort study of all adult, current smoker, inpatient admissions in 2014 (pre-implementation) and 2016 (post-implementation). Primary outcomes included pre- to post-intervention changes in admission and discharge NRT prescription orders. Chi-squared tests were used to assess racial differences in NRT orders, stratified by pre and post periods. Multivariable logistic regression with difference-in-differences interaction terms between time period and race was also conducted.

Results

The study population included 15955 unique patients with 20524 inpatient encounters, composed of White 60.9%, Black 14.6%, Hispanic 11.5%, Asian 7.5%, and other race/ethnicity 5.5%. There was a significant increase in NRT orders after the implementation of the EHR intervention (2014 vs 2016) during admission (29.9% to 78%) and at discharge (12.9% to

45.7%). In 2014, White patients had the highest admission and discharge NRT order proportions (33.3% and 14.3% respectively) and these proportions differed significantly by race/ethnicity (P

Conclusion

The EHR intervention was associated with improved equity in NRT ordering rates between racial and ethnic groups in this large integrated health system. This study is the first to show significant reductions in racial/ethnic inequities in receipt of NRT via a health care policy intervention built into the EMR. Systematic changes applied through an EHR can target population-level health, and have the potential to exacerbate or balance systemic inequality.

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Delaware Research Poster Finalist - Nicholas Jennelly

Title

Medication Reconciliation in the Ambulatory Setting: When Cerner Attacks

Authors

Nicholas Jennelly, MD; Maritza Harper, MD

Introduction

Medication errors are one of the leading causes of injury to hospital patients, and chart reviews reveal that over half of all hospital medication errors occur at the interfaces of care [1]. Completion of an accurate and up to date medication reconciliation must occur at each patient encounter to ensure proper documentation in the patient's chart of all medications taken. Our goal was to increase the completion of a documented medication reconciliation by a Wilmington Adult Medicine provider by 25% by March 2019.

Methods

The measures used to evaluate the intervention included the percent of ambulatory patient charts with a complete documented medication reconciliation gathered from Cerner reports. Pre-surveys of both providers and medical assistants identified lack of patient knowledge of their medications as the primary challenge in conducting a medication reconciliation. The changes implemented included 1) provider education on how to properly document a medication reconciliation in the Cerner system via a laminated instructional card and 2) one-on-one in-person instruction. Our interventions sought to target medical providers as they are the ones who possess the proper education on prescription medication names, indications, and dosing for patients.

Results

From pre- to post-intervention, a 31.1% increase in medication reconciliation rates were observed over a two-week period for the providers included in this intervention.

Conclusion

Increased provider education on proper electronic health record medication reconciliation increased medication reconciliation rates. Further directions include lamination of instruction cards to be provided for all providers in the workspace, inability to close a patient's chart until

medication reconciliation is completed, and encouraging patients to bring medications to appointments to ensure a thorough review. Portal messages to health systems informing proper process have also been implemented to ensure provider compliance.

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How-to Guide: Prevent Adverse Drug Events by Implementing Medication Reconciliation. Cambridge, MA: Institute for Healthcare Improvement; 2011. (Available at www.ihi.org) [1]

Florida Research Poster Finalist - Alexandra Lackey

Title

Comparison of Performance Metrics in a Teaching ICU vs Non-Teaching ICU

Authors

Alexandra Lackey, MD; Zohaib Ahmed, MD; Naumaan Hafeez, MD; Brandon Kalivoda, MD; Aashish Mainali, MD; Bhumi Patel, MD; Vasily Simaev, MD; Martin Cearras, MD; Jian Guan, MD

Introduction

The intensive care unit (ICU) can be a challenging learning environment for internal medicine residents. Teaching hospitals have been associated with higher cost without improved outcomes. Performance outcomes including patient safety and cost-effectiveness have not been adequately studied to compare teaching vs non-teaching services in the medical ICU setting. We set up this study to compare outcomes between these two services in a medical ICU.

Methods

Charts were reviewed for all admissions to the medical ICU from September 2018 to March 2019. The following variables for each patient were recorded: reason for ICU admission, race, gender, age, Acute Physiology Score (APS), APACHE III Score, hospital length of stay, ICU length of stay, direct cost, total cost, mortality, number of consultants, and number of packed red blood cell (PRBC) transfusions. Comparisons of variables from teaching versus non-teaching beds were analyzed with t-test.

Results

A total of 1385 admissions to the medical ICU were enrolled (698 teaching, 687 non-teaching). Teaching and non-teaching patients were similar regarding race, gender, age, and severity scores. A trend toward shorter ICU length of stay exists for the teaching service (3.9 vs 4.3 days), but this did not reach statistical significance ($p = 0.2505$). Average total cost ($47,440 vs $48,430; $p = 0.7779$) and mortality (16.3% vs 16.9%) were similar between the teaching and non-teaching beds respectively. The teaching service demonstrated superior utilization performance compared to that of the non-teaching service with an average of 1.2 vs 1.6 consultants (p =

Conclusion

Teaching ICU with internal medicine resident involvement is associated with better utilization and non-inferior outcome metrics compared to the non-teaching service. Resident involvement in critical care is not only vital to the future of the American health system but can also be safe and cost-effective.

Georgia Research Poster Finalist - Manisha Sadanani, MD

Title

Imbibe the Tribal Vibe: Improving Resident Camaraderie and Communication in a Residency Program – A Quality Improvement Initiative

Authors

Manisha Patel, MD Nicola Jackson, MD Esther Wallach, MD Akua Biritwum, MD

Introduction

The medical field remains one of the few professions where mentorship-led training through residency is a staple educational method. The importance of mentorship within residency medical training has been widely studied. Peer mentoring has shown to have more potential at refining a physician's ability to manage interpersonal relationships and honing communication. Some residency programs have adapted a "sibling" model in which a senior resident is a peer mentor to a junior resident. However, a group mentoring strategy consisting of multiple residents from each PGY year has not been studied; there is minimal evidence to show that this creates an environment in which residents feel comfortable to raise concerns. We have implemented a tribal system to improve interpersonal relationships, communication and conflict resolution.

Methods

Methods: Resident survey results from the 2018-2019 end of year program evaluation (APE) demonstrated shortcomings in residents' comfort level with raising concerns. A focus group met to determine a method to combat the hesitation in the form of tribes. Tribes were implemented as follows: Each tribe consists of 6-7 residents with 1-3 from each PGY year. One PGY-3 from each tribe is designated as the "Tribal Chief" to act a liaison amongst the residents, attendings and GME faculty. All residents, including incoming interns, are divided amongst ten "Tribes" based upon faculty mentorship and individual bios; Ten attending physicians were recruited based on their interest in furthering resident education to act as "Tribal Elders" or faculty mentors for each tribe. A pre-implementation survey consisting of twenty questions focusing on perception of current relationships within the program was sent to all residents, attendings and GME faculty at the end of the '19-'20 academic year. Members of each tribe will nominate individuals to represent the residency on a "Tribal Council" that will act as a resident liaison committee. Post-implementation surveys consisting of 21 questions will be sent quarterly to determine effectiveness of such a mentoring system at improving hesitation to

raise concerns. We will compare residents' ability to raise concerns to GME leadership, attendings, faculty advisor or peer to their tribe.

Results

Pre-survey results showed 63% of residents were not likely to approach GME with a concern and 65% of residents were likely to approach a co-resident/ peer with a concern. First quarterly results from September 2020 showed 54% of residents were not likely to approach GME with a concern and 80% of residents were likely to approach a co-resident with a concern. Overall, residents were 15% more likely to reach out to a peer. There was an 11.6% improvement in the number of residents reporting continued need for reform with communication, ability to raise concerns and overall atmosphere.

Conclusion

This innovative mentoring approach shows potential to improve communication across specialties. We believe that voicing opinions via the tribal system significantly improves resident communication and comfort with raising concerns over the traditional one faculty to one peer mentoring relationship.

Georgia Research Poster Finalist - Darya Savel

Title

Creating a novel respirator during early COVID-19 pandemic

Authors

Sebastian Montgomery, MD (HCA Coliseum Medical Center) Darya Savel, MD (HCA Coliseum Medical Center) Colin Petherbridge (Mercer University School of Engineering) Sagar Patel (Mercer University School of Engineering)

Introduction

The COVID-19 pandemic put the vulnerability of global supply chains on display as hospitals burned through a year's supply of N95s in a matter of weeks. By early March, emergency use authorizations were even allowing expired respirator use and the rapid approval of new models. Around this time, our hospital received a large influx of patients from the highest density COVID-19 case rate community in the world. The CDC's suggestion for PPE at that time included bandanas or scarves, but we believed our ICU nursing and respiratory staff deserved a better backup in place than the nationally suggested cloth napkin. We set out to design this backup system.

Methods

We found our inspiration from a hospital in Italy that began using 3D printed component to turn full-face snorkel masks into BiPaP masks. Our design centered around creating a reusable 3D printed adapter that connected full-face snorkel masks to various filter materials. Common filter materials included viral filters for ventilators, however we avoided this option due to supply chain concerns. Instead, we focused on widely available material like cut-to-size HEPA HVAC filters or autoclave wrapping, both of which were theoretically capable (now validated) to filter at N95 capacity or greater. The adaptor was created in Fusion 360, with a total filtering surface area of 81 cm2 over a front and rear filter to avoid limitation of air exchange. The geometry was optimized for 3D printability, resulting in the use of the hexagon cutouts and rounded edges. The filter locked in place with a snap fit junction. All prototyping and final production was completed on a Formlabs Form-3 SLA (Stereolithography) 3D printer. Formlabs durable resin was used as it can be easily cleaned with alcohol or autoclaved. We primarily used autoclave wrapping material as filter material, which could also be autoclaved for reuse.

Results

We were able to create 30 functioning masks with integrated face shields during March and April of 2020. We completed O2 saturation testing with moderate exercise for 5 minutes without any desaturation in a healthy individual. Filter material has since been validated in outside studies. The masks were stored securely as a private backup system for our ICU nursing and respiratory therapists, however they were never deployed for frontline use.

Conclusion

When we first began designing these masks, our goal was to create a more robust backup system for our ICU staff. Similar masks were created across the world during this same period, many of which were actually put into broad use during the early pandemic (late March through May 2020). Many of these masks used similar designs, however filter selection differed. They showed proof of concept on various occasions, and we completed our own fit testing in a manner similar to that of the N95 mask. Many designs have held up to more rigid testing including official approval. Our project underscores the potential for innovation in a time of international need. We are proud of our mask creation, but thankful their use was never required on a larger scale.

References

See poster for references

Idaho Research Poster Finalist - Trevor Archibald

Title

Virtual Shared-Medical-Appointments for Veterans with Type II Diabetes – An Interprofessional Trainee-Driven Quality Improvement Pilot

Authors

Trevor Archibald, DO [1]; Marina Izzi, PharmD [2]; Tracy Masi, PsyD [3]; Sarai Ambert-Pompey, MD [1,4]; Amber Fisher, PharmD [2,4]

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Introduction

Type 2 diabetes mellitus (T2DM) self-management is known to benefit from an interactive educational approach to medication, lifestyle, and biopsychosocial modifications, ideally provided by an interprofessional practice [2]. Shared-medical-appointments (SMAs) are an evidence-based clinical innovation delivering improved satisfaction and outcomes in chronic diseases [2,3,4] and are ideally suited to providing interprofessional care in an efficient and accessible way. In this pilot, we show use of the VA Veteran Video Connect (VVC) telehealth platform is a feasible method to deliver an interprofessional curriculum which promotes these beneficial outcomes of SMAs.

Methods

Forty-six patients with Type 2 diabetes enrolled in our VA outpatient clinics screened-in to undergo 4 monthly group visits utilizing an interactive telehealth curriculum based on ADA guidelines and created by an interprofessional team of medicine, pharmacy, and psychology trainees. Seven consenting patients agreed to connect to the VVC platform to participate in the group. We gathered pre- and post-intervention diabetes-related quality of life modified (dQOLm) scores and narrative responses related to intervention delivery for feasibility analysis. Two trainee participants evaluated the subject responses and coded them to a numerical score

for the diabetes-related quality-of-life (dQOLm) modified scale. Disagreements were settled by consensus discussion. The pre- and post-intervention dQOLm scores were compared using a paired T-test. Participant responses to open-ended questions were paraphrased in a narrative. Disease control parameters (A1C, kidney function, liver function), and body weight were desired but physical visits were limited due the onset of the COVID-19 pandemic. Fortunately, delivery of the interactive curriculum continued in a virtual format.

Results

Five patients completed the intervention and follow-up. One patient was excluded from analysis with incomplete data and one recruited patient was lost to follow-up. Significant improvement in dQOLm was observed during the study (mean 36.2 vs 25.8 [p value = 0.0211]). Mostly positive sentiments resulted from qualitative structured surveys regarding intervention format and perceptions of care. VVC telehealth technology had equal efficacy and improved convenience compared to in-person care. Providers expressed positive perceptions of the interprofessional delivery. Drawbacks included a notable investment in clinic setup by providers and known challenges of telehealth delivery formats.

Conclusion

The quality improvement paradigm of this pilot project brought several suggestions for improvement including refinements of group teleconferencing, universal use of headsets, options for closed captioning, and addition of dietician services. While virtual SMAs are a feasible method to deliver intensive lifestyle intervention and quality care to select military Veterans through VVC, there are notable drawbacks to greater implementation. Clearly mobile telehealth platforms are not suitable for every patient and there is significant effort required to get programs like these up and running, but what better time than during a pandemic to offer an evidence-based virtual alternative for chronic care delivery? Inherent features of SMAs including the human desire for connectedness and shared goals can provide comprehensive lifestyle education, supportive community, and interprofessional expertise to improve chronic disease care despite limitations of the COVID-19 pandemic.

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Illinois Research Poster Finalist - Waddah Malas, MD

Title

Economic Disparities Increase Cardiovascular Risk in African American Women: Results from the 10,000 Women Study

Authors

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Introduction

The relationship between economic disparities and cardiovascular health have been reported previously, but information on the impact of economic status on atherosclerotic cardiovascular disease (ASCVD) risk in African-American (AA) women is limited. We sought to determine the impact of economic status on ASCVD risk factors in AA women.

Methods

AA women (N=847) were screened from 2015-2019 in a community health screening project in Atlanta. Using the pooled cohort ASCVD 10-year risk calculator, 481 women without history of ASCVD had complete values and self-reported sociodemographic information. Subjects were classified into 4 groups based on the US economic poverty level data for 2015. Kruskal-Wallis test and chi square analysis were performed.

Results

Of the total 481 AA women, 46% had low 10-year ASCVD risk, 12% had borderline risk, 33% had intermediate risk, and 9% had high risk, based on 2018 primary prevention guidelines from AHA/ACC. The mean age was (56.3 ± 9.4) and mean 10-yr ASCVD score was (8.7%). AA women with the lowest income living under poverty limit (

Conclusion

AA women with a low income have a significantly higher ASCVD risk score. Interventions targeting socioeconomic needs in addition to the traditional cardiovascular risk factors may benefit those most in need and help achieve health equity.

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Illinois Research Poster Finalist - Joseph Norton

Title

Cathepsin B Expression in Pancreatic Cancer: A Potential Prognostic Indicator and Therapeutic Target

Authors

Joseph Norton DO, Lusine Demirkhanyan PhD, Christopher Gondi PhD

Introduction

Pancreatic cancer, specifically pancreatic ductal adenocarcinoma (PDAC) is the fourth most common cancer and will soon be the second leading cause of cancer deaths in the USA. The combined 1-year survival is about 25% and the 5-year survival is less than 10%, making it one of the most deadly cancers. PDAC tumors often reoccur after surgery and chemotherapy. These recurred tumors tend to be chemo-resistant and radiation resistant, which leads to poor overall survival (1). Major hallmarks of PDAC are extensive local tumor invasion, early systemic dissemination, and extremely poor response to chemotherapy. Cathepsin B is a lysosomal protein with a known overexpression in multiple cancers, including breast, lung, prostate, brain, colorectal, and importantly pancreatic . Cathepsin B itself degrades ECM, activates uPA, and induces MMP-9 through reduction in its known inhibitors, thus further inducing ECM degradation and angiogenesis [-9].Both of these processes support metastasis. ? ? In proof of this, a small study evaluated ICTSB levels in whipple patients and speed of recurrence, which showed overexpression of cathepsin B acted as an independent indicator of early recurrence after resection in pancreatic cancer, even better than traditional staging [9]. This study, while pivotal, was small in size and did not focus on mortality.? ? Our study focuses on prognosis, invasive character, and CTSB expression in multiple pancreatic malignancies to determine if CTSB may be a prognostic marker for pancreatic cancers of many types, but particularly of aggressive ones, such as PDAC

Methods

EMR was analyzed by Healthcare Analytics Services with OSF for pancreatic cancer diagnoses which had the diagnostic malignant tissue samples obtained via whipple-type surgical procedures. Accompanying clinical data was gathered via chart review, and manually deidentified after verification of correlation to adequate tissue sample.? Tissue was obtained from OSF pathology, where it was reviewed by pathology for adequacy, and it was determined whether samples from accompanying metastases were able to be used. Samples were brought to the university of Illinois for immunohistochemical staining with DAB which colors dark

brown. Microscopy under the same settings with visual analysis performed for extent of CTSB expression.

Results

These Figures show expression of CTSB with the color brown. Figures 1 and 2 show near absent expression, while Figure 3 and 4 show increasing expression as they both have increasing evidence of metastasis and invasion. Further, only Figure 4 had a patient death within the study timeframe.

Conclusion

IPMN is a non-malignant neoplasm with the possibility to transform into cancer, and, therefore on its own has no metastatic properties or invasive character. Neuroendocrine tumors of the pancreas also have very little invasive or metastatic character. PDAC, on the other hand have significant potential for both metastasis and invasion. This preliminary evidence supports our ongoing hypothesis that CTSB expression may be a prognostic marker for pancreatic cancers.

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Illinois Research Poster Finalist - Jessica Obeahon, MD

Title

Rapid Response Team (RRT) Quality Improvement: Headaches over Heartbreaks, the Use of RRT Checklists and Simulation Curriculum

Authors

Jessica Obeahon, MD, Mercy Hospital and Medical Center; Andrew Ajemian, MD, Cooper University Hospital; Julia Patelli, BESS, Trinity University Dublin; Rizwana Syed, MD, Mercy Hospital and Medical Center

Introduction

Rapid Responses (RRT) are run by ICU teams and responsibility falls primarily on the residents in teaching hospitals. While rapid responses are common, they may have multiple causes and residents are not always entirely comfortable leading and participating in RRTs. Multiple studies support the idea that simulation based training can enhance competency and confidence in RRT leadership. The objective of this study was to conduct a qualitative analysis of trainee RRT confidence, implement a simulation lab curriculum to improve skills and algorithm approaches to common RRT scenarios with the expectation of increased confidence leading RRTs.

Methods

A pre-intervention questionnaire was distributed amongst trainees to assess their participation and confidence in managing rapid responses. Trainees took part in simulation labs every 5 weeks, where they received a checklist outlining actions of necessity on arrival to a rapid response. The first 2 simulation lab sessions, residents worked in small groups and ran 2-minute clinical scenario drills. The subsequent simulation sessions entailed full rapid response scenarios using real equipment and a simulation mannequin with pharmacists and nurses present. Some scenarios would escalate to a code blue scenario and the RRT leader would transition from rapid response to code blue/ACLS protocol. After all residents completed their simulation sessions, a post-intervention questionnaire was utilized to evaluate skill and confidence level at that time.

Results

The data from the questionnaires was analyzed and divided by resident class (PGY1, PGY2, PGY3). Following the intervention, there was a noticeable increase in participation of RRTs in all

years. Confidence increase was directly proportional to the number of RRT's participated in, most noticeably in PGY1 residents. Lack of confidence decreased considerably and only

Conclusion

Implementing checklists, small group learning, and simulation based training sessions created improvement in trainee confidence when leading and participating in RRTs. It was noted that half of the residents lost their RRT checklists. In the future, it would be beneficial to provide RRT checklist cards to be worn with resident ID badges. Curriculum development in medical education should follow a planned, systematic approach fitted to the needs and conditions of the trainees. Moving forward, the goal is that through all these steps we can improve patient care and resident education through actualizing simulation-based training earlier in a trainee's residency career.

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Indiana Research Poster Finalist - Brandon Pearce

Title

Tackling the Impossible: "Improving Handoff"

Authors

Brandon Pearce, DO; Kenneth Dexter, DO; Robert Fick, MD; Jennifer Mundell, MD

Introduction

It has been well-studied that transitions of care is one of the most dangerous aspects during a patient's hospital course. It is difficult to quantify the exact frequency but it is not uncommon that pending tests given during handoff do not get followed up on or inappropriate medical decisions were made secondary to incomplete handoff.It is also too common that the covering physician spends an excessive amount of time on a task that could have been completed much quicker if handoff were more complete. A "good" handoff is a time-consuming, frustrating process for the already overloaded physician. There have been multiple attempts to improve handoff but no singular process appears to be perfect. The objective was to make an efficient handoff process that provided sufficient, concise information for the covering physician to make more appropriate, cost effective, and timely decisions.

Methods

Internal medicine residents were encouraged to use a template that included conditional orders for the most frequently paged concerns, including: pain, sleep/agitation, nausea, and hypotension. For example "if called for pain, then give acetaminophen" or "if hypotensive, then bolus one liter of lactated ringers." Additionally, if there was something to follow-up on, it was required that residents use an "if, then" statement. Pre and post intervention questionnaires were sent out to quantify the effectiveness of the intervention described above. Data was collected at 6 months and in the future, 12 months. 44 participants completed the pre-intervention survey and 31 completed the post-intervention survey.

Results

Both the pre-intervention and post-intervention group were composed of majority internal medicine residents of PGY 1 status (63% and 71% respectively.) 77% of the pre-intervention group felt that more information should be provided in handoff which improved to 41% in the post-intervention group. The post-intervention group demonstrated an improvement in their comfort level for caring for a sick patient in a safe manner from the handoff information by

28%. The post-intervention group demonstrated a 33% increase in feeling that the handoff provided adequate preparation to manage cross cover concerns for patients at night. There was a 26% reduction in residents feeling like they needed to review the chart prior to making a decision due to inadequate information provided in handoff post intervention. The post intervention group demonstrated a 22% increase in feeling more confident in addressing nursing concerns due to information now provided in the handoff. Importantly, there was a 41% increase in feeling that the new handoff was concise and efficient.

Conclusion

This standardized template demonstrated improvement in physician satisfaction and confidence in creating a useful handoff that predicts not only common cross cover questions but also potential complications specific to the patient. While it is possible to raise the quality of resident handoff without reducing physician satisfaction, it has proven to still be a challenge in demonstrating a direct impact in improving patient safety outcomes and more research should be done.

Indiana Research Poster Finalist - Natalia Reborido, MD

Title

Risk of QTc prolongation from off-label COVID-19 treatments: A single center experience.

Authors

Natalia Reborido Campoy, MD; Kevin Ball, MD; Todd Foster, PhD; Kathleen L. Morris, DO; Sandeep Joshi, MD, FACC, FHRS; Emily Cochard, MD.

Introduction

On March 11th, 2020, the World Health Organization (WHO) characterized COVID-19 as a pandemic. The virus has killed hundreds of thousands of people throughout the world as the scientific community has attempted to find an effective treatment. Small in vitro data and clinical studies had suggested that off-label use of hydroxychloroquine with or without the addition of azithromycin (H+/-A) may have a positive therapeutic effect for COVID-19 (1-6). In the early COVID-19 era, many centers were administering H+/-A to the majority of patients presenting with severe respiratory symptoms due to confirmed or suspected COVID-19. These drugs are also known as human Ether-a-go-go-Related Gene (hERG)-blockers causing QT prolongation that can lead to fatal cardiac arrhythmias like torsade de pointes/ventricular fibrillation (Tdp/VF)(7-8). To better assist providers on QT prolongation risk, the Mayo Clinic provided an algorithm developed by Dr. Ackerman and colleagues to assess drug induced sudden cardiac death (DI-SCD) risk in confirmed/suspected COVID-19 patients that are candidates for H+/-A off label treatment (9),(Fig 1). Overall, there is very limited data regarding the risk of DI-SCD with these drugs, particularly in critically ill patients. Thus, it is essential to identify risk for DI-SCD and the true incidence of QTc prolongation in patients undergoing treatment with H +/- A. The purpose of our study is to retrospectively risk stratify patients based on the Ackerman algorithm and then, based on this risk, look at mean change in QTc along with risk of developing a drug-related arrhythmia.

Methods

Methods: A total of 100 patients admitted to the intensive or progressive care units at Ascension St. Vincent Hospital, Indianapolis, IN between March and April 2020 due to confirmed or suspected COVID-19 who were treated with hydroxychloroquine were identified. Risk stratification was performed using Ackerman's algorithm (10). Serial electrocardiogram (ECG) monitoring was completed as well as 24-hour cardiac monitoring.

Results

Results: According to Ackerman's algorithm, 85.1% were low risk, 12.8% were intermediate risk, and 2.1% were high risk for QT prolongation. The mean change QTc from initial to 48 hours was 8.6 milliseconds (SD 53.4 ms), to 5 days was 13.4 milliseconds (SD 40.3 ms), and to 10 days was 17.6 milliseconds (SD 43.4 ms). Change in QTc > 60 milliseconds from initial to 48 hours was noted in 15 patients (17.0%). No events of DI-SCD were reported in the green or yellow categories. There was 1 confirmed DI-SCD in the red category with a QTc prolongation > 60 milliseconds.

Conclusion

At the time our study took place the evidence was not clear if H+/-A was effective for treatment of COVID-19.The strongest argument against its controversial use is the potential harm in terms of arrhythmic events. The aim of our study was to analyze the safety of H+/-A.According to our data in those patients in the yellow and green category by Ackerman's algorithm, prescribers can have some reassurance in terms of safety as the patients did not have concerning QTc prolongation or ventricular arrhythmias even when combined treatment (H+/-A) was used. Larger, prospective trials are needed to confirm our findings.

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Indiana Research Poster Finalist - Hanna Webb, MD

Title

Describing Transfers Originating Out-of-Facility for Nursing Home Residents

Authors

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Introduction

The over 1.3 million Americans residing in nursing homes are faced with complex medical, functional, and cognitive comorbidities, placing them at risk for transfer to an emergency department or acute care hospital.1, 2 Around 25% of transfers are potentially avoidable, leading to iatrogenic harm, worsening debility, and financial costs to the healthcare system.3 OPTIMISTIC, an Indiana-based project, reduced potentially avoidable hospitalizations by one-third,4 by providing nursing homes with on-site RNs to assist in treating acute conditions, improving transitions during hospital transfers, and initiating advance care plan discussions. Nursing home residents do leave the facility for scheduled medical appointments or to visit family. Transfers to the hospital occurring outside the facility, or community transfers, represent an under-explored and potentially more complicated subset. We describe 82 community transfers, comparing them to in-facility transfers during the same timeframe.

Methods

OPTIMISTIC RNs collected data at nursing homes in Indiana. Patient-level demographics were from the Minimum Data Set 3.0, and RN root cause analyses performed at transfer provided transfer-level data. Analysis included bivariate associations at the patient level using chi-square and t-tests, as well as multivariable associations between community and in-facility transfers assessed using a generalized estimating equations model. We accounted for correlations among transfers by the same patient by an autoregressive (AR1) working correlation matrix in the model.

Results

870 residents had transfers between January 1, 2015 and June 30, 2016. Residents were mostly white (72.9%) and female (63.5%). The mean age at transfer was 77.9 years. 62 residents had 82 community transfers, and 808 residents had in-facility transfers. Residents with community transfers were younger (74.4 yrs vs 78.2 yrs, p=0.028), with lower prevalence of cognitive impairment (44.8% vs 70.3%, p< 0.001). When controlled for age, outcome of transfer, and code status, community transfers were significantly more likely to be for cardiovascular concerns. Nearly half of community transfers originated from dialysis centers.

Conclusion

Community transfers in our cohort occurred in younger patients with higher rates of cardiovascular disease and less cognitive impairment. With other variables controlled, these transfers were more likely to be for cardiovascular symptoms. Patients were less likely to have goals of care limiting interventions. This population may be more likely to leave the nursing home to receive care, including dialysis, and be at higher risk for a community transfer. Outside providers and facility staff need direct communication at the time of transfer, especially if the patient recently experienced a clinical change. Advance care planning remains a high priority, particularly given the risk of medical events for younger and medically complex residents.

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Kentucky Research Poster Finalist - Matthew McCurdy

Title

Optimization of Sliding Scale Insulin (SSI) to control blood glucose levels in type 2 Diabetes Mellitus, managed on non-ICU unit.

Authors

Matthew C. McCurdy, DO, Rodney Steff, DO, Samuel Hardcastle, MD, Aneisha Crossbourne, MD

Introduction

Diabetes management in the hospital setting is challenging. Hypoglycemia remains a common problem among admitted patients. Previous studies reported ~7-10% of hospital patients with at least one episode of hypoglycemia [1]. Goals of care should include prevention of both hyperglycemia and hypoglycemia. Scheduled insulin regimens are recommended for glycemic control in hospital setting. Sliding scale insulin is a reactive approach to control rise in blood glucose levels; it is not proactive strategy to prevent hyperglycemia episodes [7,8]. There are multiple treatment options available; however, glycemic control in hospital setting remains suboptimal, most often this is associated with the use of sliding scale insulin. Thus, use of SSI regimen alone is discouraged [5]; however, it is still being used widely. A randomized controlled trial have reported improved glycemic control and reduced hospital complications with use of basal-bolus regimen when compared to sliding scale insulin [4]. Based on RABBIT 2 trial, our project focused on prevention of both hyperglycemia and hypoglycemia.

Methods

Study design: retrospective/prospective quality improvement, single-center; N=169 (retrospective: n=73, prospective: n=98); mean follow-up: 11 months; intention-to-treat. Interventions: home p.o. diabetic medications held on admission; glycemic control (home insulin regimen was continued at the discretion of provider, accu-checks performed at appropriate intervals - ensure patient meal tray arrives following pre-meal insulin, SSI regimen used for correction only); and nursing education (visual indicator designating enrollment, patient meal tray delivered to desk verses directly to patient room, accu-check with SSI prior to eating). Primary outcome: number of patients with glycemic control (ADA guidelines) following intervention. Secondary outcomes: reduced length of stay (LOS) following intervention, regardless of admitting diagnosis. Inclusion criteria: history of diabetes type 2 for >3 months; age 18-80 years, diabetic treatment with diet alone or any combination of oral anti-hyperglycemic agents; admission to non-ICU floor. Exclusion criteria: hospitalization

Results

By adding strict, premeal blood glucose measurements to SSI protocol, we were able to show an absolute risk reduction (ARR) of 14.98% in the number of patient's with inadequate average blood glucose control. This is represented by a number needed to treat (NNT) of ~7 patients. Additionally, we were able to show an ARR of 13.08% in the number of blood glucose measurements with inadequate control. This corresponded to a NNT of ~8 blood glucose measurements. LOS was not reduced to clinically significant levels; however, intervention did show reduction of hospital stay by almost ~1 day.

Conclusion

Despite intervention, event rates for adverse events are still very high. For instance, event rate for patient's with inadequate avg blood glucose measurements for hospitalization remains at 62.76%. Also, the event rate for inadequate glycemic control on individual blood glucose measurements remains 75.85%. Sliding scale insulin alone has been identified as an ineffective method to maintain adequate, glycemic control in DM Type II patients during hospitalization. Even after optimization of sliding scale protocol, we were unable to show the same clinical benefit as was demonstrated in basal-bolus patient studies.

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Maryland Research Poster Finalist - LT Allison Bush, MD

Title

Colorectal Cancer Screening During COVID-19 Pandemic Endoscopy Restrictions: Utilization of Fecal Immunochemical Testing in Open Access Program

Authors

Allison Bush, MD, MPH; Brett Sadowski, MD, FACP; Priscilla Cullen, RN, MS; John McCarthy, MD; Jeffrey Laczek, MD, FACP, FACG; Adam Tritsch, MD

Introduction

At our institution we utilize an Open Access Colonoscopy (OAC) program that allows patients to self-refer for colorectal cancer (CRC) screening and polyp surveillance. This enables patients to obtain CRC screening without a primary care clinic visit, referral or a Gastroenterology clinic visit. Patients are offered the choice of optical colonoscopy or CT colonography (CTC) and the submission is the reviewed for appropriateness. Open access procedures account for approximately 20% of the endoscopic procedures performed at our institution. Following the directive to postpone elective procedures due to the COVID-19 pandemic, our department had 201 OAC patients whose CRC screening would be delayed. We utilized fecal immunochemical testing (FIT) to provide timely CRC screening to appropriate patients.

Methods

This was an observational study which assessed all patients previously scheduled for CRC screening through a pre-existing OAC program. The rates of FIT eligibility, patient acceptance, patient completion, and results were tracked.

Results

A physician reviewed the 201 OAC patient request forms for FIT eligibility. We found 143 patients that were eligible for FIT with the primary exclusions being a personal history of polyps or a significant family history. Our eligible OAC patients were proactively notified of delays and offered FIT by a nurse or Gastroenterology technician. Of the eligible patients, 101 (71%) accepted, 41 (29%) declined and 1 (1%) was unable to be reached. Eight months into our initiative, 72 eligible patients (72%) had completed screening with FIT with 8 positive tests and 64 negative tests. Patients with positive FITs received expedited diagnostic colonoscopy. Three advanced adenomas were detected with two patients requiring surgical excision. When

endoscopic capabilities resumed, 17 patients (11%) elected for and completed either a colonoscopy or CT colonography, while 12 patients (8%) did not complete screening.

Conclusion

FIT is a top tier, stool based, colorectal cancer screening test for average risk patients. FIT has been used for programmatic CRC screening by large healthcare systems due to low cost and ease of participation. Currently, FIT is not widely utilized in military medical systems where patients are often screened opportunistically after presenting for care via self-referral or referral from their primary care provider. Our findings suggest that the majority of patients may prioritize timely CRC screening over a specific modality of screening in a self-referral system. We propose that the utilization of FIT in an OAC programs can decrease wait times for screening, particularly during periods of limited resources. This also highlights the feasibility of FIT in a self-referral OAC program for primary care or gastroenterology clinics and health systems working to maintain access to care through streamlining of CRC screening by avoiding unnecessary primary care and gastroenterology clinic visits.

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Maryland Research Poster Finalist - Lisa Conte

Title

Recognizing Gender Parity in Military Medicine: An Analysis of Plenary Speakers and Awardees at Military ACP Chapter Meetings

Authors

CPT Lisa M. Conte, DO, COL Joshua D. Hartzell, MD, COL Cristin Mount, MD, CDR Mark Tschanz, DO, Col (ret.) Matthew Carroll, MD & Dora J. Stadler, MD

Introduction

Educational conferences within academic medicine have long been recognized as platforms to showcase physician excellence. Historically, there has been gender inequity in plenary speakers and award recipients at educational meetings despite increasing awareness of the need for gender parity. Most of the published data reviews civilian-based conferences, leaving military medicine unexplored. To address this deficiency, our group reviewed the American College of Physician (ACP) Army/Air Force (AF) and Navy regional meetings to examine recent rates of women plenary speakers and awardees to determine if similar trends are observed in American military medicine.

Methods

For this cross-sectional study, we identified plenary speakers and award recipients from the Army/AF and separate Navy regional meetings by reviewing publicly available agendas and summaries. Plenary speaker data was reviewed from 2016 to early 2020. Award recipient data was reviewed from 2010 to early 2020. For plenary speakers, individuals presenting pre-conference lectures, providing updates in subspecialties, or serving as breakout session moderators were excluded. For an award to be included, it must have a preset description and criteria for selection. Awards given for less than three years (either new or not awarded annually) and poster or podium competition winners were excluded. For all analyses, individuals' gender was determined based on first name and confirmed through internet searches of pronoun descriptors from professional websites. Gender comparisons were done using Fisher's exact test with statistical significance set at a two-tailed p-value of

Results

Women comprised 26% of Army/Air Force plenary speakers (n=31, range 22-30%) and 16% of Navy speakers (n= 38, range 0-25%). These rates were only statistically significant compared to

the Navy chapter breakdown. Lifetime achievement awardees were 21% women (n=39), with no difference across branches. Achievement in research awardees were 19% women (n=26). When separated by level, resident/fellow research awards were given to 31% women and zero to women attending physicians. This difference was not statistically significant. Women averaged 41% of the cumulative teaching and mentorship awards (n= 49). Additionally, 15% of exceptional medical student award winners were women (n=20).

Conclusion

The data of women speakers and awardees at our chosen military ACP conferences is similar to what has been seen in civilian medicine. Overall, more men than women were plenary speakers at these meetings, with significance noted in the Navy chapter selections. Men military physicians received awards more frequently than women. Women military physicians were more likely to be recognized for teaching and mentorship versus research and lifetime achievement. Recognition at a conference is not only an honor, but a potential stepping stone for career advancement and future endeavors. These trends may have consequences that could impact the strength of our military medical corps. Though our study was limited by small sample size, our data suggests that the military branches' ACP chapters should examine speaker and awardee selection processes to better promote gender equity.

Maryland Research Poster Finalist - Eric Moughames, MD

Title

OUTCOMES FOLLOWING THE USE OF INTRAVENOUS IMMUNOGLOBULIN (IVIG) IN THE TREATMENT OF HOSPITALIZED PATIENTS WITH RESPIRATORY INFECTIONS

Authors

Eric Moughames, Sevag Sakayan, Laura Prichett, Dawn Borst, Antoine Azar

Introduction

The primary objective of this study is to compare clinical and economic outcomes among immunocompromised patients hospitalized with viral respiratory infections who received IVIG to those who did not receive IVIG.

Methods

This is a double-center, retrospective cohort study of all immunocompromised patients who were hospitalized for acute respiratory viral infections between 2011 and 2016. Data on immune status, viral type, respiratory support, length of hospital stay (LOS), as well as death and readmission rates were extracted from medical records. We evaluated the effect of IVIG with regard to each of our outcomes (death, LOS in hospital and ICU, readmission) using a series of inverse probability of treatment weighted (IPTW) multiple regression analyses. Poisson models were employed to explore LOS and ICU-LOS, and logistic regression was used to evaluate death and hospital readmission outcomes. In each model, we controlled for age, sex, transplant status, lung disease, immunosuppression status, baseline respiratory support, antiviral medications, viral organism, immunodeficiency type, and a comorbidity index, which is an additive scale including hypertension, diabetes, heart disease, and renal/urinary tract disease.

Results

A total of 270 individual hospital admissions were analyzed; 97 patients received IVIG and 173 did not receive IVIG. There were no significant differences in gender between the two groups. Average age was 40.6 years, 50% were female, 73.7% were transplant patients of which 26.7% had a lung transplant, 22.6% had a bone marrow transplant (BMT), 8.9% had a kidney transplant. 31.8% of patients had a hematologic malignancy, and 2.3% had a primary immunodeficiency. The most common isolated respiratory virus was rhinovirus (50.7%),

followed by RSV (26.3%). Overall, the use of IVIG was significantly associated with a shorter ICU length of stay (ß=-0.534, P=0.012), and a longer hospital length of stay (ß=0.887, P

Conclusion

To our knowledge, this is the first retrospective cohort analysis evaluating the effect of IVIG in immunocompromised patients hospitalized with respiratory viral infections. The results suggest that immunocompromised patients receiving IVIG may have a shorter hospital and ICU LOS, especially if IVIG is provided within the first 48 hours of admission.

Maryland Research Poster Finalist - LCDR Sara Robinson, MC USN

Title

Stewardship Driven Reduction of Inappropriate Clostridioides difficile Testing at a Tertiary Military Medical Facility

Authors

Sara L. Robinson, Laura J. Gilbert, Sorana Raiciulescu, Roseanne A. Ressner

Introduction

C. difficile infection (CDI) is the leading hospital associated (HA) infection in an era of antibiotic overuse and highly-sensitive PCR-based diagnostics. PCR does not differentiate CDI versus colonization making over-reporting a concern. HA-CDI can impact hospital reimbursement, lead to unnecessary treatment, increase costs and length of stay. Our aim was to implement an intervention to target inappropriate C. difficile (CD) testing.

Methods

Two-tiered testing is not utilized at our facility. After provider education on guidelines for appropriate CD testing, prompts were introduced into the electronic medical record (EMR) for CD test orders. At order input, providers are prompted to answer “yes” or “no” to two questions; 1) receipt of stool softeners within the preceding 48 hours and 2) criteria of 3 loose stools within 24 hours. The test order was completed regardless of the responses to the prompted questions. Six-month post-intervention data was compared to the same timeframe during the year prior.

Results

A total of 334 and 236 tests were ordered in the pre- and post-intervention periods respectively. Accounting for inpatient bed days, the incidence reduction rate (IRR) was 0.75 (CI 0.63-0.89, $p < 0.001$) corresponding to an estimated hospital cost-savings of $12,250 based on testing costs alone. The majority of CD tests were ordered by IM providers, who also demonstrated the greatest reduction in tests ordered post-intervention. Patient characteristics were analyzed in the pre- and post-intervention periods finding significantly less positive CD tests ordered for patients with recurrent C. difficile during the post-intervention period (2 vs 7, $p = 0.04$). Patients who were transferred from another institution had significantly more positive CD tests in the post-intervention period (19 vs 7, $p = 0.02$).

Conclusion

In conclusion, the results demonstrate that implementing a systems-based EMR initiative led to a 25% reduction in CD testing with a cost-savings of $12,250 not accounting for potential associated cost savings. This project suggests that even without restricting order access, educational prompts integrated in the EMR can have meaningful impact on stewardship endeavors to help reduce inappropriate CD testing. Sustained effect would be an area to explore. Disclaimer: The views expressed in this abstract are those of the author and do not reflect the official policy of the Department of Army/Navy/Air Force, Department of Defense, or U.S. Government.

Maryland Research Poster Finalist - CPT Qing Wang, MC USA

Title

Validity of Home Sleep Apnea Testing in an Active Duty Military Population

Authors

Qing Wang, MD; Brian O'Reilly, DO

Introduction

In the Unites States military, untreated obstructive sleep apnea (OSA) can degrade readiness, worsen health and health outcomes, and increase costs associated with healthcare delivery. Currently, the gold standard for OSA diagnosis is in-laboratory polysomnogram (PSG). However, PSG testing is time-consuming, resource intensive, and has limited availability. Home sleep apnea testing (HSAT) has been shown to be an acceptable alternative to PSG for the diagnosis of OSA in the general population. However, there is limited data supporting HSAT use within the military population. In this study, we aim to examine the validity of HSAT for the diagnosis of OSA in an active duty military population.

Methods

This was a retrospective study of all active duty service members referred to a military sleep medicine clinic at Madigan Army Medical Center who completed both an HSAT (Watch-PAT 200) and subsequent PSG. An apnea-hypopnea index (AHI) = 5 derived from PSG was set as the reference standard for OSA diagnosis. The respiratory event index (REI) is the AHI derived from HSAT, and the oxygen desaturation index (ODI) is also calculated from the HSAT. Sensitivity (SN), specificity (SP), positive predictive value (PPV), negative predictive value (NPV), positive likelihood ratio (+LR), and negative likelihood ratio (-LR) for HSAT were analyzed.

Results

Data collection is ongoing at this time. Preliminary analysis of 180 patients (86% male, 14% female, mean age 35) show that the prevalence of OSA in this population is 60%. A diagnostic cutoff of REI = 5 results in SN=0.72, SP=0.62, PPV=74.3, NPV=59.0, +LR=1.89, and -LR=0.46. Increasing the HSAT diagnostic threshold yields improved SP but diminished SN. Overall, the most accurate diagnostic cutoff thresholds are an REI = 15 (SN=0.18, SP=0.99, PPV=95.5, NPV=43.6) and REI = 5 + ODI = 5 (SN=0.29, SP=0.99, PPV=97.1, NPV=47.1).

Conclusion

HSAT in active duty service members referred to a military sleep clinic can be an augment diagnostic with PSG especially when PSG is not readily available. However, general population HSAT diagnostic thresholds cannot be applied to our military population as it showed suboptimal performance at diagnostic cutoff of REI = 5 and must be adjusted to improve accuracy such as with REI = 15 or REI = 5 + ODI = 5. If HSAT results are below the recommended thresholds and clinical suspicion for OSA remains high, confirmatory PSG is still warranted. If there is clinical suspicion for OSA and supportive HSAT findings, treatment should be initiated in effort to rapidly alleviate patient symptoms. Using these adjusted HSAT thresholds in this sample represents an HSAT diagnostic capture rate of 18.7% which improves PSG capacity and potentially translates to $18,643.10 in savings using the 2019 Centers for Medicare & Medicaid Services Physician Fee Schedule as reference.

Massachusetts Research Poster Finalist - Parul Sarwal

Title

Efficacy of Direct-Acting Antivirals for Chronic Hepatitis C in Patients with Diabetes

Authors

Parul Sarwal, MD (Associate), Zeeshan Gulam Hussain, MD, Nitin Trivedi, MD, FACP (Fellow), George M. Abraham, MD, MPH, FACP, FIDSA (Fellow)

Introduction

Chronic hepatitis C virus (HCV) infection is the leading cause of chronic liver disease in the United States. HCV increases hepatic insulin resistance (IR), which is thought to increase the risk for developing type 2 diabetes mellitus (DM2). The presence of DM2 has been implicated in reducing the achievement of a sustained virologic response (SVR) in HCV patients treated with interferon-based therapy. However, a similar reduction in the SVR in patients with DM2 has not been observed so far with direct-acting antivirals (DAA). We aimed to determine whether the presence of DM2 influences the efficacy of DAAs in chronic HCV.

Methods

We conducted a retrospective cohort study on all patients treated with DAAs for chronic HCV at one practice site located in Central Massachusetts. Patients treated with DAAs between January 2014 through December 2019 were included. The study was approved by the institutional review board. Electronic medical records were accessed to collect data using the International Classification of Diseases version 10 (ICD-10) codes for HCV and DM2. Sustained virologic response was defined as undetectable HCV RNA in the serum after 12 weeks of treatment (SVR12) with DAAs. Statistical analyses were done using GraphPad® Prism. Independent two-sample t-tests were used to compare the variables in the two cohorts; paired t-tests to compare pre- and post-treatment hemoglobin A1c (HbA1c). A p-value of less than 0.05 was considered statistically significant.

Results

A total of 54 adults who completed treatment with DAAs were included of which 22 patients (40.7%) had DM2. 10 were females (18.5%) and 44 males (81.5%). 72.2% of patients in our cohort had HCV genotype 1. The majority of the patients received a sofosbuvir-based regimen (87%). Using DAA-based regimens, SVR12 was achieved in all patients in our cohort in whom follow-up data were available (74%). Patients with DM2 had greater hepatic fibrosis based on

FibroSure® compared to non-diabetic patients (p = 0.03). We observed a significant decrease in the mean HbA1c from 7.6% to 6.6% (p = 0.02) in patients with DM2 following HCV treatment.

Conclusion

In contrast to interferon-based regimens, our study did not identify an effect of DM2 on the efficacy of DAA-based therapy on SVR12. The attainment of SVR12 was observed in all our patients irrespective of the presence or absence of DM2. Small sample size from a single center with retrospective data collection limits the current study. A larger multi-center prospective trial is necessary to confirm our findings. However, our study gives hope to diabetic patients with HCV as their response to the newer antiviral therapies is unlikely to vary when compared to non-diabetics with similar attributes.

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Minnesota Research Poster Finalist - Siva-Kamal Guntupalli, MBBS

Title

Aerosol and Droplet Particle Generation during Forced Expiration for Peak Flow Testing

Authors

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Introduction

Peak flow meters are routinely used by asthmatic patients to assess airflow limitation.[1,2] To ensure proper technique, patients are often asked to perform peak flow maneuvers, which may result in aerosol generation, in the presence of physicians, nurses, respiratory therapists, and other healthcare workers, potentially increasing SARS-CoV-2 transmission risk during the ongoing COVID pandemic.[3-12] However, currently, there are no data available with respect to aerosol and droplet particle generation during peak flow testing to better understand the risk of this procedure. Thus, we aimed to develop a pragmatic approach to quantify small particle generation during peak flow testing with the goal of informing institutional infection control and mitigation strategies.

Methods

Five healthy volunteers performed peak flow maneuvers with the use of peak flow meters in a particle free laboratory space. Two particle counters continuously sampled the ambient air during the

procedure. One particle counter can detect ultrafine particles of sizes ranging from 0.02 – 1 micron (PTrak), while the second particle counter can detect particles of sizes 0.3, 0.5, 1.0, 2.0, 5.0, and 10 microns (Fluke). Aerosol particle generation during peak flow testing was compared between five different peak flow meters as well as to masked and unmasked tidal breathing. Baseline concentrations of the existing particles in a standard pulmonary function testing room were also measured for comparison with the testing environment.

Results

During peak flow testing, ultrafine mean particle concentrations were increased compared to masked (0.22±0.29 particles/cc) and unmasked (0.15±0.18 particles/cc) tidal breathing(p=0.01). Ultrafine particles (0.02-1 micron) were generated in higher proportions compared to particles of other sizes (>1 micron). Ultrafine mean particle concentration was lowest with the use of Respironics peak flow meter (1.25±0.47 particles/cc). Comparable ultrafine mean particle concentrations were observed with Philips (3.06±1.22), Clement Clarke (3.55±1.22), Respironics low range (3.50±1.52), and Monaghan (3.78±1.31) peak flow meters. However, there is no significant difference(p=0.23) between the ultrafine mean particle concentrations generated by the usage of different peak flow meters upon conducting statistical analysis using non-parametric Friedman test. Although ultrafine particle mean concentration increased during peak flow measurements, when compared to masked and unmasked tidal breathing, these differences were small and remained well below ambient PFT room ultrafine particle concentrations (89.9±8.95 particles/cc).

Conclusion

We have developed a pragmatic approach to quantify small particle generation during peak flow testing. However, at this time, it is difficult to arrive at any conclusion with certainty, with respect to the infectious risk posed by the small particles generated during peak flow testing due to limitations like not knowing the particle composition and other biological properties. Also, use of only healthy volunteers in this study limits the generalizability of the results. Nevertheless, this study findings suggest that small particles generated, while using peak flow meters, are very less when compared to the baseline existing particles found in the ambient clinical environment. Thus, this study adds to the information, on aerosol particle generation, that may aid in decision-making with respect to appropriate infection control strategies in the clinics while performing peak flow testing.

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Mississippi Research Poster Finalist - Himmat Singh Brar, MD

Title

Trends and Cost Analysis of Ammonia level testing in Hepatic Encephalopathy

Authors

Himmat S. Brar, Mary Moses Hitt, Pradeep Bathina

Introduction

Hepatic encephalopathy (HE) is a reversible neuropsychiatric complication of chronic liver disease (CLD) which manifests as a broad spectrum of neurological or psychiatric abnormalities ranging from subclinical alterations to coma. Ammonia is implicated as the culprit in HE. The sensitivity and specificity of venous ammonia level >55 µmol/L to diagnose HE is 47.2% and 78.3% respectively. The positive predictive value (PPV) and negative predictive value (NPV) of ammonia are 77.3% and 48.6% with an overall diagnostic accuracy of 59.3%. Studies have shown that the normalization of ammonia levels lag behind the resolution of neurological symptoms by 48 hours while some patients had higher ammonia levels even after the symptomatic resolution. The American Association for the Study of Liver Diseases (AASLD) guidelines state that the high blood ammonia levels do not add any diagnostic, staging or prognostic value in HE patients with CLD. Repeat testing of ammonia in hospitalized patients during the same encounter is also questionable. The purpose of this study was to evaluate the trends of ordering ammonia levels and estimate the cost burden at the University of Mississippi Medical Center (UMMC).

Methods

We performed a retrospective observational study of all patients who received the ammonia test at UMMC from January 3, 2013 to December 31, 2019. Patient Cohort Explorer was used to obtain de-identified patient data from EPIC. We obtained the number of encounters and patients on whom the ammonia test was performed. Coding and billing offices provided the cost per ammonia test.

Results

The ammonia test was ordered 14,748 times on 7,725 patients with age > 18 years during 7,957 encounters between 2013 and 2019. 4,533 (30.73%) ammonia test results were >60 µmol/L, the upper normal limit of normal at UMMC. 1326, 1652, 2020, 2221, 2224, 2057, 2208 tests were ordered respectively from 2013 to 2019. Of the 14,748 tests, 8,734 were ordered one

time during the admission while the other 6,014 were ordered as repeat tests during the same encounter. The test was ordered two times in 1030 encounters, three times in 327 encounters, four times in 167 encounters and five times in 91 encounters. 205 encounters had the test ordered more than 5 times with the highest being 30 times during one hospital stay. At the estimated self-pay cost of $188 per each ammonia test, the total cost was $2,772,624 for all ammonia tests between 2013 and 2019 and $1,130,632 was spent on repeat ammonia tests during the study period.

Conclusion

Hepatic Encephalopathy is a diagnosis of exclusion and is made on clinical grounds. The serum ammonia levels do not aid in the diagnosis, assessing the severity or determining the resolution of hepatic encephalopathy. Based on our study, we recommend following the current AASLD guidelines and not order the test and also avoid repeat testing in efforts to reduce diagnostic costs.

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Missouri Research Poster Finalist - Ojaswi Tomar

Title

Quality Improvement Strategies to Improve Pneumococcal Vaccination Rates in an Internal Medicine Teaching Continuity Clinic

Authors

Ojaswi Tomar MD, Alexandre Lacasse MD FACP MSc, Helen Kornblum MD, Paula Buchanan MPH PhD, Safa Farrag MD FACP CHCQM, Varun Halani MD

Introduction

Streptococcus pneumoniae infections are common, leading annually to more than 40,000 cases of invasive disease and 4000 deaths. Although pneumococcal vaccination is 50-80% effective in preventing death from invasive pneumococcal disease, only 1 out of 5 eligible people get vaccinated. The Center for Disease Control (CDC) encourages use of dedicated tools to increase vaccination rates. The objectives of our study was to improve Internal Medicine (IM) resident knowledge of pneumococcal vaccination (PV) indication and improve vaccination rate in our academic out-patient continuity clinic (CC) utilizing a CDC mobile application to identify eligible patients.

Methods

We used PDCA cycles to identify gaps and implement solutions to enhance PV education among IM residents and improve vaccination rates in the CC. Three major gaps were identified: 1. Lack of physician awareness: we conducted a pre and post questionnaire with a didactic session on PV indication and administration schedule in order to decrease knowledge deficits; 2. Electronic Health Record (EHR) failure to identify patients 19-64 years of age meeting indications for vaccination: we provided feedback to our EHR vendor and system corrections were implemented; 3. Complexity of current guidelines: we created simple flowcharts and algorithms for quick reference and located them in easily accessible areas in the CC. Every IM resident installed the CDC mobile application "Pneumorecs Vax Advisor" on their device to identify eligible patients due to receive the pneumococcal vaccine. Comparison between the EHR- and the mobile application-derived vaccination recommendation was performed. Thereafter, the IM residents were encouraged to vaccinate patients as identified by the mobile application. Weekly huddles were conducted with residents.

Results

All 753 patients enrolled in the CC were included. The CDC mobile application identified a higher number of PV eligible patients as compared to the EHR (49.7% vs 25.6%, p

Conclusion

The CDC mobile application "Pneumorecs Vax Advisor" improved PV eligible patient identification and led to a significant increase in vaccination rates in our IM residency program out-patient CC. Therefore, its usage in addition to our EHR has been strongly recommended. One limitation of this study is lack of our baseline pneumococcal vaccination rates from previous years. However, results from this project can now be used as baseline data in future studies.

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Nevada Research Poster Finalist - Daniel Antwi-Amoabeng

Title

Electrocardiographic features of COVID-19 patients

Authors

Antwi-Amoabeng, D. MD, MSc, Beutler, D.B. MD, Hanfy, A. MD, Awad, M. MD, Ghuman, J. MD, Ulanja, M.B. MD, MPH and Gullapalli, N. MD, MPH.

Introduction

Data suggest that cardiac arrhythmias may occur in a significant number of patients diagnosed with COVID-19 [1]. However, the specific type, frequency, and distribution of electrocardiographic (ECG) disturbances in COVID-19 remains to be fully elucidated. We aimed to evaluate COVID-19-associated electrocardiographic abnormalities. We also model the influence of ECG features on mortality in hospitalized patients.

Methods

Electrocardiograms (ECGs) were obtained from 89 COVID-19-positive patients from April to June 2020 in our hospital. Cardiologist-confirmed ECG reports were documented. Specifically, the mean PR interval, QRS duration, and corrected QT interval abstracted. Patient characteristics – including sex, age, and in-hospital mortality – were recorded. Fisher's exact test was used to compare the ECG features of patients who died during the hospitalization with those who survived. The influence of ECG features on mortality was assessed with multivariable regression analysis.

Results

A-Fib, atrial flutter, and ST-segment depression were predictive of mortality. In addition, the mean ventricular rate was higher among patients who died as compared to those who survived. The use of therapeutic anticoagulation was associated with reduced odds of death; however, this association did not reach statistical significance.

Conclusion

There is an increased incidence and odds of mortality among COVID-19 with AFib or ST-segment elevation. Longitudinal studies are warranted to assess the prognosis of COVID-19-associated arrhythmias.

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New Mexico Research Poster Finalist - Zachary Pek, MD

Title

Evaluating the Use of Racial Identifiers in Case Reports in a Medical Journal

Authors

Zachary Pek MD Diamone Gathers MD Eileen Barrett MD, MPH, SFHM, MACP

Introduction

Race and racism are social determinants of health resulting in marginalized groups often experiencing worse health outcomes. These racial differences are often due to physician bias as well as biased processes. To mitigate this, it is recommended that clinicians avoid reifying racial differences as biological differences. This study describes the use of racial identifiers and potentially stigmatizing language in a medical journal.

Methods

We reviewed adult case reports in the Journal of Hospital Medicine between 2006-2018 using PubMed searches yielding 234 results. 82 were excluded due to lack of case report formatting or international location and 152 were reviewed using an advanced search function for: born, birth, White, Caucasian, Black, African, Asian, Latino, Hispanic, American, Chinese, Japanese, Mexican, Korean, alcohol, tobacco, cigarette, drug, cocaine, heroin, amphetamine, marijuana, cannabis, MDMA, ecstasy, opiate, opioid, abuse, adherence, compliance, obese, overweight. Search results were reviewed by two authors (DG, ZP), and the decision was made a posteriori to consider mention of the above search terms to connote substance misuse, substance use disorders, and stigmatized medical diagnoses, excepting alcohol use not meeting criteria for an alcohol use disorder. Frequencies of racial specification were calculated, as were the presence or absence of additional potentially stigmatizing language.

Results

Of 152 case reports, 34 (22.4%) included race. Of these, 12 (35.3%) were Black/African American, 11 (32.4%) White/Caucasian, 7 (20.6%) Hispanic, and 4 (11.8%) Asian. There was over-representation of racial specification for Black/African Americans (35.3% vs. 13.4%, $p < .001$), but not for other races. Race was more often specified in cases where potentially stigmatizing language was used (12/35 versus 22/118 , 35.3% vs. 18.6%, $p = 0.040$).

Conclusion

These data suggest case reports disproportionately identify Black/African American patients when mentioning race, and that race is more often mentioned concurrently with stigmatized diagnoses and behaviors, possibly worsening clinician biases and health inequities. Strategies for reducing this include robust peer review and providing prospective authors guidance on avoiding the use of racial identifiers and stigmatizing language in medical scholarship. Limitations of these findings include the a posterori classification of potentially stigmatizing terms. Future research can identify how often racial specification occurs in other medical scholarship, with a priori identification of language that is stigmatizing with incorporation of concepts from current literature on the subject.

New York Research Poster Finalist - Neil Khoury

Title

GASTROINTESTINAL COMPLAINTS PREDICT IMPROVED SURVIVAL FOR COVID-19 PATIENTS. LIVER INJURY, HOWEVER, MAY BE A RISK FOR MORTALITY

Authors

Neil Khoury, MD, Karthik Chandrasekaran, MD, Ezana Bekele, MD, William M. Briggs, PhD, Alexander Ivanov, MD, Daniel S. Jamorabo, MD, Smruti R. Mohanty, MD, Benjamin D. Renelus, MD

Introduction

There have been over 200,000 cases of Coronavirus disease 2019 (COVID-19), which have been responsible for close to 23,000 deaths in New York City alone. Gastrointestinal symptoms and liver injury have been reported in COVID-19, but their potential association with survival has not been explored in large studies. Our goals were to investigate whether or not presence of gastrointestinal (GI) symptoms and acute liver injury impacted survival to discharge in COVID-19 patients.

Methods

We carried out a single-center retrospective cohort study of COVID-19 patients hospitalized at NewYork-Presbyterian Brooklyn Methodist Hospital from 3/10/20 through 4/13/20. We analyzed 734 patients admitted with confirmed COVID-19, all of whom were discharged or expired during study period. We used Chi-square and t-tests to assess survival based on categorical and continuous variables, respectively. Gastrointestinal complaints documented on arrival included nausea, vomiting, diarrhea, or abdominal pain. Liver injury was defined as an ALT >150 U/L at any point during hospitalization. We used predictive models to corroborate our findings.

Results

A total of 231/734 patients (31.5%) presented with GI complaints and 114/734 (15.5%) developed peak alanine transferase levels (ALT) >150 U/L during hospitalization. GI symptoms were significantly associated with improved survival to discharge when compared to those without symptoms (73.2% vs 65.2%; p=0.04). ALT >150 U/L was associated with reduced survival to discharge (47.4% vs 71.4%; p 150 U/L portended lower survival at all ages within our cohort.

Conclusion

Patients with GI symptoms documented on arrival were found to have a higher probability of survival to discharge than those without GI symptoms at all, while patients with liver injury had a lower probability of survival than those without liver injury. We ascribe these findings to a potential fecal-oral route of transmission that leads to milder disease course compared to patients whose respiratory system is primarily targeted. Future studies are required to elucidate the possible fecal-oral transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and the utility of liver enzymes in predicting in-hospital mortality among COVID-19 patients.

New York Research Poster Finalist - Kulachanya Suwanwongse, MD

Title

Why sex make a difference in HIV clinical courses? Bioinformatics analysis of differential expressed gene in male and female with HIV disease

Authors

Kulachanya Suwanwongse MD., Nehad Shabarek MD.

Introduction

Gender disparities in clinical courses of HIV infection have been evaluated in several studies. However, the mechanism contributing to this gender difference has not yet been elucidated. Herein, we conducted bioinformatics analysis of differentially expressed genes (DEGs) in women and men with HIV to better understand the sex-based differences in HIV pathogenesis.

Methods

Data Acquisition We searched Gene Expression Omnibus (GEO) database from inception to December 2019 using keywords: “HIV” “AIDS” “Human immunodeficiency virus” and “Acquired immunodeficiency disease”. The inclusion criteria were 1. gene expression profiling of mRNA from peripheral blood 2. Sample are labeled with gender 3. Sufficient microarray data to analyze. The exclusion criteria were in-vitro culture of sample cells. Data Processing The retrieving dataset was analyzed using the GEO2R platform. T-test was done to compare gene expression between females and males with HIV. A P-value of 0.03 was used as a threshold for statistical significance. Gene ontology functional enrichment pathway analyses We used the Database for Annotation, Visualization, and Integrated Discovery (DAVID) platform to systematical extraction of biological features and gene ontology (GO) analysis of retrieved gene lists.

Results

Microarray Data Our search strategy retrieved one gene expression profiling dataset: GSE 140713, composed of 40 males and 10 females with HIV1 infected samples. (Platform: Agilent-014850 Whole Human Genome Microarray 4x44K G4112F). Identification of DEGs 19 DEGs were identified. 12 were down-regulated in HIV females. Gene ontology functional enrichment pathway analyses DEGs were substantially enriched in the pathways as follow: Biological process (BP) - Translational initiation and Regulation of gene expression - RNA secondary

structure unwinding - Chromosome segregation - Oxidation-reduction Cellular component (CC) - Cytosolic small ribosomal subunit and Nucleus Molecular function (MF) - Histone demethylase activity - ATP and rRNA binding - Translation initiation factor activity - ATP-dependent RNA helicase activity Up-regulated genes in female - Positive regulation of gene expression - ATP binding Down-regulated genes in female - Translational initiation - Regulation of gene expression - Cytosolic small ribosomal subunit - Histone demethylase activity - rRNA binding. Identification of candidate DEGs 2 DEGs have studies reported their association to the HIV mechanism: DDX3X (20 studies) and PDS5 (1 study). The DEAD-box RNA helicase 3X (DDX3X) is an ATPase-dependent RNA helicase that requires for Rev-dependent RNA export of incompletely spliced HIV-1 mRNA into human cytoplasm. We proposed DDX3X (t 5.3, p 0.0037) is most likely responsible for the gender inequalities because 1. DDX3X is needed for HIV1 life cycle. 2. Previous studies confirmed a positive correlation between DDX3X expression and HIV1 replication ratio. 3. We found an up-regulated DDX3X in HIV females corresponded to the fact that women progress to AIDS faster. 4. GO analysis showed female up-regulated genes enriched in positive regulation of the gene expression.

Conclusion

Changes in DDX3X expression may associate with sex-based differences in HIV prognosis. Studies investigated molecules targeting DDX3X may help developing treatment as current drugs mainly target viral components posed the risk of viral mutation causing resistance as opposed to DDX3X, which is a cellular molecule so less likely to be mutated.

North Carolina Research Poster Finalist - Kunjan Udani

Title

A Retrospective Study of Admission NT-proBNP Levels as a Predictor of Readmission Rate, Length of Stay, and Mortality

Authors

Kunjan Udani MD, Dveet Patel MD, Andrew Mangano DO FACP

Introduction

Serum levels of pro-B-type natriuretic peptide (BNP) and N-terminal (NT) proBNP are measured at admission to assess likelihood of acutely decompensated heart failure (ADHF). Pro-BNP, released by myocardium due to cardiac wall distention, is cleaved into the active BNP and inactive NT-proBNP forms. Elevated NT-proBNP levels on initial presentation are a reliable marker of ADHF. However, the prognostic significance of NT-proBNP levels measured on admission remains unknown. With better understanding of how admitting NT-proBNP levels impacts readmission rates, length of stay, and mortality, further prospective studies with specific interventions can be developed to reduce all-cause readmissions, shorten length of stay, and reduce mortality.

Methods

In this retrospective study, we evaluated heart failure with reduced ejection fraction (HFrEF) admissions from 2017-2018 with a focus on 30, 60, and 90-day all-cause readmissions, length of stay (LOS), and in-hospital mortality rate, that are predicted by NT-proBNP levels measured on admission. Using the HCA Healthcare Enterprise Data Warehouse, adult patients age 18 to 75 were selected using admission ICD-10 codes for HFrEF. Dialysis patients were excluded. Our search of 90 hospitals yielded 21,445 patients who were stratified into quartiles depending on their admission NT-proBNP levels: group 1 (10,500 pg/ml).

Results

Readmission Rates: The 60-day all cause readmission was significantly (p=0.047) higher in group 4 (NT-proBNP >10,500) compared to group 1 (adjusted odds ratio (OR) = 1.116, p = 0.013) or group 2 (adjusted OR = 1.111, p = 0.014). The 90-day all cause readmission for group 4 was also significantly higher when compared to group 1 (adjusted OR = 1.105, p = 0.021). Length of Stay: Elevated NT-proBNP concentrations were associated with a significantly longer LOS (p

Conclusion

Based on the analysis of n = 21,445 cases, admitting NT-proBNP levels were associated with significantly higher 60-day all-cause readmission, longer LOS, and increased mortality. These findings suggest that measuring NT-proBNP levels at admission may provide an indication of patient outcomes. Prospective studies with targeted strategies can be developed to reduce readmissions, shorten LOS, and reduced mortality based on admission NT-proBNP levels.

Ohio Research Poster Finalist - Brant Bickford

Title

Lowering Infection Risk in Patients Treated with DMARD Medications

Authors

1. Brant Bickford, DO Capt, USAF Wright Patterson / Wright State University Internal Medicine Residency 2. Joshua Scott DO Lt. Col, USAF Chief of Rheumatology Wright Patterson / Wright State University Internal Medicine Residency

Introduction

Disease Modifying Anti-Rheumatic Drugs (DMARDs) medications all carry risk of infection. Rheumatology patients are routinely educated regarding this risk during initiation of medication management. Patients are typically counselled to discontinue / withhold immunosuppressive medications with active infection. Efforts to mitigate this risk are routinely employed to minimize the risk of infection complicating therapy.

Methods

A single site rheumatology clinic implemented an updated written informed consent document prior to initiation of DMARDs in effort to improve patient compliance in discontinuing medications during infection. The consent document was updated to a single page document with emphasis placed on when to withhold therapy. 74 patient charts were reviewed from 01/01/2016 through 03/31/2020. The updated consent document was implemented on 01/15/2019. The patient population included patients on DMARD therapy with a documented infection treated in the outpatient setting. Data collected included patient demographics, rheumatologic diagnosis, DMARD therapy, and if medication was discontinued at the time of infection. The goal of this project was to increase patient compliance with lowering infection risk through improved patient education.

Results

Prior to initiation of the updated consent document, there were 41 patients who presented to rheumatology clinic with active infection. 19 of 41 (46.3%) patients had withheld their DMARD therapy during infection. After initiation of an updated consent document, 20 of 24 (83.3%) had temporarily discontinued DMARD therapy as emphasized with the new consent. Implementation of the consent document with a focus on education about infection resulted in

a 37% improvement of compliance with guidance of DMARD management in the setting of active infection. This finding was statistically significant with a p-value of 0.003.

Conclusion

DMARD medications carry significant infection risk and any clinical practice that can decrease complications of infection are warranted. We present the experience of a single rheumatology clinic utilizing a concise written consent document to improve patient understanding of medication risk and reduce risk of DMARD associated infection.

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Ohio Research Poster Finalist - Muhammad Soofi, MD

Title

Hypertension Control in a High Risk Population: Multidisciplinary QI Project

Authors

Muhammad Soofi MD, Nneoma Onuorah MBBS, John Hughes MD

Introduction

Hypertension (HTN) affects 1 in 3 Americans and is often poorly controlled, with 52% of hypertensive Medicare patients having uncontrolled hypertension (>140/90). Controlling HTN remains one of the most effective ways to reduce risk for cardiac disease and stroke. We report the outcomes of a two-year QI project that involved close multidisciplinary follow-up of uncontrolled HTN patients in a federally qualified, resident run clinic with the goal of increasing the percentage of patients with controlled HTN by 50% over 24 months.

Methods

All patients presenting to the Five Rivers Health Center (FRHC; Dayton, Ohio) with diagnosed HTN were followed serially. Resident physicians were instructed to provide HTN education, prescribe antihypertensives and refer all patients with uncontrolled HTN (>140/90) for a two-week multidisciplinary visit for BP monitoring and further medication titration. Patients were provided with BP monitor logs with remote access monitoring. Patients with persistently elevated blood pressures were referred for repeat two week visits until control was achieved. The percentage of patients scheduled for two week follow-up visit and that achieved blood pressure control were calculated every month.

Results

An average of 342 HTN patients were seen per month from January 2018 to January 2020; 53% were African-American and 51% males. Prior to the intervention, 10% of HTN patients had close follow-up appointments and 42% had well controlled HTN. After the intervention, 72% of patients had close follow-up appointments (620% increase, p-value

Conclusion

Implementation of a two-year multidisciplinary QI project resulted in a statistically significant increase in the follow-up of HTN patients (10% pre vs 72% post) and in the percentage of HTN

control (42% pre vs 57% post). In patients that gained BP control, participation in close multidisciplinary follow-up yielded faster control at six months. This QI project allowed for the highest level of BP control ever seen at FRHC, but ultimately fell short of the goal of increasing BP control by 50% in 24 months. Our next steps include involving pharmacy and social work to address the social determinants of healthcare. This QI project illustrates the power of close multidisciplinary follow-up in increasing hypertension control in a high risk population served by a federally qualified, resident run clinic.

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Oklahoma Research Poster Finalist - Veena Gujju

Title

Reducing Unnecessary CBC Ordering Through Education and Standardization: A Quality Improvement Initiative

Authors

Veena Gujju, Ghayur Saeed, Valerie Kastens, Mahmood Khattab, Mahum Nadeem, Stephen Pilkington, Samiksha Gupta, Savannah Gustad, Ahmer Asif, Sara Habib, Caleb St. Laurent, Sixia Chen, Allie Archer Wells, Mohamad Khattab

Introduction

The Society of Hospital Medicine's Choosing Wisely campaign recommends against ordering repetitive complete blood counts (CBC) in the face of clinical and lab stability. Internal medicine inpatients often receive daily CBCs, resulting in increased, unnecessary costs. We aimed to reduce the amount of CBCs ordered on a medicine inpatient teaching service by 20% over a span of 60 days.

Methods

Consecutive patients admitted to one academic medicine team were included. We excluded patients who died and patients who remained inpatient at the end of the study period. We performed 2 Plan-Do-Study-Act (PDSA) cycles. Baseline data on CBC ordering patterns was collected for 9 days. An Ishikawa (fishbone) diagram was utilized to develop ideas for interventions. On day 10, we provided an educational lecture outlining costs and indications for CBC ordering. On day 37, while repeating intervention 1, we also provided a simplified algorithm to help providers determine the need for a daily CBC. Providers were unaware that ordering patterns were being monitored. The primary outcome measure was number of CBCs ordered per number of patients per day. The secondary outcome measure was net cost saved. The process measure was a resident survey regarding the utilization frequency of the intervention. The balancing measure was emergency department (ED) visits/readmissions within 7 days of discharge. Data on CBC ordering patterns was obtained by chart review. A statistical process control U chart was generated to assess for special cause variation. Using R software version 3.5.2, a two sample t-test and fisher's exact test were done to assess for differences between groups.

Results

One-hundred-ten patients were included over a 62-day period. Baseline and post-interventions mean CBCs/patient/day were 0.953 and 0.671 respectively, an overall reduction in CBC ordering of 28.2%. Special cause variation was observed after institution of both interventions. The difference between the pre-intervention group and both interventions combined was significant (p = 0.00004, 95% CI 0.16 – 0.40). Sixty-six percent of residents selected “most days” when asked about how often the information provided was used. ED visits/readmissions within 7 days were similar between the groups (p=1.000, 95% CI 0.06 - 13.4). With a cost of $223 per CBC, return on investment was $43,482.

Conclusion

CBC ordering patterns and costs were significantly improved through education and providing a decision support tool in the form of a simplified algorithm, without increasing 7-day ED visits/readmissions. The algorithm, far less detailed than that previously published, still resulted in significant improvement without unintended consequences, making for a safe and potentially sustainable intervention. Although these interventions have been studied individually before, our work is novel. We demonstrated that multiple interventions in conjunction were required to significantly improve appropriate CBC ordering patterns. Limitations include a small sample size with short follow up limited to a single team. Further study is required to assess the sustainability of our interventions as well as their generalizability to other medicine teams.

Oklahoma Research Poster Finalist - Ali Jafry, MBBS MD

Title

Safety and Feasibility of Same-Day Discharge for Catheter Ablation in Atrial Fibrillation: A Systematic Review and Meta-Analysis

Authors

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Introduction

Though a same-day discharge protocol is commonplace in clinical practice for percutaneous coronary intervention, ablations for other supraventricular arrhythmias and even pacemaker/defibrillator placement, atrial fibrillation (AF) ablation presents a novel problem owing to the prolonged and more complicated nature of the procedure. [1] In this review, we evaluate the safety and feasibility of same-day discharge in patients undergoing atrial fibrillation ablation procedures.

Methods

A systematic search was conducted from inception until February, 2021 by 2 independent researchers in MEDLINE, EMBASE, Scopus and Web of Science for studies comparing the safety of same-day discharge to overnight stay or hospitalization for AF ablation. No randomized controlled trials met the inclusion criteria, therefore observational cohort studies were included in the analysis. Mantel-Haenszel risk ratios (random/fixed effects model) were calculated with 95% confidence intervals (CI) and for heterogeneity I2 statistics were reported.

Results

A total of 7 observational studies with 10,052 patients were included. There was a statistically significant trend towards greater post-procedural pericardial effusion/cardiac tamponade (RR: 0.13; 95% CI: 0.04-0.39; p=0.0003) and non-statistically significant trends towards more vascular complications (RR: 0.62; 95% CI: 0.08-4.65; p=0.64) and recurrent arrhythmias (RR: 0.80; 95% CI: 0.59-1.09; p=0.16) associated with the admission group. This was to be expected as post-procedural vascular complications and pericardial effusion/tamponade precluded safe discharge and required admission. More importantly, there were no differences between same-day discharge vs admission in other outcomes including 30-day hospital readmissions/ER visits (RR: 1.04; 95% CI: 0.45-2.37; p=0.93), TIA/stroke/thromboembolism (RR: 0.92; 95% CI: 0.36-2.36; p=0.86), phrenic nerve palsy (RR: 1.08; 95% CI: 0.25-4.74; p=0.92) and all-cause mortality (RR: 1.08; 95% CI: 0.25-4.74; p=0.92; I2=0%; p=0.38).

Conclusion

Same-day discharge after AF ablation is safe and has the potential to be a cost-effective strategy that will alleviate healthcare utilization and costs. [2] Randomized controlled trials are needed to validate these results.

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Oklahoma Research Poster Finalist - Mark Street

Title

Improving Utilization of an Internal Medicine Clinic Patient Portal: A Quality Improvement Initiative

Authors

Mark Street MD, Stuart Jack MD, Kory Drake DO, Ryan Yarnall MD, Amritanshu Singh DO, Kaleb Vaughn DO, Lindsey Gusman RN, Gina Mullins RN, Vicki Minton RN, Brent Beasley MD, Audrey Corbett MD

Introduction

The University of Oklahoma-Tulsa Internal Medicine Clinic utilizes an electronic patient portal to improve communication and help achieve the healthcare triple aim of reducing costs, enhancing patient experience, and improving health. Our prior quality improvement initiative successfully improved patient portal enrollment and utilization. Our goal for the continued project was to increase the use of secure portal messaging and decrease the patient call-to-visit ratio. The clinic averages ~1800 visits per month and receives ~3.3 calls per visit with each call averaging ~10 minutes, resulting in significant use of clinic resources. Specifically, our aim was to increase utilization of portal secure messaging (both patient to provider and patient to clinical staff) by 10% and decrease patient call-to-visit ratio by 10% by June 2020.

Methods

To affect and measure changes, the Plan-Do-Study-Act (PDSA) model was used. Three PDSA cycles were planned and implemented, as well as one unexpected PDSA cycle. The monthly number of secure portal messages and patient call-to-visit ratios (total number of calls to the clinic divided by the number of visits) were measured. These data points were plotted on XmR charts to determine significant trends and averages. PDSA #1: Laminated flyers containing instructions for portal registration were placed at the check-in desk. PDSA #2: Resident physicians were educated in utilizing the portal for communication with patients. PDSA #3: Information about enrolling and portal utilization were included at the top of the clinical visit summary document. PDSA #4: The widespread medical and social effects of COVID-19 began to affect our clinic.

Results

After the first three PDSA cycles, our clinic's average call-to-visit ratio decreased 14% (from 3.37 to 2.89). This averaged to 864 fewer calls, resulting in ~144 call hours saved. Patient-to-provider messaging increased 27.3% (from 86.6 to 119 messages/month) and patient-to-clinic messaging increased by 38% (from 104.8 to 170.1). Of the planned PDSA cycles, advertising with flyers appeared to have the greatest change. By April, COVID-19 resulted in increased messages to clinical staff and a significant increase in the call-to-visit ratio--likely from the drastic decrease of in-person clinic appointments and increased calls to the clinic.

Conclusion

Data prior to COVID-19 showed that portal utilization improved through education of medical staff and basic marketing approaches incorporated into the clinical workflow. COVID-19 was an industry disruptor that both demonstrated the need for enhanced clinical communication, but also affected our prior in-person PDSA cycles. Additional data regarding clinical time spent answering portal messages and effectiveness of portal communication will need to be collected. Increased portal utilization can continue to help with improvements in healthcare cost, quality, and effectiveness--and hopefully continued PDSA cycles can aid in developing new strategies to effectively communicate with our patients during this unprecedented time.

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Oregon Research Poster Finalist - Simone E Dekker, MD PhD

Title

The pain of PCA pumps: Patient-controlled analgesia error in EMR

Authors

Simone E. Dekker M.D., Ph.D., Pratyusha Banik, M.D., Hirofumi Yoshida, M.D., Jeffrey Gold, M.D., Alan J. Hunter M.D.

Introduction

Patient-controlled analgesia (PCA) is an effective and widely used method to treat pain. Despite the benefits, there are inherent risks of using pumps with high-risk medications such as opiates. Here we discuss an analysis of a case where we identified a PCA-related "latent" error in the electronic medical record (EMR), where the documentation of the daily ("24-hour") and sub-total opiate doses were inaccurate.

Methods

Upon discovering and reporting a PCA-related EMR error, we performed a retrospective review of PCA EMR documentation in this and other cases. Nurses, pharmacists, physicians, and patient safety managers were interviewed to better understand the events that led to the error. Subsequently we created a process map and sequence of events that led to the error. We developed a fishbone diagram and conducted a root cause analysis. A literature review of PCA related errors was performed, and we worked with stakeholders to develop corrective actions.

Results

We identified five process categories that contributed to the error: (1) EMR; (2) PCA pump equipment; (3) physician factors; (4) health care environment; and (5) nursing staff workflow. Additionally, we identified the following root causes; First, there was no method or process on the EMR nurse documentation sheet to indicate if PCA pump had been cleared, resulting in variable documentation, and thus difficulty for providers to know whether the 'daily total' doses were accurate. Second, there was a lack of formal nurse training and poor access to policies regarding PCA documentation, leading to inconsistencies in documentation, again leading to ambiguity of PCA dose given. Third, there was a lack of physician training on how to use the opioid & analgesia section in Epic, which contributed to miscalculation in cumulative PCA dose. We identified two corrective actions, the first of which has already been successfully incorporated: (1) provide training on the Epic opioid & analgesia section during intern

orientation; and (2) collaborate with the institutional opioid committee to make changes in Epic, such as adding a hard stop during the nursing documentation workflow to indicate if the PCA pump has been cleared or not.

Conclusion

Opiates are high-risk medications that have a narrow therapeutic window, such that errors may prove fatal. Delivery of opiates via the PCA route offers an appealing option for providers and patients, yet this complex process requires multiple steps to assure documentation is complete and accurate. We are currently analyzing the institution's patient safety incident archive to examine whether similar errors have previously occurred, and aim to perform a prospective study to better understand the scale of this issue. We hope our analysis will reduce EMR-related errors in PCA documentation and improve patient safety and overall quality of care, and stimulate future EMR interventions.

Oregon Research Poster Finalist - Vanessa Nwaokocha

Title

ELECT: Evaluation of Liver Enzymes in COVID-19 positive Tests

Authors

Vanessa Nwaokocha MD, Brian Kendall MD, Yelena Rozenfeld MPH

Introduction

COVID-19 is a novel virus known to cause a primarily respiratory infection with a high morbidity and morality burden. There have been reports of elevated liver function enzymes in COVID-19 patients however the significance is unclear. The objective of this study was to determine if elevated liver function enzymes in hospitalized COVID-19 positive patients on the day of admission is associated with increased length of hospital stay and mortality within 30 days.

Methods

This study used a retrospective cross-sectional analytic study design. To achieve the study objectives, the electronic data pull of patients meeting inclusion and exclusion criteria within the Providence health system in Oregon and California were generated from the enterprise data warehouse. The inclusion criteria included patients who were >18 years old, SARS-CoV 2 positive, and admitted to a hospital within the Providence health system in California and Oregon. The exclusion criteria were known liver disease, end stage renal disease, and elevated liver enzymes of undetermined cause prior to admission, which had not been documented to have resolved. Once patients who met both criteria were identified, alkaline phosphatase (ALP), aspartate aminotransferase (AST) and alanine transaminase (ALT) on the day of admission was collected. If these values were not available on the day of admission, the first set of ALP, AST and ALT obtained during that admission was collected and included in the data set. Other data points were also collected including gender, date of birth, race or ethnicity, and age. A chi-square test was used to compare categorical variables. ANOVA or its non-parametric alternative was used to assess between the group differences for length of stay. Meanwhile 30-day all-cause mortality was assessed with the Kaplan–Meier method and log-rank test with the survival curves are estimated for each group using the Kaplan-Meier method and compared statistically using the log rank test. All reported p-values will be two-sided and a p-value of

Results

The mean length stay (LOS) was similar between ALT group 1 and 2 however higher in group 3 but this was not statistically significant. The higher the AST, the longer the LOS which was statistically significant. ALT Group 1, who had normal liver function, had the highest 30-day mortality which was statistically significant however no clear pattern between the groups. The higher the AST or ALP level, the more likely a patient will die within 30 days however this was not statistically significant

Conclusion

The hypothesis that the more elevated liver enzymes are on the day of admission for a COVID positive patient, the longer the hospital stay and likelihood to die within 30 days is not completely supported by this data. It does however show that the higher the AST level on the day of admission, the longer the hospital stay but AST can be elevated as a result of a number of factors that were not explored in this study.

Oregon Research Poster Finalist - Rajat Thawani

Title

Resident attitudes and practice towards ordering laboratory tests at a teaching hospital

Authors

Rajat Thawani, Steve Obanor, Susan Lin, Joseph Gotesman, Aviva Tobin-Hess, Lana Glantz, Lawrence Wolf, Melvyn Hecht

Introduction

The healthcare costs in the United States are increasing, which is a cause of concern to patients, governments, health economists, and medical professionals around the world. The United States has the highest health care expenses, with health care expenditures in 2015 approaching 18% of gross domestic product. High-value, cost-conscious care aims to assess the benefits, harms and costs of interventions, and subsequently offer care that adds value. With the advances in medicine, the difficulty in reducing health care costs has been proven difficult, but increase in costs is associated with inaccessibility to healthcare, and difficult sustainability. Many interventions have been targeted towards physicians as a mean to reduce health care waste, while maintaining quality care. Studies have shown that laboratory testing is overused, and is known to add a considerable burden to healthcare costs, without adding too much value. Apart from the cost of the test, they increase personnel workload, can cause iatrogenic anemia, implicate further testing for spurious testing, further adding to costs, and lead to decreased patient satisfaction. Residents are front line in delivering health care and an intervention at their stage would be more effective, and early in their career would help them carry the principle throughout their career, and transmit to future generation of doctors when they become leaders in healthcare. Our study is the first step in a long term implementation plan for resident education and intervention to reduce ordering daily labs at the hospital.

Methods

We conducted an online survey that was circulated to resident and fellows asking about their lab ordering practice - frequency of ordering unnecessary lab tests, and reasoning behind it. We also asked them if they believe if the decreasing laboratory burden would improve resident wellness.

Results

We had 139 responses, out of which 66 (47%) were from the Department of Internal Medicine. 115 (82.7%) believed that they had definitely ordered unnecessary tests, out of which 82 thought that they ordered these tests daily or multiple times a week. Surprisingly, only 22.3% (31/139) felt that they had some to total control on ordering these labs. On further asking about reasoning behind ordering these labs, 68.3% (95/139) believed that it was out of habit and institutional culture, followed by 49.6% (69/139) residents who were worried about uncomfortable interaction with the attending, followed by 46.8% (65/139) were uncomfortable when they did not know the numbers. Irrespective of their practices, 81.3% believed that unnecessary labs add to their workload, and 94.2% believed that ordering only necessary labs would be a better use of their time.

Conclusion

Residents are aware that they order unnecessary laboratory tests multiple times a week. The most common reasons include culture, lack of education about utilization, and fear of uncomfortable interaction with the attending. Excess, irresponsible lab ordering increases workload as per residents, and they would rather think about the lab ordering. We plan to take these reasons into account, and educate residents, follow a bottom up approach in education, and measure the change made in the number of labs ordered.

Pennsylvania Research Poster Finalist - Neha Mehrotra, MBBS

Title

Diabetes Care and Education Specialists: Opportunities to Improve Glycemia in Disadvantaged Communities

Authors

Neha Mehrotra, MD; Dianxu Ren, PhD, Carla DeJesus, MS, RD, LDN, CDE; Linda Siminerio, RN, PhD, CDE; Sann Yu Mon, MD, MPH, F.A.C.E;

Introduction

The number of people with diabetes mellitus (DM) continues to increase, with an inverse proportion of providers and specialists available to provide comprehensive care and support. This is especially troublesome for those at highest risk in underserved areas. Diabetes self-management education and support (DSMES) are critical to achieving quality outcomes. Yet reports show that patients are not participating in traditional DSMES approaches, subsequently DSMES programs are at risk of closure. In response, diabetes educators (DEs), now referred to as Diabetes Care and Education Specialists, are seeking new opportunities to provide services that include attention to behavioral and psychosocial issues.

Methods

A coordinated care (CC) model was organized to address complex needs of those with DM in a disadvantaged community. The local endocrinologist sought assistance from a hospital-based program to provide coordinated care and DSMES on established clinic days. The DE was available for ongoing follow up and liaising to community services. Overarching goal was to lower mean A1C <8%.

Results

Of 80 patients who received care in the DM clinic, majority with Type 2 DM (80%) 52.5% F, mean age 57.1?14.1 years, BMI of 34.1 49±10.4 kg/m2 and A1C 9.2%, 49 patients agreed to participate in the CC program while 31 patients received usual care (UC) (traditional visit with endocrinologist only). No statistical differences were found in age, sex, BMI, or mean A1C between groups at baseline. A1C was compared between CC and UC groups at 3, 6, and 12 months. Percent of patients with A1C 0.99), 59.3% vs27.8% at 6months(p=0.07); 66.7% vs 35% at 12 months (p=0.03). The majority of patients in the CC group, maintained lower A1C levels, meeting the immediate target of

Conclusion

A provider-DE model offers a framework for providers and DEs to help a population of patients with complex needs to reach and sustain improved glycemia.

Tennessee Research Poster Finalist - Ahmed Minhas

Title

Epidemiological Differences in Incidence and Survival of Ureteral Cancer in USA, 2000-2016

Authors

Ahmed A. Minhas, Zain M. Virk, Hamid A.K. Shirwany

Introduction

Ureteral cancer is poorly studied with limited data on epidemiology. It is categorized as an upper-tract urothelial carcinoma (UTUC), which includes malignancies of the renal pelvis and calyces. UTUCs comprise 5-10% of all urothelial carcinomas. The grouping of ureteral cancer within UTUC and its low incidence represent two challenges in studying this specific malignancy. We seek to determine the incidence and survival of patients with ureteral cancer, and the association of histology, marital status, race, grade, and sex with mortality.

Methods

In this retrospective observational study, patients diagnosed with ureteral cancer between 2000-2016 were enrolled from the Surveillance, Epidemiology, and End Results (SEER) program. Age-adjusted incidence and 5-year relative survival rates were calculated using the SEER*Stat software. Mortality differences between marital status, race, sex, and various tumor histologies were performed using the Cox proportional hazards model in the Statistical Product and Service Solutions (SPSS) software. The tumor histologies included were adenocarcinoma, epithelial cell carcinoma, squamous cell carcinoma, and transitional cell carcinoma.

Results

A total of 7,838 cases of ureteral cancer were identified from 2000-2016 in SEER. The age-adjusted incidence rate of ureteral cancer was 0.56 per 100,000 person-years [95% confidence interval (CI) 0.55-0.58]. The 5-year relative survival for ureteral cancer was 51.10% (CI 49.39%-52.78%). The hazard ratio (HR) of blacks to whites was 1.18 (CI 1.01-1.38, $p = 0.04$). The HR was 0.85 (CI 0.79-0.91, $p < 0.01$) for married individuals, and 1.16 (CI 1.09-1.25, $p < 0.01$) for females. Adeno-, epithelial cell, and squamous cell carcinomas had higher mortality risk compared to transitional cell carcinoma's, with a HR of 2.00 (CI 1.45-2.75, $p < 0.01$), 2.19 (CI 1.71-2.80, $p < 0.01$), and 1.54 (CI 1.19-2.00, $p < 0.01$), respectively. Poorly differentiated (Grade III) and undifferentiated (Grade IV) tumors were associated with a higher mortality risk, with HR of 1.90 (CI 1.62-2.23, $p < 0.01$) and HR of 1.73 (CI 1.48-2.03, $p < 0.01$), respectively.

Conclusion

Ureteral cancer is rare with a low age-adjusted incidence rate between 2000-2016. The 5-year relative survival is about 50%. Relevant patient factors that contribute to mortality include race and marital status. Blacks have a higher mortality risk than whites. Unmarried individuals have a higher mortality risk than married individuals. Relevant tumor characteristics that contribute to mortality include histology and grade. Transitional cell carcinoma has better prognosis than adeno-, epithelial cell, and squamous cell carcinomas. Grades III and IV have worse prognosis than Grade I does. These results identify disparities in survival outcomes among different patient populations with ureteral cancer.

Texas Research Poster Finalist - Matthew McGlennon

Title

Shelve the Stool: Reducing Unnecessary Testing for Clostridioides difficile

Authors

Matt McGlennon DO MS, Aarti Prasad MD, Raj Yeruva MD, Leslie McCarthy RN, MaryAnn Tran MD

Introduction

Clostridioides difficile, or C. difficile, is one of the most prominent hospital acquired infections, causing increases in mortality, morbidity, length of stay, and cost. Inversely, the overdiagnosis of C. difficile due to other confounding treatments or illnesses has become an increasing problem, as testing leads to increased length of stay, overuse of PPE, decreased facetime with all levels of care, and overuse of antimicrobial agents that may lead to increased resistance.

Methods

Our quality improvement project focused on reducing unnecessary tests with interventions at multiple levels, examining if there is a reduction in total tests with an increase in positive tests. The main intervention was implementation of a 'ticket to test' concept where every stool sample being tested for stool pathogen required a test card be filled out and sent with each sample for stool PCR or C. difficile PCR. Each card contained a series of checks to ensure that the stool samples being sent met testing criteria for stool pathogens, such as how formed the stool was and if there were other causes of loose stool. Three periods were analyzed: a pre-intervention period, post-intervention with the initial card, and a second period of intervention where the revised card was implemented.

Results

Our results showed a reduction of tests per month from 12.2 tests per month pre-intervention to 9.2 tests per month; a drop of 24.6%. For percent positive testing, there was an increase from 17.2% positive test rate on average to 20.48% positive test rate; an absolute increase by 3.28%.

Conclusion

There was a modest improvement with the card intervention, most notably in the beginning of the intervention, but waned and stabilized after a few months. Considerations for this drop include changes in practice due to the increase in COVID cases becoming a confounding variable in our study, as well as evolving practices in dealing with secondary COVID infections and how they may have led to a rise in suspicion for C. difficile infections, which may have increased testing numbers. Nonetheless, it is difficult to ascertain whether there was regression to the mean for the testing data, or if this 'ticket to test' card initiative had a positive impact in the absence of a major pandemic, and only after the pandemic has resolved and there is standardization to the C. difficile testing practices will we truly see if the intervention worked.

Texas Research Poster Finalist - John Odneal, MD

Title

Practice how you play! An innovative, two-pronged approach to improve resident and ancillary staff performance in Code Blue events

Authors

John Odneal, MD; Olubadewa A. Fatunde, MD, MPH; Tara Brayboy, MD; Lakshay Jain, MD; Prithvi Muddana, MD; Tiffany Egbe, MD; Valarie Schwind, MD ; Belinda Wright RN, CCRN; Karin Kirbow RN, BSN, MBA; Amanda Ritter RN; Elizabeth Neidlinger MSN, RN, CENP; Michelle Stokes RN, BSN; Heaven Swiney RN; Beth Chrismer MSN, RN, CPHRM; Kevin Lassen, RT

Introduction

In-hospital Code Blue Events have an estimated survival rate of 30.4%. Outside of the ED and ICU, they are relatively infrequent. Combined with the inherent unpredictability and high complexity of these events they are extremely difficult to prepare for and to practice. Structural barriers such as lack of familiarity between team members, chaotic environments, lack of clear roles and responsibilities, knowledge gaps about team members capabilities and responsibilities all contribute heavily to this problem.

Methods

Our aim with this project was to increase resident comfort in running codes by 50% from baseline over six months via the adoption of a team leader checklist and the implementation of hospital wide mock codes. We identified key stakeholders in improving code blue events: ED & IM attendings, residents, department directors, nursing & nursing administration, rapid response teams, house supervisors, and hospital administration. We worked as a team to identify contributing factors via construction of an Ishikawa diagram. One significant barrier identified was a lack of resident and staff confidence and opportunity for teams to practice these skills outside of real codes or biannual BLS/ACLS recertification. We created a subcommittee of the hospital Code Blue Committee to oversee our interventions with involvement from all key stakeholders. We conducted a literature review and developed a team leader checklist to help improve the quality of codes by ensuring appropriate roles were assigned and helping leaders work through codes in a systematic manner. We implemented monthly in-hospital mock codes, announced by overhead PA identical to real codes to allow for realistic practice. We surveyed all participants on their confidence at each mock code and were able to incorporate various practice scenarios such as patients who are found down in a bathroom, ACLS in pregnant patients, or upset family members interrupting resuscitation.

Results

At the 6 month review we had increased overall comfort in running codes by 75% in PGY2s and 95% in PGY3s; Confidence in diagnosis during a code by 52% in PGY2 and 51% in PGY3; confidence in medical management by 26% in PGY2 and 15% in PGY3; Confidence with lines/access during a code by 26% in PGY2 and 71% in PGY3s. Our overall composite measure increased by 43% in PGY2, 57% in PGY3s, with an average of 49%. While this did not met our initial goal of 50% improvement at 6 months, by 12 months the composite measure had increased 56% from baseline in PGY2 and 69% in PGY3, with an average increase of 59%.

Conclusion

Our project has significantly increased resident and staff confidence and capability in code blue events. We are able to keep stakeholders involved and able to rapidly respond to change. During the covid-19 pandemic we have been able to give residents and staff ample opportunity to practice correct PPE use and running codes on PUI or covid-19 positive patients. Since it's inception, our mock code program has grown significantly, and now includes night mock codes and has expanded to other facilities in the Christus & UT systems.

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Texas Research Poster Finalist - Seth J VanDerVeer

Title

Walk Your Way to Better Health

Authors

Capt Seth VanDerVeer, USAF, MC, ACP Associate; Maj Kathryn Burtson, USAF, MC, Fellow of ACP; Ronald Markert, PhD, WSU BSOM; Capt Brant Bickford, USAF, MC, ACP Member; Capt Paul Pikman, USAF, MC, ACP Member; Capt Timothy Wall, USAF, MC, ACP Member; Capt Joseph Yuhas, USAF, MC, ACP Member

Introduction

Currently, the evidence for exercise in maintaining health, well-being, and physical functioning is overwhelming. Regular exercise improves quality of life, preserves cognitive function, and reduces mortality rates overall and from cardiovascular disease, diabetes, and some cancers. Despite these benefits, more than 50% of the population fails to meet the minimum recommended exercise requirements for age and health status. Those with multiple comorbidities are especially negligent. Exercise is one of the most powerful interventions that physicians can offer to their patients and finding ways to increase adherence are critical aspects of success.

Methods

The primary objective of this study was to evaluate the effectiveness of a graded exercise protocol and biweekly monitoring on increasing the duration of aerobic exercise to 150 minutes per week in a population of elderly individuals with chronic disease. Secondarily, we evaluated for improvement in heart rate, blood pressure, body mass index (BMI), and cardiorespiratory fitness. Forty-five patients aged =60 years with multiple comorbidities were recruited from Internal Medicine Clinic A at Wright-Patterson AFB. Participants were randomized into a treatment arm or control arm and observed over a period of 34 weeks. Those in the treatment arm were given a graded aerobic exercise protocol and received biweekly phone calls to evaluate compliance. Those in the control arm received no intervention. Measurements of heart rate, blood pressure, and BMI were taken quarterly in both groups. Each participant completed a modified Balke treadmill test and Physical Activity Scale for the Elderly (PASE) at the beginning and completion of the study.

Results

The treatment group (n = 24) had better exercise compliance with 41.7% of participants reaching the goal of 150 min of weekly aerobic exercise at 34 weeks compared to 0% in the control group (n = 21) (p = 0.003). The treatment group (n = 15) had a mean increase in Physical Activity Score for the Elderly (PASE) of 66 points from baseline, whereas the control group (n = 10) had a mean decrease of 20 points (p < 0.001). For modified Balke testing, the treatment group had a mean decrease in heart rate of 2.4 beats/min, whereas the control group had a mean increase in 5.3 beats/min (p = 0.038). For baseline to end-of-study vitals, no differences were observed between groups for mean change in heart rate (p = 0.06), systolic blood pressure (p = 0.49), diastolic blood pressure (p = 0.60), or body mass index (p = 0.65).

Conclusion

This 34-week, randomized controlled trial with assessor blinding demonstrated that a graded aerobic exercise protocol with biweekly monitoring can be an effective tool in the primary care setting for increasing exercise compliance among elderly individuals with chronic disease. Despite several limitations during the COVID-19 pandemic, the treatment group achieved an impressive level of exercise compliance compared to the control group. The treatment group also had favorable improvements in overall physical activity and cardiorespiratory fitness. Consequently, these findings emphasize the importance of physicians assuming a more active role in promoting physical activity for their patients.

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Texas Research Poster Finalist - Myrian Noella Vinan Vega, MD

Title

THE EFFECT OF PULMONARY REHABILITATION ON PHYSICAL PERFORMANCE AND MENTAL HEALTH IN PATIENTS WITH CHRONIC LUNG DISEASE

Authors

Myrian, Vinan-Vega MD; Barbara, Mantilla MD; Kenneth Nugent MD.

Introduction

Patients with chronic lung disease have reduced exercise capacity secondary pulmonary impairment, peripheral muscle dysfunction, and often other comorbidities, which is associated with poor quality of life and reduced survival. Pulmonary rehabilitation improves exercise capacity and health-related quality of life through a multidisciplinary approach that involves exercise training, education, and behavioral therapies. Our study aimed to evaluate the effect of pulmonary rehabilitation in exercise capacity and health-related quality of life in patients with chronic lung disease who completed the program at University Medical Center, Lubbock, Texas, during 2014 - 2019. We used the minimal clinically important difference (MCID) as a guide to evaluate the changes in each parameter.

Methods

We retrospectively reviewed the medical records of 144 patients who completed pulmonary rehabilitation at University Medical Center (Lubbock, TX) between 2014 and 2019. We collected information of demographics, medical diagnoses, smoking status, pulmonary function results, and the number of hospital visits 6 months before and after completion of the program. Pulmonary function tests, including the FEV1, FVC, FEV1/FVC ratio, and 6-minute walk distance, and psychosocial questionnaires, including the PHQ-9, CAT score, and MMRC dyspnea score, before and after completion were recorded.

Results

Fifty-two percent of subjects (75 patients) were male. The mean age was 71 ± 10 years, and the mean body mass index was 30.30 ± 8.75 kg/m2. Most of the patients (54.8%) had COPD. The mean baseline FEV1 was 1.54 L (56.6% predicted). After completion of the program, 86 patients (77.5%) increased their 6-minute walk distance to exceed the MCID with a mean distance of 145.32 feet, and the number hospital visits decreased from 0.80 ± 1.11 to 0.55 ± 0.87 after completion (p

Conclusion

Most patients had improvement in their 6-minute walk and psychosocial scales and had a reduced number of hospital visits after completion of the rehabilitation program. Pulmonary rehabilitation has the potential to substantially improve the lives of patients with chronic lung disease.

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Texas Research Poster Finalist - Andrew Wilson, DO

Title

EFFICACY AND SAFETY OF PULMONARY VEIN ISOLATION IN ACTIVE DUTY MILITARY MEMBERS WITH ATRIAL FIBRILLATION

Authors

Andrew S. Wilson, DO; Andrea N. Keithler, DO; Matthew A. Tunzi, DO; Richard E. Tomlinson, MD; Kelvin N.V. Bush, MD

Introduction

Atrial fibrillation (AF) has significant and diverse impacts on military personnel. Current guidelines recommend catheter ablation as second-line therapy of refractory symptomatic paroxysmal AF or intolerance to anti-arrhythmic drugs (AAD). There are no prior reports investigating ablative strategies for AF in the AD military population. This study aims to describe the efficacy and safety of pulmonary vein isolation (PVI) for AF in military service members in the largest regional military healthcare system.

Methods

AD military personnel with AF who underwent PVI from 2004 to 2019 were retrospectively analyzed in four age groups (group 1, n=26, 18 to 27 years; group 2, n=38, 28 to 37 years; group 3, n=28, 38 to 49 years; group 4, n=12, =50 years). Primary endpoints were (1) PVI procedural efficacy defined as no or rare AF recurrence (

Results

104 personnel (mean age 35.6+9 years, 84.6% paroxysmal AF, mean LVEF 60.2+6%, 19.2% maintained on AAD after PVI) underwent 142 PVI procedures with a mean follow-up of 55.8+47 months. Procedural efficacy was attained in 96.2% of group 1, 78.9% of group 2, 75.0% of group 3, and 66.7% of group 4 (p=0.004, Figure 1). No AF recurrence was observed in 80.3% of group 1, 55.3% of group 2, 46.4% of group 3, 41.7% of group 4 (p=0.02). AADs were maintained in 11.5% of group 1, 21.0% of group 2, 14.3% of group 3, 41.7% of group 4 (p=0.144) and there was no difference in AF recurrence rates between those with AADs and those without (p=0.091). LVEF

Conclusion

AD military members with AF are not ideal candidates for long-term use of AAD given military deployment and retention standards. This study suggests that PVI is an effective and safe first-line therapy for younger military personnel desiring to decrease their individual AF burden.

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Vermont Research Poster Finalist - Aurasch Moaven

Title

Standardizing Methods in Culturing Ascitic Fluid: A Project in Quality Improvement at UVMMC

Authors

Aurasch Moaven MD, Shawn Wayne MD, Sheela Reddy MD

Introduction

Spontaneous bacterial peritonitis (SBP) is associated with significant morbidity and in-hospital mortality. Given associated mortality, prompt diagnostic paracentesis is recommended for culture and cell count analysis. Diagnostic yield of ascitic fluid, however, is affected by the methodology of ascitic fluid culture. Multiple studies have shown that the blood culture bottle method, defined as the inoculation of at least 10mL of ascitic fluid into blood culture bottles at the bedside, has superior diagnostic yield as compared to the conventional method. Thus, it is a Class 1, Level B recommendation from American Association of the Study for Liver Diseases (AASLD) that “ascitic fluid should be cultured at the bedside in aerobic and anaerobic blood culture bottles prior to initiation of antibiotics”. The aim of this quality improvement project is to identify and address barriers to bedside inoculation of blood culture bottles for paracenteses completed by internal medicine (IM) residents and hospitalists at the University of Vermont Medical Center (UVMMC).

Methods

Resident physicians and hospitalists of the UVMMC IM department were surveyed to measure current practices and to identify barriers to utilization of the blood culture bottle method. To address the barriers identified in the survey, we held dedicated education sessions that focused on the standard of care recommendations and proper inoculation technique. We ensured that all internal medicine hospital floors had an adequate supply of blood culture bottles. Lastly, we created a customized and standardized procedure note that will reinforce practice recommendations and capture practice behaviors moving forward. After interventions aimed at reducing barriers are implemented, repeat surveys will be administered after 6 months to subjectively measure the impact of our interventions on utilization rates. In addition to survey data, we will use the electronic medical record to track usage of the standardized procedure note in relation to the total number of paracenteses performed.

Results

Only 47% (15/32) IM resident physicians and 55% (12/20) of hospitalists regularly inoculate blood cultures bottles at bedside. Amongst all trainees, 47% (15/32) were unaware of guideline recommendations, 50% (16/32) were unaware of proper technique, and 21% (7/32) identified availability of blood culture bottles as a barrier to bedside inoculation.

Conclusion

The implementation of this quality initiative may increase diagnostic yield of ascitic cultures, decrease time to bacterial culture growth, and better guide appropriate antimicrobial therapy, thus resulting in improvement in patient outcomes, and aiding with antimicrobial stewardship.

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Virginia Research Poster Finalist - Maria Geba

Title

Three Site Testing for Sexually Transmitted Infections for People Living with HIV in One Southeastern Ryan White HIV/AIDS Program Clinic: First Year of Experience

Authors

Maria Geba, MD, Samuel Powers, BA, Brooke Williams, BS, Kathryn R Dort, FNP, Elizabeth T. Rogawski McQuade, PhD, Kathleen A. McManus, MD

Introduction

For comprehensive care, it is recommended that people living with HIV who are sexually active have annual multisite testing for gonorrhea and chlamydia. This is partly due to the fact that these infections can increase the risk of transmission of HIV. Appropriate testing is defined as testing at all sites of sexual exposure (urogenital, oropharyngeal, and/or rectal). In the first year of 3 site testing at our HIV clinic, we aimed to describe (1) the rate of appropriate sexually transmitted infection (STI) testing, (2) the factors associated with an STI diagnosis, and (3) the percentage of extragenital STIs that would have been missed had only urogenital testing been performed.

Methods

Participants had to be greater than 14 years old with at least 1 in-person medical visit at the Ryan White HIV/AIDS Program clinic at the University of Virginia in 2019. We collected demographics, reported sexual activity, and STI test dates and results. Controlling for number of sites tested, a log-binomial model was used to estimate the association of different characteristics with an STI diagnosis.

Results

For this cohort (n=857), 44% reported sexual activity, 34% reported no sexual activity and 22% had no sexual activity information recorded. Of 1185 STI tests performed for 491 participants, 51 STIs were diagnosed in 33 participants. One STI was diagnosed in a female (0.7%). Overall, 68% (253/375) received appropriate urogenital testing, 63% (85/134) received appropriate oropharyngeal testing and 69% (72/105) received appropriate rectal testing. For male participants with > 1 STI test (n=347), Hispanic ethnicity and a detectable viral load were both associated with an STI diagnosis (p = 0.01 and 0.05 respectively). Of those with concurrent

extragenital and urogenital tests, 96% of people with an STI (n=26) were positive at only an extragenital site.

Conclusion

Nearly a quarter of participants had no sexual activity information recorded in the year, which is an area for improvement. Despite newly adopting 3 site testing at our clinic, appropriate extragenital and urogenital testing rates were similar and were high compared to national averages. There was no obvious clinician or patient bias against extragenital testing. Higher rates of STI diagnoses in Hispanic male participants and those with detectable viral loads may point to more condomless sex in these populations. Based on the identification of many infections exclusively at extragenital sites, we likely missed STIs previously. This highlights the importance of 3 site testing availability and testing at all appropriate sites.

Virginia Research Poster Finalist - Eric Schafer

Title

Clinical Pathway for Timely Antibiotic Administration for Inpatient Neutropenic Fever

Authors

Eric Schafer, Mary Hutson, Andrew Hanna, Joud El Dick, Blerand Demaku, Michael Elkins, Serenity Budd, Brielle Forsthoffer, Adnan Khan, Shejal Patel

Introduction

Neutropenic Fever (NF) is a common complication suffered by cancer patients and exerts a significant burden on both patients and healthcare systems. The IDSA recommends a time to antibiotic administration (TTA) for patients with NF of less than one hour as a quality measure. At VCU Health 39% of NF events on the inpatient oncology floor met the measure. Mean TTA was 137 minutes, with a mean time to antibiotic order (TTO) of 87 minutes representing a major contributor to the delay. Various methods have been described to decrease TTA but there is no published clinical pathway for an inpatient setting.

Methods

Interventions targeting TTO including standardized nursing page templates for NF and a clinical pathway for housestaff were implemented.

Results

74 encounters met the inclusion criteria with 28 of those occurring after the intervention. Mean TTO decreased from 87 to 16 minutes (p=0.012) resulting in a statistically significant decrease in TTA (137 to 48 minutes, p=0.004) and an increase of encounters satisfying the quality measure (39% to 79%, p

Conclusion

The interventions were effective in reducing TTA by reducing TTO. The effects on patient-centered outcomes remain unclear. However, the risk of delayed antibiotic administration in this vulnerable patient population makes the interventions discussed in this study worthwhile, nonetheless.

Washington Research Poster Finalist - Sarah Steinkruger

Title

The Heart Sink Visit: Skills for Managing Difficult Encounters in Primary Care

Authors

Sarah Steinkruger, MD Clinical Instructor, Department of Medicine, University of Washington
Jeremiah Grams, BS

Introduction

Difficult encounters (DEs) encompass ~15% of outpatient visits due to a variety of patient, provider, and situational factors. Such encounters take up a disproportionate amount of providers' time, resources, and emotional energy. This increases risk for burnout and decreases work satisfaction. It also compromises providers' ability to provide quality care and promotes action bias. These interactions equally leave patients feeling frustrated and dissatisfied, damaging care relationships and seeding distrust. Patients are more likely to seek second options or turn to emergency departments for care, and often have poorer compliance with provider recommendations. Regardless of specialty, these are situations all providers encounter, but often receive little to no formal training in.

Methods

Given this need, a two hour workshop for internal medicine residents and junior faculty was created. The goals of the workshop were to (1) demonstrate that managing DEs is a teachable skill, (2) improve participants' comfort and satisfaction with such encounters by discussing key contributing factors and teaching problem-solving and coping strategies, and (3) provide participants with a concrete toolkit for managing DEs within their own clinics. First, participants reviewed the key patient, provider, and situational factors that contribute to DEs, followed by a discussion of evidence-based skills for mitigating such interactions, including specific communication techniques. Attendees then participated in a pre-visit mindfulness meditation exercise designed to temper personal factors and prepare for challenging visits. Finally, in facilitated small groups based on the Danish Empathy Model, individuals shared and evaluated personal cases and applied potential solutions based on methods learned during the workshop.

Results

Pre-course, most participants felt neutral in terms of their comfort level with DEs (M = 3.2). When asked if their training adequately prepared them, participants again felt neutral (M =

2.9). Post-course, the majority of participants reported that they learned a new skill (M = 4.3) and felt more comfortable managing DEs as a result of their participation in the course (M = 4.1). Most agreed that managing DEs was a teachable skill (M = 4.5) and that workshops such as this should be incorporated into residency training (M = 4.4).

Conclusion

DEs in outpatient medicine are a well known, but under addressed topic that have a significant impact on providers' well-being and the health of their patients. This project demonstrates that reviewing contributing factors, applying problem solving strategies to sample and personal cases, and practicing mindfulness skills and active empathy can help providers improve their skill and comfort level with DEs.

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West Virginia Research Poster Finalist - Jacob L Fuqua, MD

Title

Red Blood Cell Conservation: Transfusion Reduction Quality Initiative at West Virginia University Hospital

Authors

Jacob Fuqua, Priyanka Jagannath, Kristen Catherman, Paulina Skaff, Sonya Inderbitzin-Brooks, Nathan Lerfald

Introduction

Red blood cell transfusions have been named as one of the top five overused procedures in the United States, according to the Choosing Wisely Campaign. Additional units of red blood cells given to patients over 7 to 8 g/dL increase the risk of lung injury, cardiac overload, and infections without benefit to the patient. Other institutions throughout the country have implemented transfusion reduction programs to reduce unnecessary transfusions and educate providers on the risks of exposing patients to unnecessary blood products. Some institutions have been able to reduce their transfusions by 25 percent with an overall savings of 2 million dollars to the hospital system. The cost of transfusion is variable by institution, blood type, and patient setting but a single unit of packed red blood cells has an estimated cost of 225 dollars at West Virginia University.

Methods

At our institution, we implemented a transfusion conservation program which included a reduction in number of units transfused on order, education to the medicine providers and a best practice advisory alert in EPIC. The number of default units to transfuse was decreased from 2 to 1 in April 2018. The education given in July 2018 was aimed to reduce the number of multiunit transfusions and educate providers about the risks and lack of benefit of excess transfusions. In March 2019, the best practice advisory was activated to indicate to the provider if a transfusion was ordered for a patient with a hemoglobin greater than 7. This initial dataset compares the last 6 months of 2018 and 2019 for all low-value red blood cell transfusions given from medicine providers. The patient population was limited to step down and floor patients admitted to academic medicine or hospitalist teams. Cardiology, medical oncology, bone marrow transplant, and intensive care unit patients were excluded. In this population, transfusions were only analyzed if the patient received a blood transfusion for a hemoglobin less then 7 g/dL. Transfusions given for the indications of acute bleeding, preoperative management, symptomatic anemia, transfusion dependence or acute cardiovascular disease

were excluded. The transfusions were classified as avoidable or expected. Expected transfusions included units given for a hemoglobin less then 7. Each unit was expected to increase the hemoglobin value by 1 g/dL and could have multiple units expected for lower hemoglobin values.

Results

There was a significant increase in the percentage of expected transfusions (p=0.00009) for 2019 as compared to 2018. On average, the institution transfuses 100 units per month for low-value hemoglobin levels and a 13 percent increase was noted when comparing the actual and expected number of transfusions.

Conclusion

This program has an estimated savings of 32,000 dollars per year to the institution. In conclusion, the combination of education and best practice advisory significantly increased the number of guideline directed transfusions by reducing the incidence of multiunit transfusions and increasing overall awareness for red blood cell conservation.

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West Virginia Research Poster Finalist - Yasmeen Obeidat

Title

OUTCOMES OF UPPER GASTROINTESTINAL BLEEDING ADMISSIONS ON WEEKENDS COMPARED TO WEEKDAYS

Authors

Obeidat, Yasmeen MD Mahdi, Ahmad MD Aguilar, Rodrigo MD Saunders, Elizabeth MD

Introduction

Upper Gastrointestinal bleeding (GIB) can account for numerous hospitalizations and is associated with longer in hospital length of stay (LOS) and mortality. It has been shown that early endoscopic intervention can improve patient outcomes and lower mortality however, this is limited by the availability of endoscopies, staff and gastrointestinal (GI) specialists. We aim to study the outcomes of acute blood loss anemia secondary to GI bleeds on the weekdays vs the weekends.

Methods

We evaluated patients in the hospital between 2005-2012. Patients with ICD-9 code 578 (Hemorrhage of gastrointestinal tract, unspecified) were extracted from the HCUP NIS. Patients were >18 years of age. A relationship was correlated between patients admitted on a weekday vs weekend. To adjust for confounding covariates, propensity score matching was performed. Using multivariate logistic regression, a propensity score for each patient was calculated with the nearest propensity score in a 1:1 ratio. Variables compared included in-hospital mortality, LOS, total hospital cost, comorbidities, complications and procedure rates. These were split into two groups; weekday vs weekends. Analysis was executed using SAS version 9.4.

Results

During 2005-2012, there were 867,502 admissions. Weekday admissions totaled at 667,440 and weekend admissions totaled at 199,762. All the admissions met our ICD-9 code. In both groups, majority of patients were between the ages of 66-88 years old, Caucasian race and carrying Medicare insurance. When comparing patients admitted during weekdays vs weekends, the weekend admissions revealed a significant mortality difference in both pre-match (8.80% vs 7.59%, p=0.001) and post-match (8.60% vs 9.02%, p=0.001). Esophagogastroduodenoscopy (EGD) was found to be performed more for weekday admissions on both pre-match (39.94 vs 38.70 p=0.0001) and post-match (50.43 vs 49.34 p=0.0001). The number of days to procedure

time was slightly higher in the weekend group; pre-match group (mean 2.41 vs 2.36 days) and post-match (mean 2.43 vs 2.39 days). The total hospitalization cost was found to be higher in the weekday admission group pre-match (mean: 48,159 vs 46,737 dollars) and post-match charges (mean 52,549 vs 49,739). When comparing length of stay, this was also found to be higher in the weekday group; pre-match (mean 7.18 vs 6.78 days) as well as post-match (mean 7.39 vs 6.93 days).

Conclusion

In summary, our review showed that patients admitted on weekends with upper gastrointestinal bleeding would have higher mortality as well as longer waits to procedure time. We also found that more EGDs were performed during the weekdays than weekends which could be contributing to our statistically significant mortality difference for upper GI bleeding. Our study also revealed increased cost during weekdays and longer LOS. Further research is warranted to evaluate the need for better services during weekends regarding GI services.

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Wisconsin Research Poster Finalist - Nikhitha Chandrashekar

Title

Endocrine related side effects of Ibrutinib – A Retrospective Analysis

Authors

Nikhitha Chandrashekar, MD; Julia Shariff, MD; Daniel Short, MD

Introduction

Ibrutinib, a tyrosine kinase inhibitor (TKI), is a drug designed to target Bruton's tyrosine kinase (BTK), a key protein in the B-cell receptor signaling complex that plays an important role in the survival and spread of malignant B cells. Endocrine side effects (SEs) like hypothyroidism, adrenal insufficiency, hyperparathyroidism, and gynecomastia have been established in numerous TKIs in different case studies, however the prevalence has not been previously reported specifically in ibrutinib.(1) Given the increasing number of indications for which ibrutinib has been approved in the recent years, we aimed to determine the SEs that occur with this drug, specifically endocrinopathies. We also studied whether patients that develop these SEs have worse clinical outcomes.

Methods

A retrospective review was performed of 105 adult patients who received ibrutinib for treatment of a neoplasm or graft vs host disease from November 2013 to January 2020 at our academic hospital. We collected all reported SEs thought to be secondary to ibrutinib as well as vital statistics. SEs were compared using chi-squared test and survival between groups were demonstrated using a Kaplan Meier curve.

Results

A total of 60 (57%) patients developed any SEs related to ibrutinib. Gastrointestinal SEs were the most common (25%). The mean time from first dose of ibrutinib to first reported SE (endocrine and non-endocrine) was 7.4 (± 10) months. Endocrine SEs diagnosed after the start of ibrutinib were noted in 3 (2.8%) patients, namely gynecomastia, hypothyroidism, and hyperparathyroidism. Overall mortality did not differ between those with and without underlying endocrine comorbidities (p=0.81). Limitations of our study include a small sample size which may have restricted the recognition of rare SEs and other outcomes. Furthermore, given the lack of a control group and the study’s retrospective nature we are unable to confirm if the reported SEs were truly related to ibrutinib.

Conclusion

This is the first study to report the real-world prevalence of ibrutinib related endocrine SEs and compare its clinical outcomes. Despite several other TKIs having a higher reported rate, this does not appear to be as common with ibrutinib.(2,3)Reassuringly, a preexisting endocrinopathy also did not affect the overall survival among those who received ibrutinib. However, despite being rare, these are potentially dangerous SEs which clinicians should be particularly cognizant approximately seven months after the first dose received. This will help to facilitate early recognition and prompt treatment should such complications arise.

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