

ACP National Abstract Competitions

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Early Career – Research

GEORGIA PODIUM PRESENTATION - RESEARCH David Minkoff, MD

Development of objective COVID-19 discharge criteria using laboratory values

David Minkoff, MD

Title

Development of objective COVID-19 discharge criteria using laboratory values

Introduction

The COVID-19 pandemic has strained hospital systems beyond their limits. Optimal discharge criteria are desperately needed to minimize length-of-stay and to free hospital resources for patients who need them. The clinical course of COVID-19 presents a challenge to hospitalists, as most patients remain clinically stable until their second week of symptoms, when they suddenly, precipitously decline. Discharge criteria focused on trends in routine labs collected on COVID-19 patients may offer objective criteria that can facilitate safe, early discharges.

Methods

All patients (n = 399) with COVID-19 admitted to Emory University Hospital (EUH), Emory University Hospital Midtown (EUHM), Emory Saint Joseph's Hospital (ESJH), and Emory John's Creek Hospital (EJCH) between March 1st, 2020 and April 15th, 2020 were initially included in a retrospective chart review. Patients were excluded from a proposed discharge criteria's analysis if they did not have sufficient lab data (i.e. daily labs were not obtained). Lab results previously associated with adverse outcomes in COVID-19, such as D-dimer, CRP, and troponin-I levels, were used to generate proposed discharge criteria. Data analysis was performed in MATLAB (Version R2020a, The MathWorks, Inc.). For each individual patient, the median lab values for each hospital day were collected in a database. Two types of discharge criteria were generated: those based on days of successive improvement in lab values (e.g. decrease in CRP for two successive days), and those based on percentage improvement in lab values (e.g. 50% decrease in CRP from the preceding peak value). Combination criteria were also generated (e.g. CRP decrease for two successive days AND decrease by 50% from the peak CRP value). Two-by-two contingency tables were generated, and Fischer's Exact Test was used to assess the odds ratios for criteria predicting safe discharges.

Results

CRP was found to be the most useful parameter to monitor. For the criterion of a CRP decrease of 50% for the preceding peak, 125 patients had sufficient data, 39 satisfied the criteria for

discharge, and only 1 decompensated after meeting criteria (PPV 0.97, OR 12.28, CI 1.59-94.95, $p = 0.002$). When a CRP decrease on two consecutive days is added as an additional requirement, 62 patients had sufficient data, 24 met the combination criteria during the hospitalization, and none subsequently decompensated prior to discharge (PPV 1.00, OR Inf, $p = 0.0049$). In other words, all patients who achieved the combination criterion were able to be discharged safely. The median illness day that patients met these criteria was day 13.5 (corresponding to hospital day 6.5, as most patients presented on illness day 7).

Conclusion

Trends in daily labs have the potential to serve as objective discharge criteria for COVID-19 patients. Major limitations of this study are its retrospective nature, that the data were collected prior to dexamethasone becoming standard of care, and the small number of patients who satisfied the criteria. Currently, the database is being expanded to include an additional 5,000 patients admitted through November, as well as criteria based on vital signs and respiratory support.

NEW YORK PODIUM PRESENTATION - RESEARCH Asim A Kichloo, MD

Opioid Crisis – A Public Health Emergency! The Role of Internet in Opioid Addiction and Awareness.

Asim A Kichloo, MD

Title

Opioid Crisis – A Public Health Emergency! The Role of Internet in Opioid Addiction and Awareness.

Introduction

The opioid epidemic is a major public health emergency. Little is known regarding how patients use the internet to access information regarding the addictive potential of opioids. We examined trends in internet usage at a rural hospital related to pain management and the addictive potential of opioids to determine the utility of web-based resources for the advancement of patient education regarding opioid analgesics.

Methods

In this cross-sectional study, we surveyed 134 patients in the Emergency Department and inpatient setting with either new or existing opioid prescriptions. Questions were designed to collect demographic information, information regarding patients' current internet usage, and trends in the use of the internet to seek information related to opioid analgesics, including their addictive potential. Categorical data was analyzed using binomial ANOVA testing.

Results

Among the 134 patients surveyed 75.6% reported having internet access, and 85.9% had taken prescription opioids. While 61.5% of patients look for health related information online, only 29.6% had used the internet to seek information regarding the addictive potential of opioids. Interestingly, 62.2% would use the internet to learn about the opioids that they were prescribed if provided a website by their physician.

Conclusion

While most patients use the internet to look for health related information, few are using the internet to look for information regarding the addictive potential for opioids. Patients are

receptive to using the internet for opioid education, and providing patients with web-based resources could help educate those who are being prescribed these medications.

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WISCONSIN PODIUM PRESENTATION - RESEARCH Kathryn EK Berlin, DO

Use of a Stoplight Communication Tool for Interprofessional Communication Correlates with a Decrease in Rapid Response Team Activations

Kathryn EK Berlin, DO

Title

Use of a Stoplight Communication Tool for Interprofessional Communication Correlates with a Decrease in Rapid Response Team Activations

Introduction

Effective communication is essential to high value care: it results in decreased length of stay [1] and adverse events [2] as well as increased patient satisfaction [3]. However, errors in communication occur, both from inefficient communication and "overload", given the sheer volume of communication on a daily basis. A 2017 study found that internal medicine residents were paged up to 50 times per day [5]. We examined areas prone to communication error at our facility and found that information was easily lost or forgotten when a provider was busy with other tasks. It was hypothesized that creating a system for non-urgent communications to be sent outside of these critical times would improve patient care. Our specific aims were to reduce the number of non-urgent communications residents and nurses received during critical activities; we utilized the number of rapid response team (RRT) activations as a balancing measure.

Methods

This QI project took place at the Clement J. Zablocki VA Medical Center during the 2019-2020 academic year on a single 30-bed medical unit. Approximately 60 residents and 50 nurses were involved. Prior to our intervention, participants were surveyed to obtain input on communication processes and their current satisfaction. From this, we created our "stoplight communication tool". This was a simple and intuitive tool designed to guide participants on appropriate timing of communications. Red times were deemed to be highly critical and were designated times that a provider was not contacted unless it was emergent. Yellow times were considered "high-traffic" times. Participants were asked to consider if the communication could wait. All other times were listed as green ("go for collaboration!"). Two cycles were completed. Cycle 1 was designed to limit paging times based on the Stoplight Communication Tool, while Cycle 2 focused on simplifying compliance. To evaluate effectiveness, page logs were reviewed and analyzed using a one-way ANOVA. Communication directed to nursing was evaluated with a survey, analyzed using a t-test. The incidence of RRT activation was our balancing measure.

Results

At baseline, residents received 8.52 pages during yellow times and 6.92 during red. This improved to 6.28 during yellow and 5.40 during red with Cycle 1. It further improved to 2.20 (p

Conclusion

A stoplight communication tool can be utilized to reduce non-urgent interdisciplinary communications at critical times; furthermore, this correlated with a decrease in RRT activation.

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SRI LANKA - POSTER FINALIST - RESEARCH Chamila D Mettananda, MD PhD FRCP

Incidence and prevalence of stroke among urban/semi-urban Sri Lankans: a population – based cohort study

Chamila D Mettananda, MD PhD FRCP

Title

Incidence and prevalence of stroke among urban/semi-urban Sri Lankans: a population – based cohort study

Introduction

Incidence of stroke is declining in most of the countries except in countries of middle socio-demographic index. However, there is no data on incidence of stroke in Sri Lanka, and only limited data is available on prevalence of stroke.

Methods

We studied a population-based cohort (35-64 years) selected by stratified random sampling from an urban/semi-urban health administrative area (Ragama Health Study) in 2007, and evaluated them again in 2014 with regard to new onset stroke. Possible stroke patients were independently reviewed by a neurologist and a physician with regard to the diagnosis of stroke. The prevalence of stroke (at baseline) was and incidence of stroke over time was estimated.

Results

We followed up 2204 patients from 2007 to 2014 (female 57.6%, mean age 59.2 ± 7.6 years). Risk factor prevalences at baseline were; hypertension 48.7%, hyperlipidaemia 35.5%, diabetes mellitus 28.2%, smoking 17.9% and obesity 2.6%, respectively. Of them, 19 had a past history of strokes at enrolment and stroke prevalence in 35-64y age group was 6.37/1000 population. 24 new strokes occurred during the follow-up and stroke incidence in 35-64y age group 156 per/100,000 person-years).

Conclusion

This is the first report on stroke incidence in Sri Lanka. Stroke incidence and prevalence rates of Sri Lanka lie between those of those of high and low incidence countries indicating the importance of improving.

CALIFORNIA POSTER FINALIST - RESEARCH Cheng-Wei Huang, MD

Validity of LACE index in assessing risk of 30-day COVID-19 readmissions in a large integrated health system

Cheng-Wei Huang, MD

Title

Validity of LACE index in assessing risk of 30-day COVID-19 readmissions in a large integrated health system

Introduction

The LACE index has been studied and validated to predict risk of readmissions and mortality within 30 days from discharge. The LACE index includes length of stay (L), acuity (A), comorbidity (C), and prior emergency department use (E)¹. The utility of LACE index among Coronavirus Disease 2019 (COVID-19) patients is unknown. COVID-19 is a unique disease with a prolonged course and may not fit previous disease models². Better understanding of the post-discharge course can help guide discharge planning. We sought to evaluate how well the LACE index can predict 30-day readmission and mortality risk among discharged COVID-19 patients.

Methods

This is a retrospective study of adult COVID-19 patients age ≥ 18 years old hospitalized and discharged alive from 15 Kaiser Permanente Southern California (KPSC) medical centers between 03/01/2020-06/30/2020. A COVID-19 hospitalization was defined as a hospitalization with COVID-19 ICD-10 code: U07.1 and SARS-COV-2 RT-PCR positive during hospitalization or within 14 days prior to admissions. First discharge in study period was used as index hospitalization. Pregnant, non-medicine service, and non-network patients were excluded. Baseline demographics and LACE index were extracted from the electronic health records. Primary endpoint was all-cause mortality or all-cause observation stay or inpatient readmission within 30 days from discharge. Baseline characteristics were presented descriptively. We evaluated the validity of LACE index using a receiver operating characteristic (ROC) curve and a C-statistic was calculated to assess model discrimination. A value of 0.5 or less indicates the model is no better than chance for making a prediction, while it is often posited that a value of 0.7 or higher is considered good discrimination between groups.

Results

Of 1,446 patients discharged alive in the study period, 131 patients (9%) were readmitted and 32 died (2%) within 30 days from discharge. Readmitted patients were older, more likely to be a former/current smoker, had a lower body mass index, and higher LACE index (all, $p < 0.01$) (Table 1). A logistic regression model of LACE index alone had a C-statistic of 0.64 (95% confidence interval: 0.59-0.69), and adjustment for the other factors resulted in a similar result.

Table 1. Baseline characteristics of cohort^a

	Total (n=1,446)	Not readmitted (n=1,315)	Readmitted (n=131)	P-value
Age	57 (45-67)	56 (45-67)	64 (50-74)	<0.01
Body Mass Index	30.5(26.5-35.9)	30.7(26.7-36.2)	28.6(24.7-33.9)	<0.01
Female (%)	659 (45.6)	593(45.7%)	66(44.9%)	0.90
Race				<0.01
Asian	205 (14.1%)	185 (14.1%)	20 (15.3%)	
Black	110 (7.6%)	92 (7%)	18 (13.7%)	
Hispanic	895 (61.9%)	840 (63.9%)	55 (42%)	
White	219 (15.1%)	185 (14.1%)	34 (26%)	
Other	17 (1.1%)	13 (1%)	4 (3.1%)	
Smoking (%)	462 (32.6%)	405 (31.2%)	57 (44.9%)	<0.01
LACE Index	10 (8-13)	10 (8-12)	12 (9-14)	<0.01

^aData are presented as n(%) or median (interquartile range)

Conclusion

Within a large diverse integrated health system, the LACE index was a weak predictor for 30-day COVID-19 readmissions and/or mortality. Further studies are needed to identify factors and/or models that may better predict readmission risk among COVID-19 patients to help guide care.

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CALIFORNIA POSTER FINALIST - RESEARCH Ekamol Tantisattamo, MD FACP

Impact of COVID-19 Pandemic on U.S. Kidney Transplantation

Ekamol Tantisattamo, MD FACP

Title

Impact of COVID-19 Pandemic on U.S. Kidney Transplantation

Introduction

Coronavirus disease 19 (COVID-19) pandemic is a current leading public health problem and causes a shortage of healthcare resources. Particularly, kidney transplant (KT) involving in the immunosuppressed state can cause potential KT recipients at greater risk of poor transplant outcomes. Whether the increasing number of COVID-19 cases is associated with a decrease in the number of KT in the United States during the COVID-19 pandemic is unclear.

Methods

Publicly available data regarding the number of COVID-19 cases and KT in the United States were retrieved from the Centers of Disease Control and Prevention (CDC) and the Organ Procurement and Transplantation Network / Scientific Registry of Transplant Recipients (OPTN/SRTR), respectively. A cross-sectional study was conducted to examine the association of the cumulative COVID-19 cases in the United States until December 6, 2020 with a difference in the number of KT between the year 2019 and 2020 (until October 31, 2020; Δ KT) by using multiple linear regression.

Results

As of December 6, 2020, there were 1,446,527 COVID-19 cases in the United States and 280,135 patients died. KT were performed in 48 states with a total of 18,438 new KT as of October 31, 2020 compared to 22,641 KT in 2019. Median COVID-19 cases and deaths were 222,131 (4,894, 1,311,625) and 3,905.5 (79, 22,502), respectively among the 48 states. Median Δ KT2020 - 2019 were 42.5 (-20, 469). Every 10,000 COVID-19 cases was associated with an increase in 3 KT in year 2020 compared to year 2019 (β coeff 0.0002966, p

Conclusion

Growing the number of COVID-19 cases was associated with a decrease in the number of KT in 2020 independent of the number of KT the year prior and the COVID-19 death. Although the

healthcare resources may need for emergent and critically ill COVID-19 patients, the survival benefit of KT compared to continuing on dialysis should be taken into account and justify organ transplantation, which is a life-saving treatment in vulnerable kidney disease population, as an unmet need to maximize the number of KT and mitigate organ shortage.

DISTRICT OF COLUMBIA POSTER FINALIST - RESEARCH

Adrienne N. Poon, MD FACP

Risk Factors for COVID-19 Mortality Amongst Hospitalized Patients: A Case-Cohort Study

Adrienne N. Poon, MD FACP

Title

Risk Factors for COVID-19 Mortality Amongst Hospitalized Patients: A Case-Cohort Study

Introduction

Understanding factors for mortality from COVID-19 amongst hospitalized patients associated with COVID-19 infection is urgently needed to better understand how to identify target groups at higher risk of COVID-19 severe infections leading to hospitalization and deaths. COVID-19 has further exposed historical health disparities among communities of color who have been more heavily burdened with pre-existing chronic diseases. Factors associated with mortality from COVID-19 are not well understood and should be explored further. The primary objectives of this exploratory study is to understand risk factors for mortality amongst those hospitalized with COVID-19. Findings from this study will help to inform approaches to target groups at higher risk of severe COVID-19 infection and to design interventions related to these factors for patients with risks of poor outcomes.

Methods

A case-cohort design applied incidence density sampling, for cases consisting of patients with a COVID-19 positive test who experienced in-hospital death were matched by sex in a 1:4 ratio to control patients who were surviving on the day of death event for a case. There were 105 cases identified and 424 controls during this same period. All statistical analyses were performed using the R package. Variable selection was performed through using a Bayesian regression model to obtain posterior probabilities as a modification of the two-step method for variable selection proposed by Newcombe et al (2018). Variables that were ranked highly with posterior probability of at least 90% were then selected for a Breslow modified conditional multivariate logistic regression to determine coefficients and odds ratios. Variables that were significant were then used in a model with repeating the same algorithm for final results.

Results

The mean age of those deceased was 74.6 compared to those who survived 61.5. Of those who experienced mortality, N=51 were male or 62.2% and N=31 or 37.8% were female. By race,

N=65 or 70.7% were Black/African American and N=10 or 10.9% were Hispanic/LatinX. 53.7% of those admitted to the ICU (N=44) experienced mortality. Of those who experienced mortality, N=35 or 42.7% were intubated. Factors associated with worsened mortality included age (OR=9.50, $p < 0.01$). Those on statins (OR=0.42, p

Conclusion

Mortality from COVID-19 amongst our hospitalized patients was found to be worse amongst older patients as well as those who were intubated. Our patients who were maintained on high flow nasal cannula, in comparison did not experience worse mortality. The role of oxygenation therapies beyond intubation should be further investigated. Higher levels of inflammatory markers including CRP, d-dimer, and LDH similar to other studies have been found to be more associated with mortality from COVID-19. It is important to track these clinical indicators and assess the utility of these biomarkers to predict mortality. We found that statins were protective likely due to inflammatory effects. We also found a protective effect for valsartan. The mechanisms for this should be further explored.

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DISTRICT OF COLUMBIA POSTER FINALIST - RESEARCH

Adrienne N. Poon, MD FACP

Establishing a COVID-19 Biorepository in Washington, DC

Adrienne N. Poon, MD FACP

Title

Establishing a COVID-19 Biorepository in Washington, DC

Introduction

We have established a prospective longitudinal cohort study of patients diagnosed with COVID-19 in Washington, DC with plans for follow-up over the course of one year. This biorepository aims to collect both biospecimens and clinical data to promote scientific inquiry into the basic science, pathogenesis, and mechanisms of the virus causing COVID-19. This project will be a valuable resource to stimulate scientific research to further understand evolution of COVID-19 in the acute phase and in longitudinal follow-up given reported prolonged persistence of symptoms beyond the acute phase in a proportion of patients.

Methods

This bank includes both clinical interviews and specimens collected once during the first 11 days of illness and at discrete follow-up time points (10 week, 6 months, and 12 months) post-infection. SARS-CoV-2 RNA has been detected not only in the respiratory tract but also in blood, urine, and stool specimens. At baseline, nasopharyngeal or oropharyngeal swabs will be collected for RT-PCR of SARS-CoV-2. Serological tests from adult patients (30mL) based upon safety guidelines are collected for analysis of neutralizing antibodies, cellular markers of immune activation and soluble pro-inflammatory mediators. Urine studies and respiratory fluid are collected as well. Follow-up studies include repeated nasopharyngeal/ oropharyngeal specimens, blood tests from adult patients (50mL), and urine studies.

Results

Currently, we have enrolled 55 participants including 45 enrollments at baseline. Of these participants, N= 23 (51.1%) are female and N= 22 (48.9%) are male. The mean age at onset of infection is 54. The large majority of participants are black (N=40, 88.9%), followed by white (N=2, 4.4%) and Hispanic (N=3, 6.7%). Co-morbidities included hypertension (N= 30, 66.7%), diabetes (N= 16, 35.6%), cardiovascular disease (N= 14, 31.1%), hyperlipidemia (N= 17, 37.8%), obesity (N= 28, 62.2%), and smoking (N= 18, 40.0%). Initial outcomes of our baseline enrollments showed that N= 44 (97.8%) required hospitalization. The average length of hospital

stay was 9.1 days and N = 9 (20.0%) required ICU admission. Treatments included Remdesivir (N= 12, 26.7%) and Dexamethasone (N= 17, 37.8%). Outcomes also included N = 43 (95.6%) who survived to discharge and N = 2 (4.4%) who experienced mortality.

Conclusion

The creation and establishment of a COVID-19 biorepository will be a valuable resource for scientific investigators to study the pathogenesis and mechanisms of the SARS-CoV-2 virus. We expect this bio-repository to continue to grow as the epidemic of COVID-19 continues to grow in DC towards a third wave of infections. Similar to epidemic trends in DC where the large majority of diagnoses and hospitalizations have been among communities of color, we have found that the majority of enrollments have been from these communities. The willingness of community members to participate in this study and support better understanding of COVID-19 is invaluable towards the study of health disparities facing this community. Study retention beyond acute enrollments has been a challenge, but instituting processes for improved communication has helped strengthen retention. Through this large coordinated team-based effort and contributions from participants, this biorepository will be a valuable resource for the scientific community to better understand COVID-19.

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FLORIDA POSTER FINALIST - RESEARCH Nishi Dedania, MD

IMPROVING FORMAL DIDACTIC TEACHING ON INTERNAL MEDICINE WARDS: AN ELUSIVE DREAM OR A TANGIBLE GOAL?

Nishi Dedania, MD

Title

IMPROVING FORMAL DIDACTIC TEACHING ON INTERNAL MEDICINE WARDS: AN ELUSIVE DREAM OR A TANGIBLE GOAL?

Introduction

Residents identify formal didactic teaching (FDT) as a critical component of learning on the medical wards on annual residency surveys. Similarly, faculty express a desire to incorporate FDT into the daily inpatient rotation experience. However, both residents and faculty note multiple barriers to its consistent implementation. We aim to study the impact of various interventions on resident and faculty perceptions on the frequency and quality, as well as their overall satisfaction with FDT.

Methods

We designed an online survey that was then electronically distributed amongst the survey participants. All residents (PGY1-4) who rotate on inpatient medical wards as part of the Internal Medicine Residency at a large academic center were included in this study. Internal medicine faculty who attend on the teaching services at two sites were surveyed. Survey data studied the frequency, quality, satisfaction, and barriers to FDT from a resident and faculty perspective.

Results

Survey data was collected from 92 residents and 45 faculty members (62% and 61% response rate, respectively). FDT was reported by the residents as relevant to patient cases (90% agree), at the appropriate level of training (80% agree), and effective (74% agree). Similarly, 69% of faculty were satisfied with the quality of their own FDT but only 44% were comfortable teaching on a wide range of topics. Residents indicate FDT only occurs consistently (often or always) 27% of the time in their daily inpatient experience and is only efficiently presented 48% of the time. Likewise, faculty note FDT only occurs more than twice per week 28% of the time. Less than half of the residents and faculty (40% and 38%, respectively) report being satisfied/very satisfied with the current frequency of didactic teaching of wards. Based on qualitative data, both residents and faculty report lack of time as the largest barrier to FDT (74

and 31 responses, respectively) while faculty also report lack of time to prepare lectures. In addition, 70% of faculty indicated that having a library of prepared mini lectures would be a helpful resource for FDT on the wards.

Conclusion

FDT is a core method of education during residency training. When FDT occurs at our institution, residents and faculty are often satisfied with the quality and appropriateness of lectures but this practice lacks consistency and efficiency. For both groups, time is the biggest barrier to consistent teaching, including lack of preparation time for faculty, inconsistent dedicated time for FDT, length of teaching sessions, and conflicting clinical duties. Creating a library of high yield, clinically relevant, 10-15 minute long didactic lectures in PowerPoint format to utilize prior to daily teaching rounds is proposed as a solution to improve FDT.

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GEORGIA POSTER FINALIST - RESEARCH Tracey Henry, MD MPH MS FACP

Risk factors for 30-day readmission of COVID-19 Patients: A retrospective – prospective study from the CROSS (COVID-19 Characteristics of Readmissions and Outcomes and Social Determinants of Health Study) Collaborative

Tracey Henry, MD MPH MS FACP

Title

Risk factors for 30-day readmission of COVID-19 Patients: A retrospective – prospective study from the CROSS (COVID-19 Characteristics of Readmissions and Outcomes and Social Determinants of Health Study) Collaborative

Introduction

The number of survivors of an initial COVID-19 disease hospitalization is growing and further data describing clinical and sociodemographic risk factors for hospital readmissions is needed. The CROSS Collaborative was developed in July 2020 and is a multidisciplinary, multi-hospital group dedicated to examining reasons for COVID-19 hospital readmissions, associated clinical outcomes, and exploration of social determinants of health that place patients at risk for readmission. The objective of this project is to identify the clinical characteristics, clinical outcomes, and specific social determinants of health of COVID-19 readmitted patients to detect predictors of readmissions and to develop tools to aid in preventing readmissions.

Methods

In this retrospective/prospective study, data extraction via a clinical data warehouse and manual chart reviews was used to gather patient demographics, clinical characteristics and clinical outcomes of readmitted COVID-19 patients to four Emory Healthcare hospitals. (Patient-level zip code data will be used in future analyses to explore the effects of social determinants of health on 30-day readmissions). Participants: PCR-confirmed COVID-19 positive adults (>18 years old) with all-cause hospital readmissions within 30 days of index admission to four Emory Healthcare hospitals from March 1 to November 14, 2020. Measurements: Demographics and clinical characteristics including sex, race/ethnicity, and comorbidities (obesity, hypertension, diabetes mellitus, hyperlipidemia, congestive heart failure, chronic kidney disease, end stage renal disease, malignancy, chronic lung disease, HIV, dementia, and mental health diagnoses) were extracted from the charts of readmitted COVID-19 patients. The primary endpoint was 30-day all-cause readmission.

Results

2399 PCR-positive COVID-19 patients were hospitalized. 153 were readmitted within 30 days. 72% of the readmitted patients were Black or Hispanic. 30-day readmission rates varied from 1.9% to 4.7 % across the four hospitals. Diabetes (P-value: 0.03) and end stage renal disease (P-value: 0.004) reached statistical significance for 30-day readmission.

Conclusion

Black and Hispanic patients comprised the majority (72%) of readmitted COVID-19 patients. Diabetes and end stage renal disease were associated with increased risk for 30-day readmission in COVID-19 patients.

MASSACHUSETTS POSTER FINALIST - RESEARCH Shrein Saini, MD

Blood culture contaminants and COVID surge.

Shrein Saini, MD

Title

Blood culture contaminants and COVID surge.

Introduction

During the COVID-19 surge in early 2020, our hospital observed an increase in the number of blood cultures ordered, and an increased rate of blood contamination. We conducted this retrospective chart review to examine factors associated with contaminated blood cultures during the COVID-19 surge.

Methods

Retrospective chart review of patients in two intensive care units (NCCU and MICU) from 03/24/2020-05/01/2020. We reviewed all the blood culture reports from these two units. We compared the blood culture reports from the COVID surge to blood culture report data from 2019 during same time frame. NCCU exclusively cared for patients with confirmed or suspected COVID and the MICU cared for patients with and without COVID. An infectious disease physician reviewed the positive blood culture reports and corresponding medical record to confirm the appropriate attribution of blood culture. We defined blood culture contaminants as followed by our microbiology lab [2&3].

Results

In the NCCU, in the above time frame in 2020, 144 blood culture bottles drawn across 9 patients, all were COVID positive. 16 bottles flagged positive, all of them were blood culture contaminants. Overall, the contaminant rate was 11.1% i.e. 16/144. Out of these contaminants, 14 bottles (87.5%) were Coagulase negative staphylococcus and 2 bottles (12.5%) were streptococcus anginosus. In 2019; there were only 28 blood culture bottles drawn and none of them were positive in the same time frame. In the MICU, in the above time frame in 2020, 114 blood culture bottles drawn across 9 patients all were COVID negative. 30 bottles flagged positive out of which 4 bottles were contaminants. Overall, the contaminant rate was 3.5% i.e. 4/114 bottles. All the 4 bottles were positive for Coagulase negative staphylococcus. In 2019, there were 244 blood culture bottles drawn out of which 50 were positive out of which 18 were contaminants making the contaminant rate 7.3% i.e. 18/244 bottles.

Conclusion

There is a significant increase seen in blood culture contaminant rate in NCCU by 7.6% as compared to MICU. Comparing this rate to last year, the contamination rate in NCCU exceeds the combined rate in both units in 2019 by 3.8%. Also, during COVID surge in NCCU we witnessed more blood culture orders when compared to last year, likely because COVID patients were persistently febrile. Most blood culture contaminants were skin flora. During the first COVID surge, some nurses were reassigned to the ICU to help manage the influx of critically ill patients. These nurses are not trained in taking care of ICU patients and frequent phlebotomies that are done routinely by ICU staff. Staff in the NCCU were also using PAPR (Powered Air Purifying Respirator) as PPE and may not have been accustomed to performing procedures such as blood culture while wearing PAPR which may have compromised the sterile procedure. Another likely reason for this increase may have been the rushed manner of drawing the blood cultures in order to minimize the contact with COVID patients. In preparation for a second surge, above factors should be kept in mind to provide high value care.

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MISSOURI POSTER FINALIST - RESEARCH Paul D Hansen, MD FACP

Ketorolac -- First Do No Harm

Paul D Hansen, MD FACP

Title

Ketorolac -- First Do No Harm

Introduction

Ketorolac, a non-steroidal anti-inflammatory drug, is commonly administered for acute pain via intravenous(IV) or intramuscular(IM) routes in a variety of care settings. IV or IM ketorolac are frequently utilized despite equally effective oral alternatives, increasing cost and the risk for complications such as needle-stick injuries and injection site reactions. Despite concern for the side effect profile (renal injury, gastrointestinal hemorrhage and increased post-operative bleeding), parenteral dosing above the proposed therapeutic ceiling of 10mg is common. The selection of IM injection site is often based on training/practice patterns, which may not be in line with current best practice guidelines. Specifically, the dorsogluteal area (buttock) is no longer a recommended site for IM injection given its proximity to the sciatic nerve and superior gluteal artery.

Methods

Objective: to characterize ketorolac utilization across various care settings in a community-based health system. Population: Retrospective review of all patients who were administered ketorolac during a patient encounter from July 1, 2018 through June 30, 2019 within the Mercy Healthcare System. Data Source: Clarity® (an electronic medical record database). A QlikView customizable data mining tool was created and applied using population data from Clarity®. Modifiable variables included: dose, number of doses, administration route, IM injection site, care setting grouping based on encounter type or location, patient demographic data, diagnosis, and ordering provider groupings (attending, resident, NP, PA).

Results

90,027 encounters and 104,386 doses of ketorolac were identified. 49.3% of the doses administered were in the ED. Over 3 million milligrams(mg) of ketorolac were administered. IV Ketorolac accounted for 61% of the doses and 42% of the mg administered, respectively. The most common IV dose was 30mg. IM ketorolac was ordered around 35% of the time, accounting for 58% of total mg administered, with the most common dose being 60mg. The

buttock was the most common site utilized for IM injections. There was a female predominance of 66%. Common diagnostic indications for ketorolac included abdominopelvic pain(14.6%), headache(13.9%), back pain(13.9%), flank pain(11.3%), and musculoskeletal pain(10.7%). Patients 65 years and older received 14.3% of the doses. 32.3% were dosed at 30mg or above and 9% were dosed at 60mg or above. The clinic setting accounted for 86.3% of doses 60mg or greater that were administered to patients aged 65 and older.

Conclusion

Ketorolac is dosed well above the proposed therapeutic ceiling of 10mg greater than 99% of the time. Greater than 2 of the 3.1 million mg administered within a fiscal year across the healthcare system were likely given without patient benefit but with increased cost and potential harm. Dosing above the therapeutic ceiling in patients 65 years and older is common, especially in the clinic setting. IM injections are used less frequently than IV, but account for the majority of mg administered due to the higher doses commonly utilized. The buttock remains the most common IM injection site, despite best practice guidelines recommending against its use. Utilization of the QlikView tool for this study helped identify several areas where QI projects could be implemented to improve care on a system-wide level.

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MISSOURI POSTER FINALIST - RESEARCH Benjamin Harris, DO

Development and Implementation of a Delirium Prevention Process

Benjamin Harris, DO

Title

Development and Implementation of a Delirium Prevention Process

Introduction

Delirium is a common complication within the hospital setting with nearly one in three older patients experiencing it during hospitalization (1). Reduction in delirium is associated with decreased falls, decreased distress of patients and caregivers, and decreased length of stay as a result (2). These reduction techniques have historically been low-cost and focused on avoidance of pharmacologic intervention. Identification and reduction of delirium, therefore, has the opportunity to improve inpatient care in a relatively cost-effective manner.

Methods

Over a five month period, we incorporated a delirium scoring system to identify patients with delirium while hospitalized throughout our intermediate care (step-down) floor. A CAM (Confusion Assessment Method) score is already commonly used within the ICU setting and the same training was used to educate nurses within the step-down unit how to screen patients. This was labeled as a non-ICU CAM score and a patient would either score negative to indicate no delirium present or positive to indicate the patient currently had delirium. With appropriate identification of these patients, effectiveness of interventions could then be evaluated objectively. We first employed a review of inpatient and home medications by our pharmacy department. Physicians were also advised to avoid medications known to increase risk to delirium (i.e. benzodiazepines, opiates) and medications were re-timed as to avoid waking patients in the middle of the night if possible. The medication review intervention was then followed by physician and nursing education. This education stressed good day and night cycles which included blinds open and lights on during the day along with blinds closed, lights off, sounds and vital signs minimized at night. These low-cost interventions were encouraged as long as the clinical scenario allowed for continued safe patient care. A flyer was distributed among nurses and the interventions were discussed frequently during the daily nursing huddle by the physician.

Results

Prior to any intervention, the average positive non-ICU cam score was 10.5% of those patients within the intermediate care population. The first intervention was started on week ten when a

pharmacist was notified of a patient scoring positive for delirium. At that point, medications were reviewed and medications re-timed. This intervention led to an average decrease in positive non-ICU CAM score of 10.5% down to near 8%. At week 14, the further interventions with nursing and physician education led to a further decrease in delirium positivity near 5%. Overall, our cumulative interventions decreased patients with delirium in half from near 10% to 5%.

Conclusion

Delirium continues to be a common complication within the hospitalized population, especially those in the elderly age group and those with higher acuity of disease. We developed a system for detection of patients with delirium and incorporated interventions to reduce the prevalence of delirium. Initial testing indicates significant delirium reduction with pharmacy medication review, nursing education, and physician education. Given that these interventions discussed are relatively low cost, further research would be beneficial to assess the correlation of delirium reduction with length of stay, mortality, and other metrics of importance to the hospital community.

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NEW JERSEY POSTER FINALIST - RESEARCH Ashesha Mechineni, MD

IS SERUM PROCALCITONIN A VALID PROGNOSTIC INDICATOR FOR COVID 19 INPATIENT CLINICAL OUTCOMES?

Ashesha Mechineni, MD

Title

IS SERUM PROCALCITONIN A VALID PROGNOSTIC INDICATOR FOR COVID 19 INPATIENT CLINICAL OUTCOMES?

Introduction

Coronavirus disease 19 (COVID 19), caused by Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), originated in Wuhan, China, in the latter part of 2019 and quickly escalated into a worldwide pandemic. One of the strongest tools for monitoring care of inpatients with the proven diagnosis of COVID 19 has been tracking inflammatory markers. Procalcitonin is a classical biomarker for bacterial infection used by clinicians worldwide. This study evaluates the role of using procalcitonin in the care of COVID 19 affected patients and its prognostic value.

Methods

A single-center, retrospective observational study obtaining data from electronic medical records of all COVID-19 positive patients admitted to an academic tertiary care center in New Jersey between March 15th, 2020 to May 6th, 2020. There were a total of 1210 patients identified with primary inpatient diagnosis of COVID related acute illness. Among these patients, 585 patients had a recorded serum procalcitonin value during their hospitalization and that is the study group. We analyzed the primary outcome as discharged vs died. Fisher's exact t-test and Pearson correlation coefficient were used to comparing the categorical and continuous variables when applicable.

Results

The median age group of patients included in the study was 64 years and 65.2% of them were males. The population distribution of ethnicity groups was 47.8% Hispanic origin, 24.9% Caucasian, 17.7% African-American. The most common comorbid conditions recorded as Hypertension(55.7%),Diabetes Mellitus (38.6%),Obesity (40.1%), and Pre-existing Chronic kidney disease(9.9%) The most common symptoms of presentation among patients were cough(68.7%),fever(55.8%), and shortness of breath(75.8%). The mean serum procalcitonin of the two groups of patients who were ultimately discharged or died during the course of

hospitalization was 5.17ng/ml and 11.61 ng/ml respectively. Statistically, a significant difference is observed between both the groups with a p-value of 0.002(95% CI(confidence interval): (-10.6)-(-2.2). Serum procalcitonin is also statistically correlated to elevated CRP(C -reactive protein) with correlation co-efficient being noted as 0.19 (p-value: 0.0001, 95%CI: 0.11-0.27). There was no statistically significant relationship between serum procalcitonin value and PF ratio(Horowitz index) used to measure the severity of ARDS.

Conclusion

Serum procalcitonin is one of the prognostic indicators useful to predict final outcome in COVID 19 inpatients. It correlates to the inflammatory marker CRP thus indirectly helping to chart the clinical course trajectory. However, does not have any relationship to predict the severity of ARDS(Acute respiratory distress syndrome) or Ventilator use.

NEW YORK POSTER FINALIST - RESEARCH Marc J Braunstein, MD FACP

Relationships between Inpatient Palliative Care Consultation and Outcomes of Patients with Hematologic Malignancies

Marc J Braunstein, MD FACP

Title

Relationships between Inpatient Palliative Care Consultation and Outcomes of Patients with Hematologic Malignancies

Introduction

Supportive oncology provided by palliative care (PC) consultation has proven to prolong survival in randomized studies of patients with advanced cancers, particularly in those with solid tumors.[1] While patients with HM have similar symptom burden and distress as those with advanced solid tumors, the impact of PC consultation is less characterized in patients with HM.[2] We hypothesize that patients with HM are less likely to receive inpatient PC consultation. In this study, outcomes of patients with HM who received inpatient PC consultation were compared to a control group of disease-matched controls who were not seen by PC.

Methods

A retrospective chart review of patients with HM admitted to our inpatient oncology service between 2013-2019 was performed. HM included acute and chronic leukemias, multiple myeloma, lymphoma, myelodysplasia, and myeloproliferative neoplasms. Data were summarized in SAS v9.4 (SAS, Cary, NC) using descriptive statistics for patients who received PC consultation and controls who did not, and these groups were also compared using Wilcoxon rank-sum, chi-square, and Fisher's exact tests as appropriate based on the type and distribution of the data. Multiple logistic regression models with stepwise variable selection methods were used to find predictors of outcomes.

Results

Over the 7-year study period, 3,654 admissions were to the oncology service, among which 370 HM patients who were actively on treatment were included. Of these, 102 (27%) received PC consultation, and the 268 who were not seen by PC served as a control group. Median age of the PC group was 73 (33-96) and 67 (16-97) among controls, $P=0.002$. Groups were similar in terms of comorbidities (CHF, CAD, diabetes, and liver/renal disease). PC consults were greater

for patients with acute leukemia and myelodysplasia (38% in each group), and least for those with chronic leukemias (15%) and myeloproliferative diseases (18%). Median length of stay was longer for patients seen by PC (11.5 vs. 6 days, $P=.001$), and these patients were more likely to be admitted to the intensive care (27.5 vs. 8.6%, P

Conclusion

Patients with HM who received PC consultation had a lower 30-day readmission rate and higher 6-month mortality, despite lack of differences in the time from their cancer diagnosis compared to the control group not seen by PC. More than two thirds of all patients did not receive a PC consultation, nor did over a third of patients who expired within 6 months of admission. Further research is required to investigate other factors that might warranted PC consultation, such as the severity of illness at the time of hospitalization. Results of this study suggest that inpatient PC consultation is associated with decreased readmission rate, yet these services are underutilized in patients with HM who are projected to have shorter overall survival.

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NEW YORK POSTER FINALIST - RESEARCH Asim A Kichloo, MD

Trends and outcomes of ERCP in patients with Liver Cirrhosis: An Analysis of the National Inpatient Sample from 2009 to 2014

Asim A Kichloo, MD

Title

Trends and outcomes of ERCP in patients with Liver Cirrhosis: An Analysis of the National Inpatient Sample from 2009 to 2014

Introduction

There is limited availability of data on endoscopic retrograde cholangiopancreatography (ERCP) in patients with Liver Cirrhosis. In this cross-sectional study, we analyzed the demographic variation, complications, and the predictors of complications and mortality in cirrhotic patients undergoing ERCP.

Methods

We identified the adult cirrhotic population undergoing ERCP by previously validated International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) codes using the National Inpatient Sample (NIS) database from 2009 to 2014. We compared the baseline characteristics of patients who underwent diagnostic versus therapeutic ERCP and the rate of complications between the two groups. Furthermore, we utilized a multivariate regression model to estimate the impact of cirrhosis on ERCP outcomes.

Results

From 2009 to 2014, there were 1,038,258 adult hospitalizations with ERCP, out of which 31,294 (3.05%) had cirrhosis as a concurrent diagnosis. There were 21,835 (69.8%) therapeutic ERCPs and 9,459 diagnostic ERCPs (30.2%). ERCP-associated hemorrhage was higher in cirrhotics than non-cirrhotics (2.5% vs 1.2%; $P < 0.0001$) and ERCP-associated hemorrhage (2.7% vs. 2.1%; $P < 0.0001$) were higher in therapeutic ERCP group than diagnostic ERCP. Perforation (0.1% vs 0.3%; $P < 0.0001$) and cholecystitis (1.9 vs. 3.1%; $P < 0.0001$) were lower in therapeutic ERCP group than diagnostic ERCP. On multivariable analysis, with every one-point increase in Elixhauser co-morbidity index, the risk of complications increased significantly (OR 1.11; 95% CI 1.07 – 1.16; $P < 0.0001$). Also, with each one-point increase in Elixhauser co-morbidity index, the risk of mortality increased significantly (OR 1.19; 95% CI 1.13 – 1.26; $P < 0.0001$).

Conclusion

In cirrhotic patients undergoing ERCP, the rate of post-ERCP pancreatitis and ERCP-associated hemorrhage are higher in therapeutic ERCP than diagnostic ERCP whereas perforation and cholecystitis are lower in therapeutic ERCP than diagnostic ERCP. Performing ERCPs in small and medium sized hospitals may improve outcomes in cirrhotic patients.

NEW YORK POSTER FINALIST - RESEARCH Ankita Sagar, MD MPH FACP

Pre-Visit Planning in Internal Medicine Sub-Specialty Academic Practices: A Framework for Improving Pneumococcal Vaccination Rates in Persons under the Age of 65 Years

Ankita Sagar, MD MPH FACP

Title

Pre-Visit Planning in Internal Medicine Sub-Specialty Academic Practices: A Framework for Improving Pneumococcal Vaccination Rates in Persons under the Age of 65 Years

Introduction

The Center for Disease Control and Prevention (CDC) supports the role of primary and subspecialty clinicians in counseling patients under the age of 65 years to receive pneumococcal vaccination if they are at an increased risk of pneumococcal infection.(1)?Despite the ready availability of pneumococcal vaccines, the rates among adults with chronic and immunocompromised conditions remains low, while burden of invasive pneumococcal disease is high.(2,3) Our quality improvement initiative aimed to improve vaccination rate for patients less than 65 years old and at increased risk of pneumococcal disease by?utilizing a modified pre-visit huddle for subspecialty practices in a large academic health center.???

Methods

Our quality improvement initiative incorporated four parts: 1) clinician education webinar, 2) pre-visit nursing call to address vaccination status, 3) pre-visit counseling, and 4)?interdisciplinary pre-visit huddles. An evidenced based educational webinar was presented to interdisciplinary team members in medicine subspecialty practices. Subsequently, the practices utilized interdisciplinary pre-visit counseling and huddle for patients at risk of invasive pneumococcal disease. Nurses performed pre-visit counseling for eligible patients, focusing on motivational interviewing, to confirm vaccination status, discuss vaccination needs, and update clinical records. The nurses would then discuss these findings at the pre-visit huddles to inform clinicians of pending vaccination needs.

Results

The total number of patients deemed eligible for the initiative was 482.?All?patients?were under the age of 65, and 59% were female, 41% were male.?Under ethnicity, 75% of patients identified as?Non-Hispanic/Latino,?6% identified as Hispanic or Latino, and remainder declined

to answer or marked “other”. Of eligible patients, 34% identified as Asian (8%) or Black or African American (26%), while 36% identified as White. Of the 482, approximately 90 were removed from initiative due to 1) telemedicine visits, 2) new patient visits, or 3) cancelled appointments. Majority of the pre-visit patients (36%) were amenable to receiving a vaccine while 5% previously received vaccination. Seventeen percent deferred vaccination and 9% were unreachable during the pre-visit call. After 10 weeks of the initiative, 40% had documented pneumococcal vaccination, up from 28% at baseline. This resulted in a 43% increase in pneumococcal vaccination rate.

Conclusion

While the CDC recommends pneumococcal vaccination for patients at increased risk of infection under the age of 65, the rates remain low. Our rapid cycle quality improvement initiative resulted in a 43% increase in vaccination rate in this cohort. Our quality improvement initiative incorporated four parts: 1) clinician education webinar, 2) pre-visit nursing call to address vaccination status, 3) pre-visit counseling, and 4) interdisciplinary pre-visit huddles. Limitations of this initiative include: 1) clinician pre-/post-intervention knowledge assessment is pending, 2) patients assigned to telemedicine or new patient visit types were not included in this cohort. Of note, more patients had an updated immunization record compared to the original number likely due to increased emphasis placed on pneumococcal vaccination in these practice sites. The significant increase in vaccination rate provides a framework in multidisciplinary approach to pre-visit planning in non-primary care specialties within Internal Medicine and could be utilized for other vaccination efforts.

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OHIO POSTER FINALIST - RESEARCH Vivek Mathur, MD FACP

Is Orange Juice Guilty?

Vivek Mathur, MD FACP

Title

Is Orange Juice Guilty?

Introduction

A 31-year-old female is admitted for diabetic ketoacidosis (DKA). She has a history of diabetes mellitus type 1 and chronic kidney disease (CKD) stage 3 on an angiotensin receptor blocker.

Methods

The DKA resolved however she continued to suffer from labile blood glucoses and hyperkalemia, as high as 6.9 mmol/L. She had at least six episodes of hypoglycemia on the medical floor. Hypoglycemic episodes were treated with orange juice. It is estimated she was given approximately 56 ounces of orange juice in a 24 hour time period.

Results

Orange juice has 12.7 meq of potassium and 21 grams of sugar in eight ounces. It is a common treatment for hypoglycemia due to accessibility and the assumption that it does not cause side effects. She received nearly 90 meq of potassium despite normokalemia. The patient's CKD stage 3 and use of an angiotensin receptor blocker (ARB) put the patient at higher risk of hyperkalemia than most patients. D50 ampules (commonly 12.5 or 25 grams) would have been better, as there is no potassium in these formulations and have a similar sugar content as four to eight ounces of orange juice.

Conclusion

Easier access to IV D50 or oral glucose gels should be considered to decrease the use of orange juice as hypoglycemic treatment. These may prevent hyperkalemia, especially in those with CKD and/or on hyperkalemic-potentiating medications. This illustrates the importance of reviewing a patient's comorbidities and medications before recommending any treatment. The patient's potassium was brought down to a normal range through medical intervention. Had the patient been treated with D50 ampules initially, hyperkalemia would have been avoided.

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TENNESSEE POSTER FINALIST - RESEARCH Titilope Olanipekun, MD

Coronavirus Disease 2019 (COVID-19) Vaccine Uptake Among Recovered African American Patients.

Titilope Olanipekun, MD

Title

Coronavirus Disease 2019 (COVID-19) Vaccine Uptake Among Recovered African American Patients.

Introduction

The preliminary results of Phase 3 Coronavirus Disease 2019 (COVID-19) vaccine trials by some pharmaceutical companies, showing effectiveness rates of > 90% is a key step in the fight against the pandemic. However, adequate uptake of a safe and effective COVID-19 vaccine when it eventually becomes available will be important to minimize COVID-19 associated morbidity and mortality. Though COVID-19 hospitalization and mortality rates are disproportionately higher among African Americans compared to other racial groups in the U.S, a recent survey of US adults showed that African Americans had the lowest COVID-19 vaccine acceptance rate. There is a paucity of data on COVID-19 vaccine acceptability in patients who recovered from COVID-19 infection. It is unclear how long natural immunity from a previous COVID-19 infection lasts, with some studies reporting up to 6 months⁶. As such, previously infected individuals may need to be vaccinated to maintain immunity levels. We evaluated the COVID-19 vaccination acceptability among African American patients who have recovered from COVID-19 infection.

Methods

African American patients hospitalized with COVID-19 infection to the Grady Memorial Hospital in Atlanta, Georgia, between April 1, 2020, and May 30, 2020, were asked to participate in the study after recovery and discharge from the hospital. All participants completed a survey administered over the phone by trained physicians on the likelihood to accept a 'proven safe and effective' vaccine and factors impacting their decisions. Patients' demographic and comorbidity data were obtained from the electronic health record system EPIC software. Data analysis was performed using R version 3.6.3 (R Foundation). The study was approved by the Morehouse School of Medicine institutional review board and verbal informed consent was obtained from the participants.

Results

Out of 132 patients eligible for participation in the study, 119 completed the survey. The median age was 64 years (IQR, 54.5 - 73.5 years) and 58% were men. The most prevalent comorbidity was hypertension (68%) followed by diabetes mellitus (33%) and heart failure (20%). Overall, 30% responded they would accept a vaccine against COVID-19 while 16% were undecided. Reasons provided by participants for potentially declining COVID-19 vaccination included the perception that the vaccine will not be effective irrespective of what the research shows (69%), fear of vaccine-related side effects (64%), distrust of the pharmaceutical companies that produce vaccines (60%), and 29% believed they already had immunity against COVID-19 re-infection.

Conclusion

Our study shows that only 3 out of 10 African American patients who recovered from COVID-19 infection will accept a 'safe and effective' vaccine against the disease. Interestingly, this potential uptake rate is lower than previously reported among non-infected African Americans (40%). One-third of the patients in our survey believed they have immunity against COVID-19 which may have played a role in the low acceptability rate. The drive for COVID-19 vaccination should not stop at developing a safe and effective vaccine. Concerted efforts integrating medical providers and community-based advocacy groups may be necessary to dispel the misconceptions around the COVID-19 vaccine to improve vaccination uptake particularly in high-risk and vulnerable groups such as African Americans.

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VIRGINIA POSTER FINALIST - RESEARCH Patrick T Fadden, MD FACP

Impact of Education on Prescribing of Pharmacotherapy for Alcohol Use Disorder in Hospitalized Veterans

Patrick T Fadden, MD FACP

Title

Impact of Education on Prescribing of Pharmacotherapy for Alcohol Use Disorder in Hospitalized Veterans

Introduction

Pharmacotherapy for alcohol use disorder (AUD) has been shown to reduce alcohol relapses, frequency and quantity of alcohol consumption, alcohol cravings, and healthcare utilization, yet it remains underutilized in the treatment of AUD. Consequences of AUD lead to many hospital admissions, however the inpatient setting is often overlooked as a potential setting to identify and treat AUD. We sought to assess the impact of two interprofessional educational interventions on percentage of veteran patients receiving medications for AUD at discharge following admission for alcohol related disorders.

Methods

We conducted a single-center, retrospective chart review of hospitalized veterans to assess evidence-based pharmacotherapy prescribing prior to and following two phases of interprofessional educational interventions regarding evidence-based treatment of AUD. Educational session one provided general information regarding the identification and treatment of AUD to internal medicine physicians and pharmacists, while educational session two consisted of tailored educational outreach to internal medicine physicians, pharmacists, and alcohol, tobacco, or other drugs (ATOD) social workers. This study took place at the Central Virginia Veterans Affairs Health Care System (CVHCS), a large level 1A facility.

Results

Following the tailored educational session, there was a significant increase in prescribing of pharmacotherapy for AUD (4% vs 41%, $p = .0001$). Naltrexone was the predominant first-line pharmacotherapy option prescribed to veterans. Only about 13% of veterans had a contraindication to naltrexone and none of the included veterans had contraindications to all of the first-line medication options. None of the veterans that received a medication for AUD at discharge had an all-cause 30-day hospital re-admission.

Conclusion

This project proved that educational outreach to internal medicine physicians, pharmacists, and social workers can lead to a significant increase in prescribing of medications for alcohol use disorder in the inpatient setting. Following the second educational session addressing specific barriers, there was a significant increase in prescribing of evidence-based medications for AUD at discharge. This increase may be attributed to the incorporation of facility-specific data and barriers into educational outreach. Naltrexone was the predominant first-line medication option prescribed to veterans, likely due to its ease of prescribing, level of evidence, and tolerable side effect profile.

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WISCONSIN POSTER FINALIST - RESEARCH Kathryn EK Berlin, DO

Mini M&M Conferences Create a Structured Opportunity for Self-Reflection

Kathryn EK Berlin, DO

Title

Mini M&M Conferences Create a Structured Opportunity for Self-Reflection

Introduction

There has been a push to integrate emotional education into residency curricula especially as studies have demonstrated a link with improved stress management skills and prevention of burnout. QI education is also included in all residency training; however, studies have shown that residents still have very limited knowledge in regards to its integration into practice.

Methods

We created a mini M&M program at the Clement J. Zablocki VA Medical Center (Milwaukee, WI) with three goals in mind: (1) To encourage & educate residents on the integration of QI into daily practice, (2) To provide normalization of the high emotional distress that can be associated with medical practice and, (3) To educate residents on ways to cope with this distress and to help their team manage and process these traumatic events. Ward teams submitted a monthly case that featured an example of a patient safety or quality improvement error via a worksheet. They also were charged with considering why an event happened and what could prevent it from happening. A chief resident then investigated and would put together a powerpoint including the cases and teaching points. A monthly noon conference closed to faculty was dedicated to reviewing this powerpoint. The conference taught residents a method for debriefing and then reviewed each de-identified case. Residents would discuss the emotional and systems aspect of the case after.

Results

Participants noted more areas in their own practice for quality improvement (10/18, 55.6%) and appreciated the integration of QI teaching into a busy ward service (11/18, 61.1%). After the noon conference, participants were more “aware of the significant toll distressing patient care events have on providers” (37/40, 93%) and agreed that discussing emotions and difficult cases was beneficial (36/40, 90%). Finally, while only about ½ of the participants had previously participated in a debrief, they felt more comfortable with the idea of leading a debriefing (2.58 to 3.09, $p=0.03$).

Conclusion

A Mini M&M program can improve resident QI education as well as provide education regarding the emotional aspect of medicine and coping strategies, including a debrief session.

Early Career – Clinical Vignettes

PENNSYLVANIA PODIUM PRESENTATION - CLINICAL VIGNETTE

Caitlyn R Moss, MD

IVIG: Placing COP Under Arrest

Caitlyn R Moss, MD

Title

IVIG: Placing COP Under Arrest

Introduction

Cryptogenic organizing pneumonia (COP) is an idiopathic form of interstitial lung disease that presents with dyspnea and a subacute cough with bilateral ground-glass opacities on CT. COP typically responds to steroids. We present the case of a patient with COP who was given IVIG as salvage therapy given worsening hypoxia and steroid-induced psychosis.

Case Presentation

A 72-year-old male with atrial fibrillation, hypertension, and hyperlipidemia presented to the emergency department with dyspnea and scant hemoptysis. He was febrile to 100.3F and tachypneic. Exam revealed bibasilar rales. Labs showed a leukocytosis. Chest x-ray was concerning for multifocal pneumonia; x-ray one-month prior was normal. Urinary S. Pneumo and Legionella antigens, respiratory viral panel including COVID-19, sputum culture, Mycoplasma IgM, HIV, and QuantiFERON gold were all negative. He completed a 7-day course of levofloxacin for community acquired pneumonia but then developed worsening hypoxia requiring oxygen via nasal cannula. Repeat chest CT showed extensive patchy areas of ground-glass attenuation and interstitial thickening bilaterally. Diuresis did not improve his oxygenation. Given concern for interstitial lung disease, prednisone 0.75 mg/kg was started. Autoimmune workup revealed normal rheumatoid factor, ANCA, hypersensitivity pneumonitis panel, angiotensin converting enzyme, aspergillus antibodies, SS-A, SS-B, and anti-dsDNA. ANA was weakly positive at 1:80. Bronchoscopy with bronchoalveolar lavage was completed; bacterial and fungal cultures showed no growth. Biopsy could not be obtained due to hypoxia. Biopsies from video-assisted thoracoscopic surgery showed organizing pneumonia throughout the right lung. Prednisone was increased to 1 mg/kg. Course was complicated by severe hypoxia and hypercarbia requiring high flow nasal cannula and BiPAP. He developed visual and auditory hallucinations, insomnia, and significant agitation. He frequently removed his oxygen and required physical and chemical restraints. Given his steroid-induced psychosis and worsening respiratory failure, he was started on mycophenolate mofetil (MMF). MMF can take weeks to reach its peak, so intravenous immunoglobulin (IVIG) 0.4 g/kg/dose was given for 5 days as an alternative to pulse steroids to induce remission given his steroid-induced psychosis. On day

two of IVIG, he was weaned from 60L/55% FiO₂ via high-flow nasal cannula to 2L nasal cannula and weaned to room air three days afterwards. Steroids were tapered and his agitation and hallucinations resolved. He was discharged with no oxygen requirement eight days after starting IVIG.

Discussion

Most patients diagnosed with COP respond to steroids, typically prednisone at 0.75-1 mg/kg. However, those who do not are at risk for developing persistent or progressive lung fibrosis. For steroid non-responders or those who cannot tolerate the adverse effects, a cytotoxic agent such as cyclophosphamide or MMF is typically started. For fulminant disease leading to respiratory failure, as seen in our patient, pulse steroids are also administered. However, given the psychosis and agitation our patient was experiencing, we felt that pulse steroids were not in his best interest. Based on prior case reports, IVIG was administered instead and resulted in successful induction of remission of his COP. IVIG should be considered in patients with severe COP who are unable to safely receive pulse steroids due to side effects.

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ARKANSAS POSTER FINALIST - CLINICAL VIGNETTE Haritha Machavarapu, MBBS FACP

COVID-19 and skin manifestation – A case report.

Haritha Machavarapu, MBBS FACP

Title

COVID-19 and skin manifestation – A case report.

Introduction

The novel coronavirus seems to cause significant morbidity and mortality. The outbreak of COVID 19 has been declared as healthcare emergency by WHO. The common symptoms of presentation are cough, fever, myalgia, chills, fatigue, headache, shortness of breath and sore throat, rhinorrhoea, diarrhoea, chest pain, change in taste and smell, congestion reported in some cases. The knowledge spectrum of the manifestations of this virus is still limited. There are recent reports of cutaneous manifestations. Here we report a case with skin manifestation.

Case Presentation

A 54 y/o male with past medical history for non-alcoholic liver cirrhosis, ckd, DVT on warfarin presented with weakness and shortness of breath. He was treated for septic shock and diagnosed with right sided hydrothorax. COVID pcr was reported negative on admission. Patient was diagnosed with MSSA bacteremia and antibiotics deescalated from vancomycin to cefazolin. He was started on hemodialysis during the hospitalization. He was coagulopathic secondary to non alcoholic liver cirrhosis. Patient was thrombocytopenic since admission which was secondary to liver cirrhosis. He clinically improved. Around the 10th day since admission, patient was noted to have non blanchable purpuric rash which initially started in the upper extremities and progressed to chest, back and all extremities. Patient was otherwise stable. Biopsy was not performed because of his risk for bleeding. HIV was reported negative. Repeat blood cultures remained negative. Repeat COVID PCR was reported positive on the 13 th day since admission. Patient was otherwise asymptomatic. His thrombocytopenia worsened and work up was consistent with DIC. His respiratory status remained stable. He was discharged to long term acute care.

Discussion

study in china and Italy 7.8% had skin manifestations; unrelated to the severity of the covid19.(1)A case with petechial rash reported in Thailand; misdiagnosed as dengue(2).In a review of literature by Sachdeva et al COVID19 cutaneous manifestations were erythematous

rash, rash with petechiae, vesicular rash, acral ischemia, livedo reticularis and urticaria were reported. Macular or maculopapular exanthema appeared to be the most common presentation (36.1%) and 1.4% with petechiae per a review of literature (3). Jia et al mentioned the most commonly reported skin finding was chilblain-like lesions (40.2%), followed by maculopapular lesions (227, 22.7%), urticarial lesions (89, 8.9%), vesicular lesions (64, 6.4%), livedoid and necrotic lesions (28, 2.8%), and other or nondescript rashes and skin lesions (192, 19.8%) (12). The pathology of the skin changes still unclear. Shehi et al reported microthrombi on biopsy in a COVID patient with maculopapular rash (5). A case series study by Margo et al microscopic and immunohistopathologic studies on pulmonary and cutaneous tissues—Significant complement deposition in the microvasculature, with perivascular neutrophilia and prominent leucocytoclasia suggesting vasculitis was reported. Another study reported high concentrations of lymphocytes without eosinophils, papillary dermal edema, epidermal spongiosis, and lymphohistiocytic infiltrates which is direct effect of the virus (7). Biopsy revealed a superficial perivascular lymphocytic infiltrate with abundant red cell extravasation and focal papillary edema, along with focal parakeratosis and isolated dyskeratotic cells in a case (9). A literature review by Freeman et al 12% of patients had skin manifestations before any symptoms (13); The correlation between the skin manifestations and severity is not established; pernio-like lesions in mild disease retiform purpura was seen in severely ill patients (13). Physicians should be aware of the cutaneous manifestations of COVID-19 for early diagnosis, timely testing, treatment, preventing transmission.

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CALIFORNIA POSTER FINALIST - CLINICAL VIGNETTE Kyaw Khaing Soe, MBBS MD

Sliding with the Sines: A Case of Life Threatening Hyperkalemia

Kyaw Khaing Soe, MBBS MD

Title

Sliding with the Sines: A Case of Life Threatening Hyperkalemia

Introduction

The classic electrocardiographic manifestations of the hyperkalemia starting with the peaked symmetrical T-waves have been recognized as an indication for emergent intervention even without the laboratory confirmation (1), but these changes are not correlating well with the serum potassium (2, 3, 4, 5). It is already known that rapidly rising potassium is more likely to present with cardiac rhythm changes (6) but little evidence is found how quickly it can evolve in real time. We would like to present a case of rhabdomyolysis where the telemetry electrocardiographic changes of hyperkalemia were retrospectively observed.

Case Presentation

A 76 year old male with diabetes, hypertension and old ischemic stroke, presented with acute on chronic generalized weakness and encephalopathy over one month duration. Recurrent stroke was ruled out and patient was found to have acute renal failure with hyperkalemia. Potassium was 6.7, urea 164 and creatinine 10.76. After thorough investigation, his kidney failure was likely due to acute rhabdomyolysis with creatinine kinase 40,673. Electrocardiogram (Figure. 1) did not show any classical changes associated with hyperkalemia and he received intravenous calcium gluconate, furosemide, dextrose, insulin, sodium bicarbonate, and albuterol nebulization. Patient was arranged for emergent hemodialysis and then admitted to intensive care unit. Hemodialysis was uneventful and repeated potassium was 4.0. CK also trended down to 37,586 the following day and further hemodialysis sessions were provided. On the third hospital day, CK jumped to 206,297 but the potassium level remained stable, 4.7. Patient remained oliguric and another session of hemodialysis was provided. Roughly 6 hours after hemodialysis, the repeated potassium was 6.9. Telemetry rhythm strip was reviewed (Figure 2) which did not show any hyperkalemic manifestations. Patient was given intravenous calcium gluconate, dextrose, insulin and sodium polystyrene. About 2 hours after providing those remedies, patient suffered cardiac arrest with pulseless electrical activities. Patient was resuscitated and the repeated potassium level taken just minutes before the cardiac arrest was 7.4. On review of telemetry strip, significant changes in the rhythm began just 9 minutes prior to the cardiac arrest (Figure 3 A, B). During this period, the rhythm remained fairly regular at a

rate of 75 per minute. QT-interval had been prolonged due to concomitant hypocalcemia. No classical peaked T waves were detected (Figure 3 A, B). As the QRS waves eventually widened, followed by PR prolongation, there were also flattening of P waves, ST segments depression in both lead II and V5, resulting in classical sine waves (Figure 4 A, B). The QRS in V5 gradually assumed left bundle branch block morphology, followed by the sinus arrest (Figure 5 A, B). Full 12 lead electrocardiogram after the resuscitation still showed the typical sine waves of hyperkalemia (Figure 6) with repeat potassium level of 7.9.

Discussion

We cannot overstate the importance of frequent 12-lead electrocardiogram in addition to the closed observation of continuous telemetry monitoring as the rhythm could evolve substantially in a short period of time in patients with significant hyperkalemia. Timely intervention and reassessment for clinical response are critical in the management of hyperkalemia.

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INDIANA POSTER FINALIST - CLINICAL VIGNETTE Salem Mohammad, MD

Rare Entity Masquerading as Sepsis: Idiopathic Systemic Capillary Leak Syndrome

Salem Mohammad, MD

Title

Rare Entity Masquerading as Sepsis: Idiopathic Systemic Capillary Leak Syndrome

Introduction

Idiopathic systemic capillary leak syndrome [ISCLS] is a rare and often fatal disease with approximately 260 cases worldwide. Patients present with a constellation of three things: recurrent hypotensive episodes, hemoconcentration, and hypoalbuminemia.[1] Often misdiagnosed as septic shock, toxic shock syndrome or anaphylaxis. Caused by dysfunction in vascular endothelium due to unclear mechanisms leading to loss of intravascular fluid/proteins into the interstitial compartment. Patients present with variant symptoms: decreased urination, fatigue, edema, abdominal pain, nausea, myalgias. Initial Management of ISCLS is directed towards securing the airway, correcting hypoxemia, and management of shock. Hypotension over 1-3 days during this leak phase followed by the post-leak phase during which massive fluid recruitment occurs from tissues to the vascular compartment associated with pulmonary edema and severe peripheral edema to the extent of causing compartment syndrome and rhabdomyolysis. [2][4] There is no evidence-based or guideline-directed therapies for ISCLS due to its rarity but case reports describe treatments such as Intravenous immune globulin [IVIG], terbutaline/aminophylline, Bevacizumab. This case report intends to increase awareness and recognition of ISCLS.

Case Presentation

36-year-old female with a past medical history of obesity, body mass index of 34 who presented to the emergency department[ED] with complaints of nausea, vomiting, and non-specific abdominal discomfort for 3 days along with lightheadedness and weakness. Patient had a sick child at home recovering from a diarrheal illness. No medical family history of ulcerative colitis or Crohn's disease. On exam, patient had dry mucous membranes, tachycardic, hypotensive w/ no edema or abdominal tenderness. Labs were consistent with leukocytosis, polycythemia/hemoconcentration, hyponatremia, acute kidney injury, lactic acidosis and normal albumin levels. CT abdomen/pelvis showed marked finding of jejunitis of unclear significance. Patient was admitted with severe sepsis without septic shock picture and treated with broad-spectrum antibiotics and intravenous fluids. Within less than 8 hours, patient was persistently hypotensive and no longer fluid responsive and tachypneic. Patient was started on

vasopressors and intubated for airway protection. Repeat lab work consistent with worsening leukocytosis, acute kidney injury, and persistent lactic acidosis however with signs of hypoalbuminemia, albumin 3.1 gm/dL in this 8-hour duration. Underwent emergent diagnostic laparoscopy which was negative. Patient's clinical course was complicated by progressively worsening shock on multiple vasopressors with negative blood cultures, worsening bilateral upper and lower extremity edema and rhabdomyolysis secondary to compartment syndrome who underwent 4 compartment fasciotomies and placed on venoarterial extracorporeal membrane oxygenation and continuous renal replacement therapy. She received IVIG given high suspicion for systemic capillary leak syndrome. Patient had multiorgan dysfunction and disseminated intravascular coagulation with recurrent diffuse bleeding and eventually transition of care to comfort measures.

Discussion

ISCLS is a very rare and often fatal condition that is misdiagnosed due to a lack of awareness, a rarity, and sharing similarities to other distributive shocks. While the constellation of hypotension, hemoconcentration and hypoalbuminemia might be seen commonly in septic patients, ISCLS should be considered in the differential for patients with this constellation with no improvements despite pressor support for early recognition of this rare entity.

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INDIANA POSTER FINALIST - CLINICAL VIGNETTE Katherine E Palmisano, MD

Didn't See That One Coming! An Unusual Case of Sudden Blurry Vision

Katherine E Palmisano, MD

Title

Didn't See That One Coming! An Unusual Case of Sudden Blurry Vision

Introduction

Syphilis is an infectious disease caused by *Treponema pallidum*. Neurosyphilis can occur at any time after initial infection. Ocular syphilis is a form of neurosyphilis that commonly causes posterior uveitis and panuveitis, and is potentially blinding. Risk factors include MSM (men who have sex with men), HIV co-infection, and unprotected sex.

Case Presentation

A 47 year old Hispanic male with no past medical history presented with two weeks of right eye pain and blurry vision. He described seeing spiderwebs, spots, and bright halos, but was otherwise asymptomatic. The patient had three different male partners in the past year. He usually uses condoms but had a one night stand two months ago and did not use protection at that time. Fundus exam showed panuveitis, cystoid macular edema, and vitritis in the right eye. Physical exam was otherwise unremarkable. He was diagnosed with birdshot retinochoroidopathy while serology was pending and started on systemic prednisone with Durezol (difluprednate) 0.05%, a topical steroid. His blurry vision started to improve on this regimen. Laboratory evaluation included a normal complete blood count, erythrocyte sedimentation rate of 67, HIV1 positive, RPR reactive 1:512. Given the positive RPR consistent with syphilis, the patient was admitted. Whilst inpatient, he underwent lumbar puncture, which revealed a white blood cell count of 119, 88% lymphocytes, with a total protein of 85mg/dL, glucose 46mg/dL, and VDRL reactive 1:64. This confirmed the diagnosis of neurosyphilis. His prednisone dose was decreased and he was started on penicillin G as a continuous infusion for 14 days. Additional tests revealed a CD4+ cell count of 361 and HIV viral load by PCR of 249,337. He completed treatment of his neurosyphilis and was started on antiretroviral therapy with Biktarvy (bictegravir, emtricitabine & tenofovir alafenamide) by infectious disease two weeks after his hospitalization. He has follow up planned including repeat lumbar puncture at six months with cerebrospinal fluid VDRL and close monitoring of RPR titers for fourfold decrease.

Discussion

HIV co-infection is an important risk factor for ocular syphilis. HIV-positive patients often present with ocular syphilis before the HIV status is known. Ocular syphilis may worsen when the diagnosis is not considered and patients are treated with corticosteroids without antimicrobial coverage. HIV may modulate immune response to *T. pallidum* causing greater organ involvement, atypical and florid skin rashes, more rapid progression to neurosyphilis, and increased HIV viral load. Ocular syphilis in an HIV patient not receiving antiretroviral therapy is more likely to involve both eyes and more frequently involves the retina. Syphilis is important to consider in the differential for sudden vision change and eye pain, and if testing is positive, it is imperative to also test for HIV coinfection.

INDIANA POSTER FINALIST - CLINICAL VIGNETTE Muhammad Qasim, MD

Point of Care Ultrasound in Management of Chest Pain

Muhammad Qasim, MD

Title

Point of Care Ultrasound in Management of Chest Pain

Introduction

Chest pain is the 2nd most common complaint to the emergency department [ED] with 7.5 million annual visits.^[1] In community hospitals, a majority of these patients are immediately cared for by the admitting hospitalists. At times, this care involves inadequate cardiology support in the form of limited on-site echocardiogram technicians or readers available in the evening or night hours. Point of care ultrasound [POCUS] is becoming increasingly accessible, affordable, and serves as an efficient bedside tool to risk stratify a patient presenting with chest pain. Internal medicine [IM] residency programs have incorporated POCUS into their teaching curriculums in an attempt to better equip graduating physicians with this valuable tool.^[2] This has led to a change in the management of patients presenting with clinical symptoms of an underlying acute cardiac illness. Incorporating POCUS into the bedside assessment of these patients has the potential to change patient management and improve patient outcomes (prevent delay of care and lower mortality). Limited data is present regarding patient delay of care or mortality rates with POCUS.

Case Presentation

A 34-year-old man with a past medical history of smoking and intravenous drug use [IVDU] on methadone presented to the ED of a critical access hospital with atypical angina starting 1 hour prior to arrival associated with diaphoresis, nausea and vomiting. Pain was unrelieved by 2 tablets of sublingual nitroglycerin.

Physical Exam showed tachypnea, bradycardia, and a diaphoretic patient in mild distress. Normal S1/S2. No murmurs or rubs. No chest wall tenderness to palpation. ECG: sinus bradycardia <1mm ST-elevations noted in lead 1, aVL and V2. Labs with normal complete blood count. D-Dimer below cutoff. Hypokalemia and Troponin-I 0.03 ng/mL. Chest x-ray showed no acute findings. Hospital medicine was consulted to admit the patient to their service at the critical access hospital with concerns for pericarditis/myocarditis. On evaluation by the hospitalist, the patient was still having active chest pain. Hospitalist performed a POCUS which showed no pericardial effusion but showed a severely reduced ejection fraction along with significant hypokinesis of the anterior wall. Patient was transferred to a facility with a cardiac

catheterization lab. Patient underwent left heart catheterization with proximal left anterior descending 100% occlusion intervened status post drug-eluting stent the following day.

Discussion

It would have been challenging to disposition this patient appropriately to a referral center without the utilization of cardiac POCUS providing pertinent information. If this patient had been admitted to a critical access hospital with a formal echocardiogram performed the next day and transferred at that point, the implications would have included the potential for harm during the delay of care. The scope of hospital medicine is rapidly evolving and given that most hospitalists undergo IM training, it is imperative that we incorporate POCUS teaching in IM training programs as a core competency.

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INDIANA POSTER FINALIST - CLINICAL VIGNETTE Muhammad Qasim, MD

NATIVE MITRAL VALVE ENDOCARDITIS WITH AN UNUSUAL PRESENTATION

Muhammad Qasim, MD

Title

NATIVE MITRAL VALVE ENDOCARDITIS WITH AN UNUSUAL PRESENTATION

Introduction

Infective Endocarditis[IE] with septic embolism continues to be a challenging clinical situation.^[2] Easily recognized when presented with typical manifestations and clinical picture such as Intravenous drug user [IVDU] history, fever, murmur, immunological and embolic phenomenon essentially meeting Duke's Criteria. As per one study, the most common clinical findings were fever 96%, new murmur 48%, vascular embolic event 8% only, and other factors ESR, CRP elevations were common. Splinter hemorrhages, Osler's nodes, Janeway lesions, Roth spots, and conjunctival hemorrhage were much less common.^[1] Limited literature is available on transient hypotensive episodes as a clinical manifestation. IE is a life-threatening disease process and continues to have a high mortality rate even with treatment.^[1] Prompt diagnosis of IE requires an understanding of its various clinical presentations. The objective of this case report is to show an unusual presentation of a patient with native mitral valve endocarditis to increase awareness.

Case Presentation

69-year-old male with a past medical history of colon cancer and chronic obstructive pulmonary disease presented to the emergency department [ED] with complaints of abdominal distension worsening over several weeks. Noted to have a liver abnormality on MRI and planned to undergo a CT Guided biopsy of this the day prior to ED visit. The procedure was postponed due to a hypotensive episode. He was released to follow up with a primary care physician however presented to the ED the following day again with a hypotensive episode, blood pressure 89/48 mmHg. Temperature 36.2°C. Exam shows a non-focal neurological exam, alert and oriented but slowed mentation, dry mucous membranes. No murmur. Abdomen soft, non-tender w/ hyperactive bowel sounds. . CT abdomen/pelvis noted a 1.5 cm mildly complex hypoechoic lesion right liver lobe concerning for atypical hemangioma and colonic ileus. Focal wedge-shaped area in the right kidney concerning for malignancy. The patient was admitted for pseudo-obstruction and treated as per guidelines. Blood cultures resulted positive for Enterococcus Faecalis. Transthoracic echocardiogram [TTE] was ordered and noted a hyperechoic 2cm mass at anterior mitral leaflet prolapsing into left atrium with posteriorly

directed severe mitral regurgitation which was confirmed on transesophageal echocardiogram [TEE]. Patient was urgently referred for mitral valve replacement and 6 weeks of IV antibiotics.

Discussion

This patient was found to have native mitral valve endocarditis and had presented with unusual symptoms of abdominal distention/discomfort with recurrent transient hypotensive episode state which was responsive to IV fluids. This case highlights the importance of a thorough evaluation of patients presenting with vague signs and symptoms. He did not fulfill any criteria for sepsis or any concerns for endocarditis on the presentation until blood cultures resulted. Supportive care was pursued and blood cultures positive for *Enterococcus Faecalis* bacteremia. Given the organism with a propensity to cause endocarditis, he was appropriately evaluated with TTE and TEE which led to the diagnosis of IE. This case highlights the importance of including infective endocarditis as a differential on our list while evaluating patients with hypotension or presenting with enterococcus faecalis bacteremia.

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NEW JERSEY POSTER FINALIST - CLINICAL VIGNETTE Ashesha Mechineni, MD

SPONTANEOUS PNEUMOTHORAX AND PNEUMOMEDIASTINUM IN COVID 19 PNEUMONIA: A BRIEF REPORT OF TWO CASES

Ashesha Mechineni, MD

Title

SPONTANEOUS PNEUMOTHORAX AND PNEUMOMEDIASTINUM IN COVID 19 PNEUMONIA: A BRIEF REPORT OF TWO CASES

Introduction

The COVID 19 pandemic is caused by the Coronaviridae family's single-stranded RNA (ssRNA) virus called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). Predominantly known as respiratory illness, the signature disease pattern seems to be viral pneumonia on presentation. One of the infrequent clinical presentations being noticed in these patients is pneumothorax or pneumomediastinum on arrival without invasive or noninvasive positive pressure ventilation-induced barotrauma^{1,2}.

Case Presentation

1. A 58-year-old male patient with no significant past medical history and no history of tobacco use presented to the Emergency room with a 14-day history of cough and shortness of breath symptoms. He was diagnosed with COVID 19 pneumonia and found to have hypoxia and Bilateral ground-glass infiltrates on imaging. The patient initially required only a nasal cannula for oxygen supplementation. On day 3 of the presentation, the patient was found to have increasing dyspnea and then noted to have a new left pneumothorax, pneumomediastinum, progressively worsening, requiring left-sided chest tube placement. The patient then failed noninvasive pressure ventilation strategies involving High flow nasal cannula and BIPAP (Bilevel positive airway pressure) and required invasive mechanical ventilation. The patient remains on a ventilator for 7 days at the time of writing this report and has remained stable respiratory wise. The patient does have persistent left-sided pneumothorax, pneumomediastinum, subcutaneous emphysema on the left chest wall despite using lung-protective ventilation strategies. 2. 81-year-old female patient with comorbidities including Hypertension, Congestive heart failure, Diabetes Mellitus, Hyperlipidemia presented to the Emergency room with acute onset hemiparesis, code stroke called, tPA (tissue plasminogen activator) given as per protocol after neurology evaluation and hospital course complicated by Intracranial hemorrhage. Patient on arrival also noted to have COVID 19 nasopharyngeal PCR(polymerase chain reaction) swab positive test without any other signs or symptoms of respiratory disease. On day 19 of

hospitalization, the patient suddenly decompensated with new-onset acute hypoxia and diagnosed with spontaneous pneumothorax and pneumomediastinum and new infiltrates in bilateral lobes. At this point, due to multiple comorbidities and poor neurological prognosis of the patient, the family elected for comfort care measures.

Discussion

Pneumothorax and pneumomediastinum are defined as the presence of free air in the pleural and mediastinal cavities, respectively. Strenuous activity, Drug abuse, Obstructive lung disease, Interstitial lung disease, Acute respiratory distress syndrome, Positive pressure ventilation invasive, and non-invasive related barotrauma are some of the most common etiologies³. The incidence of barotrauma related pneumothorax and pneumomediastinum in mechanically ventilated patients is well documented. It is known to have a higher rate of occurrence in COVID-related ARDS compared to non-COVID-related ARDS⁴. The above-discussed case reports, however, had the occurrence of pneumothorax before needing positive pressure ventilation. One of the current theories indicates lung frailty as a pathophysiological mechanism in COVID 19 patients to develop this condition. We would like to educate clinicians on the importance of including new-onset pneumothorax as an important differential for acute decompensation in COVID 19 inpatients and advocate for a lung-protective ventilation strategy to prevent its occurrence.

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NEW MEXICO POSTER FINALIST - CLINICAL VIGNETTE David Cisneros, MD

A Rare Heritable Cause of Strong Dense Bones

David Cisneros, MD

Title

A Rare Heritable Cause of Strong Dense Bones

Introduction

Skeletal dysplasias and metabolic disturbances are among the many conditions associated with radiographic evidence of increased bone density. Here we present an extremely rare case of endosteal hyperostosis characterized by nearly perfectly symmetrical sclerotic bony changes most prominent in the bones of the skull, pelvis and proximal femurs.

Case Presentation

A 61-year-old male presented with a history of longstanding chronic pain syndrome. Imaging workup revealed diffuse sclerotic bone. The patient had multiple diagnoses including “stress fractures” from his time in the military, osteopetrosis, and Paget’s disease. Careful radiology review noted that the patient’s previous diagnoses did not correctly match the actual skeletal imaging findings. Workup, including whole body bone scan confirmed the radiologist’s suspicion of endosteal hyperostosis, with prominent homogenous and symmetric sclerosis in the pelvis (iliac wings, ischia extending to the symphysis pubis, and proximal femurs). CT imaging demonstrated the same characteristic sclerosis within the confines of the medullary space in the skull and throughout the iliac wings, pelvic bones, and proximal humeri extending to mid shaft of each humerus.

There was no history of fragility fractures and no identified metabolic or neoplastic conditions to explain these skeletal radiographic findings.

Discussion

Since the first description of osteopetrosis in 1904, many high bone density diseases have been inappropriately classified as osteopetrosis (1). Importantly, in endosteal hyperostosis, the bones are neither increased in size nor deformed as they are in Paget or Engelmann disease. Furthermore, the bones are not prone to fracture as they are in Paget disease and osteopetrosis (2).

Endosteal hyperostosis is an extremely rare disease and few reports are present in the literature. The rarity may be in part due to misdiagnosis. Furthermore, the condition can be relatively benign as it does not appear to affect longevity. Notably, biomechanical testing has actually shown increased strength of both cortical and trabecular bone in subjects with the disease (2). This suggests another factor contributing to the rarity of the disease may be under diagnosis due to its relatively benign nature.

When endosteal hyperostosis does cause morbidity, it is usually due to arthritic changes associated with foraminal encroachment resulting in neuronal impingement. There are a few associated dysmorphic features that have been described such as: increase angle of the jaw, elongation of the mandible, and flattening of the forehead (3). However, these changes are usually slowly progressive, not uniformly present in all subjects, and increased bone strength has not typically been associated with fracture.

Genetic studies reveal autosomal dominant inheritance in most subjects. The sclerosteosis is thought to be caused by deactivating mutations in a gene called SOST (4). This results in enhanced osteoblast activity from sclerostin deficiency, with failure of osteoclasts to compensate for increased bone formation (5). To date there are no known treatments other than surgical decompression of narrowed foramina to alleviate cranial nerve palsies. Agents known to suppress bone resorption (e.g. bisphosphonates) and agents known to stimulate bone formation (e.g. teriparatide) should be avoided.

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NEW MEXICO POSTER FINALIST - CLINICAL VIGNETTE David Cisneros, MD

Massive Thrombotic Skin Necrosis Associated with COVID-19

David Cisneros, MD

Title

Massive Thrombotic Skin Necrosis Associated with COVID-19

Introduction

Massive cutaneous necrosis from thrombotic vasculopathy results in significant morbidity and mortality (1). Therefore, early assessment with thoughtful diagnostic approach is of utmost importance in determination of the etiology of skin necrosis. Here we present a case of extensive necrotic skin wounds with biopsy proven microvascular thrombosis without a clear alternative diagnosis to COVID-19 infection.

Case Presentation

34-year-old female with a history of non-ischemic cardiomyopathy with reduced ejection fraction due to remote methamphetamine use, sub-acute/acute hypoxemic respiratory failure, uncontrolled diabetes mellitus insulin dependent complicated by diabetic neuropathy and nephropathy, hypertension, dyslipidemia, and hypothyroidism. Patient presented with extensive sub-acute truncal (abdominal, gluteal) necrotic skin wounds.

Given severity of wounds, patient had extensive workup and multiple sub-specialty consultations for evaluation while in hospital. Infectious workup non-revealing for active local infection as etiology of abdominal wounds. Multiple biopsy dermatopathology results revealed only subcutaneous necrosis with fibrin thrombi present in necrotic small vessels of skin without vasculitis. Biopsies were negative for calcium deposition in subcutis vessels and no fungal, bacterial, or mycobacterial organisms seen on stain.

Extensive hypercoagulable workup including the following; heparin induced thrombocytopenia, anti-phospholipid antibody syndrome, cryoglobulinemia, warfarin induced skin necrosis, antithrombin III activity, factor V leiden PCR, protein S free antigen, and Protein C was all negative/non-revealing.

Furthermore, autoimmune/serologic workup for vasculitic or systemic connective tissue disease process was also unremarkable. In addition, patient had workup for metastatic disease that was negative. Also, workup for potential embolic source negative as well. Infectious workup also

non-revealing (other than COVID-19) for etiology of thrombotic skin necrosis. Patient had quit illicit drug use several months prior to onset of necrotic wounds and drug screens negative on multiple occasions for methamphetamine, cocaine, or other stimulant use – thus levamisole induced vasculopathy was unlikely.

As patient was hospitalized during COVID-19 pandemic she had routine screen for infection prior to discharge to nursing facility. Patient tested positive for COVID-19 but was completely asymptomatic (i.e., no fever, cough, dyspnea, loss of taste, respiratory congestion, or GI symptoms) though patient was requiring low levels of supplemental oxygen (1-2L nasal canula) at time of positive test that was thought to be due to atelectasis/mild volume overload state.

Discussion

Patients with COVID-19 infection have been reported to have coagulopathic and thromboembolic events associated with this new disease (2). In this case there were many potential etiologies to patient's thrombotic skin necrosis. However, the fact that extensive workup was negative for conventional etiologies of the cutaneous small vessel thrombosis/necrosis makes a case for association of COVID-19 with this patient's severe necrotic skin wounds. Moreover, COVID-19 pneumonia has been associated with microvascular thrombosis and hemorrhage of the lungs linked to excessive alveolar and interstitial inflammation (3).

The clinical implication of COVID-19 infection association with microvascular coagulopathies is of substantial importance as this may ultimately lead to not only active but also prophylactic therapeutic anticoagulation in certain COVID-19 patients.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Sonia George, DO

Azathioprine-Induced Lung Injury in a Young Woman

Sonia George, DO

Title

Azathioprine-Induced Lung Injury in a Young Woman

Introduction

Azathioprine is a purine synthesis inhibitor that is used to treat a variety of inflammatory and immunologic conditions including IBD, Rheumatoid arthritis, and post-transplant immune responses. Its side effects of myelosuppression, GI upset, hepatotoxicity, and increased risk of developing certain malignancies are well known, but pulmonary toxicity caused by azathioprine is a less well-documented side effect. This is a case of a 21 year old woman with Crohn's disease who was put on azathioprine following reversal of an ileostomy.

Case Presentation

A 21 year old woman with history of Crohn's disease presented with two days of fever and shortness of breath on exertion with associated chills and diarrhea. One month prior to her presentation, she was placed on azathioprine for Crohn's maintenance after having a previous ileostomy reversed. Azathioprine was stopped 3 days prior to admission due to a low white blood cell count. Her risk factors for infection included recent travel to Pakistan 3 months prior and working in a hospital setting as a pharmacy student. During hospitalization, she was afebrile, without a cough and diarrhea self-resolved. Labs revealed severe neutropenia with an ANC of 67. CT chest showed multiple rounded and patchy ground-glass opacities in the bilateral lungs with peripheral distribution, most numerous in the right upper lobe. She was started empirically on vancomycin and zosyn. Azathioprine was held, and TB and HIV were ruled out. On hospital day #2 the ANC was 140, and the patient was started on a 4-day course of Neupogen with rapid improvement in ANC to 3600 over 3 days. She was subsequently discharged home on a short course of Levaquin.

Discussion

This patient's presentation and hospital course are very similar to other documented cases of pulmonary toxicity attributed to azathioprine. On initial presentation she was found to be severely neutropenic and was experiencing GI upset, both of which are well-known effects of azathioprine toxicity. In the documented cases of azathioprine-induced lung injury, the most

common presenting symptoms are fever, exertional dyspnea, and a dry cough that begin 4-6 weeks after initiating the drug and resolve within 1 week of stopping the azathioprine. The most common findings of azathioprine-induced lung injury on chest CT are bilateral nodules and patchy opacities, which this patient's CT also showed. She rapidly improved after discontinuing the azathioprine. Azathioprine-induced lung injury is an uncommon but important adverse effect of the medication that should be considered whenever a patient who is currently taking or has recently discontinued azathioprine presents with respiratory symptoms and fever. It is often confused with infectious causes and can progress to severe lung injury including bronchiolitis obliterans and ARDS if the offending agent is not promptly discontinued.

NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Pramod K Jha, MD

Partial Stiff Person Syndrome, Grave's Disease and Diabetes Mellitus in a young female.

Pramod K Jha, MD

Title

Partial Stiff Person Syndrome, Grave's Disease and Diabetes Mellitus in a young female.

Introduction

Stiff Person Syndrome (SPS) also called Moersch-Woltman Syndrome is a rare autoimmune disorder (estimated prevalence of one to two cases per million) presenting with progressive muscle stiffness, rigidity and spasm involving the axial muscles and limbs leading to gait difficulties and progressive disability.

Case Presentation

45-year-old female with past medical history of migraine, hypertension, diabetes mellitus, Graves' disease who presented to the hospital with worsening stiffness of the right upper extremity leading to contractures over the last several weeks. She had severe stiffness and rigidity leading to contractures of her right upper extremity. She had MRI of her brain and cervical spine which showed circumferential epidural thickening at the upper cervical level and bilateral paraspinal and paravertebral muscle edema. Sedimentation rate and C-reactive protein were elevated. Serum autoimmune panel was negative. A lumbar puncture was done - spinal fluid was colorless, protein 50, glucose 137, nucleated cells 9, PMN 18%, lymphocytes 82%, no bacteria and no growth in culture medium, autoimmune encephalopathy panel was negative except for anti GAD antibodies which was 2871(reference range ≤ 0.02 nmol/L). Due to association of SPS in females with paraneoplastic syndrome she underwent CAT scan of her chest, abdomen and pelvis with intravenous contrast which were all unremarkable. She was treated with intravenous steroids and a benzodiazepine initially without much improvement. She received 5 days course of Intravenous Immunoglobulin(IVIG) with significant improvement in her rigidity and spasms. She has been following with neurology as an outpatient and continues to do physical therapy, is currently receiving Botox injections for contractures and is taking Diazepam and Baclofen for spasms with significant improvement.

Discussion

SPS is caused by increased muscle activity due to decreased inhibition of the central nervous system (CNS) that results from the blockade of glutamic acid decarboxylase (GAD), an enzyme critical for maintaining inhibitory pathways. The subsequent decline in the levels of gamma amino butyric acid (GABA) in the CNS causes a loss of neural inhibition. SPS is often associated with Grave's disease or type 1 diabetes mellitus (T1DM) or pernicious anemia. It may rarely occur as a paraneoplastic syndrome. Benzodiazepines are generally considered the optimal initial therapy for patients with SPS. In patients with unsatisfactory response to or intolerance to escalating doses of benzodiazepines, baclofen (GABA receptor agonist) can either be used as monotherapy or added to benzodiazepine. In patients with inadequate symptomatic relief from benzodiazepines or baclofen and in those with severe disease (symptoms that continue to significantly interfere with daily function and activities), immunomodulating therapy is recommended with IVIG. Patients unresponsive to IVIG may respond to other therapies, such as plasma exchange or B-cell depletion with rituximab.

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Asim A Kichloo, MD

Use of Robotic assisted bronchoscopy for diagnosis of rare synchronous double primary bilateral non-small cell lung cancer

Asim A Kichloo, MD

Title

Use of Robotic assisted bronchoscopy for diagnosis of rare synchronous double primary bilateral non-small cell lung cancer

Introduction

Lung cancer is the third most common cancer in United States and leading cause of cancer related deaths for both men and women.¹ Lung cancer screening recommendations by USPSTF were updated in 2013. The recommended screening tool is low dose Computed tomography for at risk population. The identification of lung nodules in asymptomatic patients, require utilization of advanced techniques² to obtain tissue diagnosis which plays a role in early institution of therapy. Patients found to have multiple and bilateral pulmonary nodules present a greater challenge due to the potential complications inherent in sampling procedures. Here we report a rare case of synchronous multiple primary lung cancer involving both the right and left upper lobes of the lung, diagnosed during a single procedure utilizing robotic assisted electromagnetic navigational bronchoscopy.

Case Presentation

An 81-year-old woman, with history of hypertension and emphysema, was seen in pulmonary clinic for incidental lung nodules found on a chest CT. She had symptoms of shortness of breath on exertion. The patient has 20 pack years smoking history and quit 5 years ago. She denied any alcohol use or illicit drug use. On examination we noted slightly diminished breath sounds on right lung base and rest of the exam was normal. On further evaluation with spirometry, mild obstructive airway disease was demonstrated. The CT chest showed a 2cm left upper lobe nodule with spiculation and a 1.4 cm right upper lobe nodule with irregular margins. PET scan showed hypermetabolic uptake in the right upper lobe nodule and borderline uptake in the left upper lobe nodule. There was no hilar or mediastinal lymphadenopathy or FDG avidity in the lymph nodes and no suspicious uptake in the pleura, although she was noted to have a small right pleural effusion. The right pleural effusion was too small for diagnostic thoracentesis. Patient had robotic assisted electromagnetic navigational bronchoscopy with Monarch platform with biopsy performed during the single procedure of both the right and left upper lobe nodules. Rapid on site cytopathology confirmed adequate tissue and fiducial markers were

placed in and around both nodules. Final pathology reported poorly differentiated non-small cell carcinoma, consistent with adenocarcinoma of lung primary from both the right and left sided nodules. Given the patient's imaging findings, patient was diagnosed with synchronous multiple primary lung cancer. Patient was subsequently referred for Stereotactic Body Radiation Therapy for her early stage non-small cell lung cancer as patient was not a surgical candidate due to her age and functional status.

Discussion

Early diagnosis of lung cancer is essential for curative therapy.³ Our patient presented the unique challenge of bilateral lung nodules. Use of advanced technology has led to the ability to establish early diagnosis of a rare synchronous bilateral non-small cell lung cancer. Tissue sampling for peripherally located lung nodules using Electromagnetic navigational bronchoscopy is considered safer compared to conventional bronchoscopy with better diagnostic yields.⁴

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NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Christine Marie Osborne, MD

Ethical Considerations of a Time-Limited Trial of Life-Sustaining Treatment when Treating Outside the Standard of Care

Christine Marie Osborne, MD

Title

Ethical Considerations of a Time-Limited Trial of Life-Sustaining Treatment when Treating Outside the Standard of Care

Introduction

Providers often encounter patients who lack capacity with subsequent decisions made by surrogates. Complications arise when surrogates request treatments outside of the standard of care.

Case Presentation

A 50-year-old man with sickle cell anemia and schizophrenia was admitted to hospital medicine with a vaso-occlusive pain crisis. On admission, he was psychiatrically compensated and retained decision-making capacity, choosing to elect full code status. Forty-eight hours later, he developed lethargy, confusion, and worsening abdominal pain and was diagnosed on CT imaging with a bowel perforation. Urgent surgical exploration was recommended as the standard of care. At this time, he was found to lack capacity due to metabolic encephalopathy, and decision-making fell to his mother, his legal next of kin. She declined surgery, but requested maximal medical therapy, despite explanation that this was not standard of care and would not likely save his life. Her decision was based in part on his prior refusal of surgery for a suspected bowel perforation, with a less severe course and recovery. The patient was made NPO and treated with intravenous antibiotics, fluids and TPN. His course was complicated by bacteremia and multisystem organ failure. While he continued to lack capacity, he consistently stated that he did not want treatment, requested to leave, pulled out lines, and drank water from the sink and toilet. He was in significant pain, which was treated with opioids. His mother continued to request maximal medical therapy, basing this on the patient's choice to elect full code status on admission. The ethics service was engaged to comment on treatment over objection outside the standard of care with ambiguous clinical endpoint. A time-limited trial of therapy was proposed, with a goal of restoring the patient's capacity. The medical team's obligation to minimize the patient's suffering was reified, reinforcing the palliating measures included in his treatment plan. As his status worsened, his mother elected to transition to DNR/DNI. He was transferred to the MICU for trial of NIPPV for respiratory failure and worsening

encephalopathy, which was stopped due to worsening abdominal distension. He was transitioned to comfort measures only and died less than 24 hours later.

Discussion

This case illustrates the ethical challenges that emerge when a surrogate decision-maker requests life-sustaining, yet likely futile treatment after the standard of care has been declined. Here, the surrogate did engage in substituted judgment, the preferred standard of decision-making, basing decisions on perceived values of the patient. This case also highlights the moral distress that occurs while caring for patients without capacity who do not assent to treatment. There was reluctance to treat over objection, raising the question of whether the preferences of patients without capacity have moral value, and how this compares with substituted judgment of the surrogate. The time-limited trial of therapy was a useful tool to provide an ethical path forward that honored the surrogate decision-maker's wishes without prolonging futile treatment. The primary endpoint became restoring the patient's capacity to make his own decisions, with this viewed as the best way to respect autonomy, beneficence, and non-maleficence.

NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Christine Marie Osborne, MD

Rhabdomyolysis and Necrotizing Crescentic IgA Glomerulonephritis in a Patient with Legionella Pneumonia

Christine Marie Osborne, MD

Title

Rhabdomyolysis and Necrotizing Crescentic IgA Glomerulonephritis in a Patient with Legionella Pneumonia

Introduction

Legionella pneumonia is often considered in hospitalized patients who present with respiratory symptoms, high fevers, hyponatremia and diarrhea. While the respiratory symptoms are paramount, it is important to consider the extrapulmonary complications of Legionella pneumonia which may complicate the patient's clinical course.

Case Presentation

A 56 year-old man with schizoaffective and antisocial personality disorders was admitted from the county jail with a 4-day history of fever, hemoptysis, severe headaches, hematuria, diffuse myalgias, and bloody diarrhea. Officers reported the patient frequently flooded his cell and ingested toilet water. A CXR revealed L>R bibasilar infiltrates, and a diagnosis of Legionella pneumonia was made based on positive urinary antigen. While the patient's pneumonia improved on IV levofloxacin, his creatinine continued to worsen. CK was not initially checked, as the patient initially presented with gross hematuria and positive red blood cells on urine microscopy. However CK returned markedly elevated at >12,000 on day 3 and the diagnosis of rhabdomyolysis was made. The patient was started on IV fluids, but creatinine continued to rise, and nephrology was consulted. The patient underwent extensive workup for immune mediated disease, which returned negative. A renal biopsy was ultimately performed, which revealed diffuse necrotizing crescentic IgA glomerulonephritis. The patient was started on pulse dose methylprednisolone followed by cyclophosphamide and was ultimately discharged to complete a 21-day course of levofloxacin along with tapering doses of steroids. Outpatient nephrology follow-up was arranged for monthly cyclophosphamide infusions. Repeat creatinine values one month after discharge show improvement to 1.72 from peak of 2.87 during his index admission.

Discussion

This case illustrates the known but rare association of Legionnaires' disease with rhabdomyolysis. Furthermore, it highlights the established correlation of Legionnaire's disease, renal failure, and rhabdomyolysis. Early recognition of this triad can prompt swift initiation of treatment, which may serve to reduce mortality in affected patients. IgA glomerulonephritis can be seen following upper respiratory tract infections, but the presence of crescents on biopsy is predictive of a rapidly progressive glomerulonephritis and must be treated aggressively to minimize reduction of renal function and progression to ESRD.

NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Sumaira Zareef, MD

Fever of Unknown Origin: Adult onset Still's disease with Macrophage Activating Syndrome

Sumaira Zareef, MD

Title

Fever of Unknown Origin: Adult onset Still's disease with Macrophage Activating Syndrome

Introduction

More than 50 years after the first definition of fever of unknown origin (FUO), it still remains a diagnostic challenge. Evaluation starts with the identification of potential diagnostic clues (PDC), which should guide further investigations. In the absence of PDCs, a standardized diagnostic protocol should be followed with PET-CT as the imaging technique of first choice. Even with a standardized protocol, in a large proportion of patients from western countries the cause for FUO cannot be identified. The treatment of FUO is guided by the final diagnosis, but when no cause is found antipyretic drugs can be prescribed. Corticosteroids should be avoided in the absence of a diagnosis, especially at an early stage. The prognosis of FUO is determined by the underlying cause. We present a unique case of fever of unknown origin secondary to Adult Onset Still Disease (AOSD) with Macrophage Activating Syndrome (MAS).

Case Presentation

Our patient was a 57 year old female with past medical history of diabetes mellitus and hypertension who presented with fever (off and on for 7 days) and salmon colored rash. Noted to be tachycardia and hypotensive on arrival. Initial work up revealed leukocytosis (27 k/microliter), high ferritin (59, 485 ng/ml) and imaging with bilateral mediastinal, hilar, and axillary lymph nodes. Hemophagocytic lymphohistiocytosis was initially high on the differential list but bone marrow biopsy and lymph node core biopsy done were both unremarkable. Given fever, characteristic rash and fulfillment of Yamagishi criteria AOSD with MAS was considered and Solumedrol was started. Patient's fevers, tachycardia and hypotension resolved. Lab values including ferritin and leukocytosis gradually improved. Patient had extensive infectious work-up done which was all negative. After discharge from the hospital, she followed up with rheumatology, was maintained on prednisone and methotrexate and future plans is to start Anakinra as a steroid sparing agent.

Discussion

Adult-onset Still's disease (AOSD) is a rare but clinically well-known, polygenic, systemic auto inflammatory disease. Interleukin 1 driven inflammatory pathway plays a pivotal role in pathophysiology of AOSD and MAS and leads the concurrent presentation rarely. The fever of AOSD is usually quotidian (a daily recurring fever) or double-quotidian (two fever spikes per day). Fever often precedes other manifestations. The temperature swings can be dramatic, with changes of 4°C (7.2°F) occurring within four hours. AOSD can also present as fever of unknown origin (FUO) and may be a common cause of FUO in some regions owing to its sporadic appearance in all adult age groups with potentially severe inflammatory onset accompanied by a broad spectrum of disease manifestation and complications. AOSD is an unsolved challenge for clinicians with limited therapeutic options and high clinical suspicion can help providers gear therapeutic plan in the right direction.

NEW YORK POSTER FINALIST - CLINICAL VIGNETTE Milana Zirkiyeva

Rare and Life-threatening occurrence of Spontaneous Pneumothorax during Pregnancy

Milana Zirkiyeva

Title

Rare and Life-threatening occurrence of Spontaneous Pneumothorax during Pregnancy

Introduction

Spontaneous pneumothorax is defined as the presence of air in the pleural cavity in the absence of significant pulmonary disease or trauma. The prevalence is rare and can be life-threatening especially during pregnancy with less than 60 cases reported in literature so far. Prompt and accurate diagnosis is crucial as it can lead to sudden respiratory compromise. Treatment can be conservative with intercostal drain vs surgical therapy if recurrent. We present a case of an initial occurrence of spontaneous pneumothorax in a healthy young pregnant female presenting with chest pain and dyspnea.

Case Presentation

A 34 year old female with past medical history of sickle trait presented at 37 weeks of pregnancy with the complaint of non-radiating, sharp left sided chest pain associated with palpitations and shortness of breath at rest for one day. Patient was a non-smoker and this was the first pregnancy. Hemodynamics were stable but the patient was tachycardic from 110 to 115 beats per minute. Labs were within normal limits. Physical exam was significant for left sided decreased breath sounds. Decision was made to get a CT angiogram of the chest which showed a large left-sided pneumothorax with compressive atelectasis of the left upper and lower lobes and no pulmonary embolism. Chest tube was placed with re-expansion of the lung and resolution of symptoms. Post chest tube removal, there was no recurrent pneumothorax. The patient later underwent successful vacuum assisted vaginal delivery.

Discussion

Spontaneous pneumothorax is a very rare finding during pregnancy. It involves the collection of air in the pleural cavity without any prior trauma. Generally it is caused by rupture of small apical blebs or bullae in the absence of other significant disease. The risk of recurrence of the pneumothorax is 30-40% in subsequent pregnancies. Conservative treatment with pleural drains is the initial approach but if it becomes recurrent then surgery should be considered

which includes a thoracotomy or VATS. The optimal time for surgical intervention is during the second trimester. To prevent intrathoracic pressure during delivery, elective assisted delivery (Forceps or ventouse extraction) with Epidural anesthesia is considered the safest. The second stage of delivery is shortened with the aid of instrumental deliveries which reduces expulsive efforts which result from hyperventilation, valsalva maneuvers, and positive pressure ventilation during a caesarian. General anesthesia should be avoided to avoid risk of pneumothorax which results from the positive pressure ventilation and prevents use of nitrous oxide which can exacerbate the pneumothorax.

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE MD

DIDAR UL ALAM, MD

Acute severe encephalopathy due to SIADH linked to COVID -19 infection: A case report

MD DIDAR UL ALAM, MD

Title

Acute severe encephalopathy due to SIADH linked to COVID -19 infection: A case report

Introduction

The syndrome of inappropriate secretion of antidiuretic hormone (SIADH) is a disorder of impaired water excretion caused by the inability to suppress the secretion of antidiuretic hormone (ADH) [1]. If water intake exceeds the reduced urine output, the ensuing water retention leads to the development of hyponatremia. atypical pneumonia is a common cause of SIADH. Here, we report a case of acute symptomatic hyponatremia and SIADH, attributed to Coronavirus diseases 2019(COVID-19).

Case Presentation

A 72-year-old female presented to the emergency department (ED) for confusion and fever for 1 day. In the ED, she was febrile with a blood pressure of 137/91 mmHg, heart rate was 78 beats /min and respiratory rate was 20 breaths per minute with oxygen saturation of 99% in 2 liters nasal cannula (NC) oxygen. Physical examination revealed that she is oriented only to herself and there were inspiratory crackles bilaterally. The remainder of the physical examination is unremarkable. Laboratory findings were significant for serum sodium of 104 mEq/L, her baseline sodium was 137 mEq/L. Other laboratory investigations showed blood urea nitrogen (BUN) 9mg/dl and creatinine of 0.5 mg/dl, random blood glucose was 147 mg/dl and serum potassium was 4.6 mg/dl. Further workup revealed serum osmolarity of 223 mosm/Kg with urinary sodium of 52 mEq/L and urine osmolality of 789 mosm/kg. Other significant lab findings include CRP level of 15.3 mg/dl , Ferritin 1098 ng/ml, LDH 343 U/L, Fibrinogen 587 mg/dl, and D dimer of 0.76. Thyroid-stimulating hormone (TSH) and cortisol levels were within normal limits. Chest X-ray (CXR) showed peripheral predominant mid and lower lung zone alveolar opacities suspected for multifocal pneumonia and inflammatory process [Fig :1]. A computed tomography (CT) scan of the head was done and it was unremarkable. Electrocardiogram (EKG) showed normal sinus rhythm. SARS -CoV -2 PCR was done due to multifocal peripheral predominate pneumonitis in CXR and came back positive. She was transferred to the intensive care unit (ICU) for infusion of 3% sodium chloride (NaCl) and close monitoring of sodium. Her mental status was significantly improved over the next 12 hours. she

was also started on dexamethasone and Remdecivir for treatment of COVID-19 pneumonia. Influenza A and influenza B were tested and came back negative. blood culture was negative for 72 hours, urine legionella and urine streptococcal antigen was negative. Over the course of the hospitalization, sodium level was steadily improved and oxygen requirements gradually dropped. The patient was discharged on room air after 7 days of hospitalization with a sodium level of 130 mEq/L.

Discussion

The most common causes of SIADH include malignancies, medications, pulmonary diseases, and central nervous system disorders [2,3,4,5]. SIADH has been extensively reported in pulmonary infections including atypical pneumonia and tuberculosis. The mechanism of SIADH in Covid 19 pneumonia is not well established. the proposed mechanism is thought to be related to the marked elevation of inflammatory cytokines, such as IL-6 which in turn stimulates the nonosmotic release of Antidiuretic hormones (ADH) and cytokines that injure the lung tissue, which induces SIADH via the hypoxic pulmonary vasoconstriction pathway[6].

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PENNSYLVANIA POSTER FINALIST - CLINICAL VIGNETTE Kainat Saleem, MD

PROSTATE CANCER AND ONE OF THE WAYS IT CAN KILL

Kainat Saleem, MD

Title

PROSTATE CANCER AND ONE OF THE WAYS IT CAN KILL

Introduction

Prostate cancer is one of the most common malignancies in the US with > 3 million men living with this disease in the US in 2017 (1). Per SEER database 12.1% men will get diagnosed with prostate cancer at one point in their life. It is also one of the most survivable cancers, with a 5-year survival rate ~97.8%. We present a rare complication of prostate cancer.

Case Presentation

Middle-aged male with known Gleason 4+5 prostate cancer on androgen deprivation therapy presented to us for the evaluation of back pain. Patient had had a two-day stay at another hospital before being transferred to us. Outside hospital records were incomplete, however they noted that admission labs showed a normal hemoglobin, platelets 150 and creatinine 1.5 (baseline 1.2); lab ranges not available. Over the course of two days of admission at outside hospital, patient's labs progressed as: creatinine 1.5 ? 4.8 ? 6.0 ? 7.2, platelets 150 ? 44 ? 25, hemoglobin 12.1 ? 9.9, total bilirubin 3.6, LDH 3943, 1+ schistocytes on smear. Patient was given one unit of platelets, urgently started on hemodialysis, and transferred to us. On admission to our hospital: vitals: afebrile, BP 199/78, HR 92, RR 20, O2 sats 91% on 1L O2. Labs: hemoglobin 8.2 g/dL, platelets 76 x 10⁹/L, creatinine 5.6 mg/dL, ALT 43 IU/L (range 17-63), AST 119 IU/L (15-41), total bilirubin 4.3 mg/dL (0.3-1.5), direct bilirubin 1.9mg/dL (0.1-0.5), alkaline phosphatase 127 IU/L (38-126), reticulocytes 1.9% (0.4-2.4), LDH 3151 IU/L (normal < 30 mg/dL (36-195), fibrinogen 576 mg/dL (221-501), INR 1.2 (0.8-1.2), PT 15.3 sec (11.2 – 15.0) , APTT 38 sec (22.7 – 34.3). Peripheral smear showed 3-4 schistocytes per high power field. Patient denied any gastrointestinal symptoms. Empiric diagnosis of atypical hemolytic uremic syndrome (aHUS) was made, and patient was urgently started on plasma exchange (PEX). PEX was continued for four consecutive days with platelet count, haptoglobin, bilirubin and LDH returning to normal. ADAMTS 13 activity came back at 64% (cut off for diagnosis of thrombotic thrombocytopenic purpura < 10%). PEX was stopped at that point and eculizumab was started. Patient was discharged home on intermittent hemodialysis and close hematology/oncology follow up. Atypical complement levels were pending at the time of discharge.

Discussion

aHUS is a life threatening, complement mediated microangiopathy that accounts for < 10% of cases of hemolytic uremic syndrome. aHUS has poor outcomes with a mortality rate of 25% in the acute phase. 50% - 60% of the patients have irreversible renal and/or neurological injury. Malignancy is a known trigger for aHUS which has been associated with mucin producing adenocarcinomas like gastric adenocarcinoma. The frequency of association of aHUS with prostate cancer is not defined and this phenomenon has been reported in case reports only. Unlike other malignancy associated aHUS, prostate cancer associated aHUS responds well to PEX (2). Prompt recognition of this life-threatening disorder is essential, especially if patient has a history of prostate cancer, with early transfer to a tertiary care center for PEX and advanced care.

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PERU - POSTER FINALIST - CLINICAL VIGNETTE Carlos E Huauya, MD

A New Tune in an Old Fiddle.

Carlos E Huauya, MD

Title

A New Tune in an Old Fiddle.

Introduction

Postmenopausal vaginal discharge can represent a diagnostic challenge, especially in developing countries where infections take a more prominent role.

Case Presentation

A 78-year-old Peruvian female presented with 2 months of intermittent fever, night sweats, abdominal pain and distension, constipation and vaginal discharge. She reported 20-lb weight loss in the last 6 months. Her history was significant for small bowel pseudo-obstruction 2 months before. Additionally, her daughter had pulmonary tuberculosis 30 years ago. On exam, the patient had fever (102 F). No lymphadenopathy was palpated. Lungs were clear to auscultation. Her abdomen was soft but mildly tender in right upper quadrant with no hepatomegaly. Vaginal exam revealed atrophy, mild cervical motion tenderness and thick white discharge. The initial laboratory data showed mild thrombocytopenia (147,000/mL) and elevation of ESR and CRP. Other biochemical tests, urinalysis and coagulation profile were normal. Chest x-ray was normal. Abdominal ultrasound demonstrated slight hepatomegaly and ascites. Transvaginal ultrasound showed irregular endometrium (8 mm) and free liquid in pelvic cavity. Abdominal and pelvic CT scan revealed mild ascites, retroperitoneal lymphadenopathy and contrast enhancement in uterus. Bacterial cultures from blood, urine and stool were negative. Serology for HIV, HTLV-1, Brucella and syphilis were negative. Wet mount and Pap smear were unremarkable. Gonorrhea and chlamydia NAAT were negative. Endometrial biopsy was performed. Pathology revealed chronic inflammation of the endometrium with caseous and necrotizing granulomas compatible with endometrial tuberculosis and was negative for atypical cells or malignancy. Despite negative AFB smear and culture, the patient received standard antituberculosis treatment with resolution of her symptoms after two months.

Discussion

Urogenital tuberculosis is the third most common form of extrapulmonary tuberculosis (1). Female genital tuberculosis is known to affect women mostly causing tubal disease with

subsequent menstrual disorders and infertility (2). The diagnosis can be more problematic in postmenopausal women who may only present with nonspecific symptoms such as fever, abdominal/pelvic pain and weight loss. In this population, some cases of genital TB can present with features that can mimic endometrial malignancy, such as pyometra, persistent leukorrhea or bleeding (3). In addition, the usual diagnostic methods of tuberculosis have lower sensitivity because urogenital infections are paucibacillary. Negative classic tests do not eliminate the diagnosis (4). Histopathological findings such as presence of caseating granulomas and/or AFB on staining of biopsy specimens can be considered definite criteria for genital TB (5). Elderly patients are at higher risk of disease reactivation due to age-associated decline in cellular immune response. This population represents one of the largest reservoirs of TB infection. Also, older adults face more challenges in diagnosis, treatment-related side effects and have a higher proportion of TB deaths (6).

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RHODE ISLAND POSTER FINALIST - CLINICAL VIGNETTE John Oghene, MD

Double Down on Double Vision: An Unusual Cause of Painful Diplopia

John Oghene, MD

Title

Double Down on Double Vision: An Unusual Cause of Painful Diplopia

Introduction

Painful ophthalmoplegia has a broad differential diagnosis including infectious etiologies, primary or metastatic neoplasms, vascular etiologies such as carotid dissection or aneurysm, and lastly inflammatory etiologies, for example, vasculitis or sarcoidosis.[1,2] Given the various causes of this presentation, it is important for clinicians to perform not just an appropriate laboratory and imaging workup in these patients, but also inspect for other organ involvement which could suggest a more widespread autoimmune condition.

Case Presentation

We present a case of a 60-year-old male with a history of recurrent sinus disease ongoing for the past year who presented to the emergency department with a 4-week history of progressive stabbing retro-orbital pain associated with double vision. Neurological examination revealed isolated right-sided diplopia. His initial workup including computed tomography (CT) head, CT angiogram head/neck, and magnetic resonance imaging (MRI) confirmed no acute stroke, however, MRI did reveal increased enhancement of the right cavernous sinus extending into the right orbital apex as well as enhancement and mild thickening of the right extra-ocular muscles. It also revealed maxillary sinus opacification consistent with his history of sinusitis. A CT (computed tomography) scan of the chest showed patchy ground-glass opacities in bilateral lung fields as well as a spiculated right apical lung nodule. Further laboratory work-up uncovered a highly positive c-anti-neutrophilic cytoplasmic antibody (ANCA) and anti-proteinase-3 antibodies (PR3), mildly elevated sedimentation rate, and antinuclear antibody. The multidisciplinary care team agreed that the given clinical picture of pulmonary opacities, recurrent sinus disease, and cavernous sinus enhancement in the setting of positive serology, the likely diagnosis was granulomatosis with polyangiitis. Subsequently, even despite the lack of a definitive pathohistological confirmation, the diagnosis of Tolosa-Hunt syndrome in the setting of granulomatosis with polyangiitis was established, and the patient was initiated on prednisone 60 mg daily. At his follow-up visit, he reported improvement of his eye pain and ocular mobility within 48 hours of initiating prednisone. The patient continued to taper his prednisone and was initiated on rituximab. A repeat MRI orbit 3 months later showed a

persistent but decreased enhancement of the right cavernous sinus confirming objective response to therapy.

Discussion

Tolosa-Hunt syndrome is a rare steroid-responsive painful ophthalmoplegia secondary to granulomatous inflammation of the cavernous sinus or orbital apex.[3] The etiology of this disease falls into three broad categories including vascular, neoplastic, and inflammatory conditions. In this patient, the additional pulmonary-sinus disease and positive serologies suggested the diagnosis of an ophthalmoplegia secondary to granulomatosis with polyangiitis, an association that has been uncommonly noted in the literature. Glucocorticoids have been the mainstay of the treatment since the syndrome was first described. As seen in our case, rapid initiation of steroids alleviated the patient's symptoms. It is therefore important for clinicians to include Tolosa-Hunt syndrome in their differential of painful ophthalmoplegia so that prompt treatment is initiated. It is also essential to consider that an underlying systemic inflammatory disorder might account for this entity so that appropriate testing is performed and long term treatment considered.

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TEXAS POSTER FINALIST - CLINICAL VIGNETTE Sandhya Basyal, MBBS

Stauffer Syndrome: A rare paraneoplastic syndrome from Renal Cell cancer

Sandhya Basyal, MBBS

Title

Stauffer Syndrome: A rare paraneoplastic syndrome from Renal Cell cancer

Introduction

Stauffer syndrome is a rare paraneoplastic syndrome where there is Hepatic dysfunction without presence of Hepatic metastases likely due to tumor production of cytokines. Here we present a case.

Case Presentation

61 YOM with medical history of COPD, Hyperlipidemia presented to the ED with complains of severe low back pain on the left for 2-3 weeks. The pain was gradually getting worse. It was a constant pain aggravated by walking. He denied any trauma or fall. Pt complained of decreased appetite. He had lost 16 lbs in 4 – 6 weeks. He is a former smoker and quit 1 year back. Used to smoke 4-5 cigarettes a day. He denied alcohol abuse .Denied any cancers in family. His home medications were atorvastatin, budesonide/formeterol, Oxycodone as needed for back pain and pantoprazole. Of note, pt was recently admitted in another facility for odynophagia. EGD showed severe esophagitis and he was started on Pantoprazole. He had persistent leukocytosis, throat was erythematous and was given prescription of Augmentin. On examination he was afebrile, Blood pressure was 124/73, Heart rate was 100 and respiratory rate was 16. He appeared to be in distress due to pain. There was no clinical pallor, icterus, lymphadenopathy. There were numerous excoriation in whole body due to scratching secondary to itching. There was tenderness on left lateral side of the back in the iliac crest. Straight leg raise test was negative. Rest of the physical exam was unremarkable. Pt could walk with a stable gait. His white blood cell count was 22.4 with 79.5 %neutrophils and 6% Bands, Hemoglobin was 8 and MCV was 82, ferritin was 825, TIBC was 169, iron saturation as 6.55%. His chemistry panel was normal except hypocalcemia of 8.2 and high ALP Of 190. AST and ALT were normal. Lipase was normal . ESR was 140, CRP was 300. INR was 1.36. Lactic acid was 2.8 and procalcitonin 0.81. GGT was 96, CPK 23, urinalysis was normal. Urine toxicology was positive for cannabinoids. CT spine showed L5 Grade 1 spondylolisthesis but no high grade spinal canal narrowing. CT abdomen and pelvis showed large left renal mass of 11.5x14.7 cm with invasion of left renal vein , soft tissue nodules in perinephric region and enlarged retroperitoneal lymphnodes. There was an osteolytic lesion in the left iliac bone of 4.2x4.8 cm corresponding to the area of back

pain. CT chest didn't show metastasis although mildly suspicious although non specific mediastinal and hilar lymphadenopathy. Chest X-Ray showed left pleural effusion associated with atelectasis vs subtle pneumonia of left lung base can't be excluded in CXR. The patient was started with Vancomycin and Piperacillin and Tazobactam for possible Health care associated Pneumonia. Pt was seen by urology next day and recommended cytoreductive surgery. Oncology was onboard. Meanwhile patient's mental status started getting deteriorated. PT opted for DNR/DNI and was discharged home on Home hospice.

Discussion

Stauffer syndrome has a poor prognosis. Diagnosing this syndrome early in the disease course can help Palliative care team involve early and improve quality of life.

TEXAS POSTER FINALIST - CLINICAL VIGNETTE Abraham Campoy, MD

Post-COVID induced late onset severe cardiomyopathy masquerading as SARS-COV-2 reinfection with hypoxia.

Abraham Campoy, MD

Title

Post-COVID induced late onset severe cardiomyopathy masquerading as SARS-COV-2 reinfection with hypoxia.

Introduction

New onset congestive heart failure (CHF) is a condition that requires a thoughtful evaluation to determine its etiology. Most causes of CHF are related to specific cardiac conditions such as ischemia or hypertension, less common are entities such as post-viral cardiomyopathy secondary to myocarditis. Multiple complications have been described with COVID-19 (SARs-COV-2), cardiac involvement are not uncommon, with most occurring in a short span and during hospitalization, often times leading to fatal events. SARs-COV-2 late effects are not well comprehended yet as the current pandemic continues to evolve. CHF diagnosis linked to COVID-19 is initially challenging to make especially when respiratory symptoms are the driving factor, sharp clinical suspicion is needed.

Case Presentation

A 48 y/o woman with Type 2 Diabetes and Hypertension but without known cardiac problems was admitted for COVID-19 in June. On admission, she had a normal troponin, nondiagnostic EKG, an elevated D-Dimer and Chest Xray consistent with COVID. She improved and was discharged home stable on 2 liters of oxygen without a change in troponin. 11 weeks later she was readmitted with progressive SOB, DOE and hypoxia. Her physical exam revealed tachycardia, tachypnea, and edema, she was in acute hypoxic respiratory failure. Her labs showed a normal Troponin with an elevated BNP of 3050. Her CXR Bilateral infiltrate/edema and a right pleural effusion. There was a positive test for COVID and was restarted on the COVID protocol. She was given furosemide and an echocardiogram revealed a decreased left ventricle ejection fraction of 30-35%. A nuclear stress test did not reveal either ischemia or fixed defect. Diuretics were continued and an ACE inhibitor was added with resolution of her symptoms. She was able to tolerate physical activity without use of Oxygen and she was discharged home in stable condition.

Discussion

This case illustrates the potential late effects of SARS-CoV2 on cardiac myocytes. While most of the literature has focused on the acute care of the COVID patient, it is becoming evident that many of these patients have long-term sequelae. Many COVID patients have an acute Cardiac event with associated heart failure. There was no evidence that our patient had an acute cardiac episode. However, she did develop CHF with findings consistent with a cardiac myopathy. The late effects of COVID-19 on the cardiac myocytes are not well comprehended. Several studies suggest that many patients have persistent myocarditis. We need long-term studies to establish risks for cardiac injury and develop ways to prevent it, to improve mortality and morbidity for our patients.

VERMONT POSTER FINALIST - CLINICAL VIGNETTE Vivekanand Tiwari, MBBS FACP

Underlying multiple myeloma in a patient with erythromelalgia

Vivekanand Tiwari, MBBS FACP

Title

Underlying multiple myeloma in a patient with erythromelalgia

Introduction

Erythromelalgia is a clinical syndrome characterized by intermittent episodes of red, painful and hot extremities. Its association with many diseases such as myeloproliferative disorders is well established but its association with multiple myeloma is not clear. We describe a case in which the patient solely presented with the features of erythromelalgia but later on was found to have IgA multiple myeloma.

Case Presentation

A 67-year-old female was referred to the rheumatology clinic to evaluate polyarthralgia in the setting of an elevated erythrocyte sedimentation rate (ESR) and a positive rheumatoid factor. The patient reported having pain in her shoulders, knees, and lower back for many years, but it was not associated with any prolonged morning stiffness, rash, or systemic symptoms. She reported intermittent episodes of bilateral foot pain associated with redness and burning sensation, worsening after heat exposure. Physical examination showed some erythema in the toes, but there was no evidence of any synovitis. Her lab work was remarkable for an ESR of 82 (normal range, 0-30), normal C-reactive protein (CRP), mildly elevated liver enzymes with an AST of 41 (0-30), ALT of 54 (0-30), and alkaline phosphatase of 134 (35-105) with normal bilirubin levels. She also had mildly elevated rheumatoid factor at 14 (0-10), negative anti-cyclic citrullinated peptide (CCP), positive ANA in the titer of 1: 80 but negative double-stranded DNA antibody, and negative ENA (extractable nuclear antigen) antibodies. Her antineutrophilic cytoplasmic antibodies, antimitochondrial antibodies, and anti-smooth muscle antibodies were negative as well. X-ray of her hands and feet did not show any erosions. Her clinical presentation didn't fit with any inflammatory polyarthritides, but her foot symptoms seemed to suggest erythromelalgia. In the setting of elevated inflammatory markers and erythromelalgia, the patient was referred to Hematology. Further investigation showed significantly elevated IgA levels at 1,793 (70-400), which led to a serum protein electrophoresis (SPEP) and an immunofixation showing IgA monoclonal gammopathy. It was followed by a bone marrow biopsy, which showed kappa-restricted plasma cells, representing about 30-40% of the bone

marrow. The patient was diagnosed with IgA kappa multiple myeloma and was started on appropriate treatment.

Discussion

Erythromelalgia is a rare disorder presenting with intermittent episodes of red, painful, and hot extremities with lower extremities' predilection. (1) The onset of these symptoms is precipitated by exposure to heat, and the symptoms are relieved with cooling. Since it is a clinical diagnosis, and there are no specific laboratory tests to diagnose this condition, it could be easily missed or misdiagnosed. Its association with myeloproliferative disorders is well established (2), but the association with multiple myeloma is not clear, with only a few cases reported in the literature. Our case also represents the importance of practicing the old art of medicine wherein the laboratory values are only a part of the medical decision-making. They can not be substituted for a good history and physical. Even though there were many laboratory abnormalities, in this case, it was only the history of erythromelalgia, which ultimately led to the correct diagnosis.

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WEST VIRGINIA POSTER FINALIST - CLINICAL VIGNETTE

Michael D Cheshire, DO

Diabetic Treatment “Noses” Its Way Into An Unexpected Outcome

Michael D Cheshire, DO

Title

Diabetic Treatment “Noses” Its Way Into An Unexpected Outcome

Introduction

Nasal polyposis is attributed to chronic inflammation and creates bothersome symptoms that sometimes requires surgical treatment, though the exact cause of nasal polyposis has yet to be elucidated.

Case Presentation

A 62-year-old female patient with type 2 diabetes mellitus, essential hypertension, allergic rhinitis with nasal polyposis, moderate persistent asthma, and allergy to aspirin developed complications from nasal polyps including rhinorrhea, nasal congestion, recurrent sinus infections, and chronic sinusitis. Additionally, she reported anxiety related to the external visibility of her nasal polyps. At her peak symptomatology, examination revealed pale grey polypoid masses prolapsing into the nasal cavity and extending to the level of the nasal vestibule on the right and just below the vestibule on the left. She was treated with topical steroids for 9 years with minimal effect and she adamantly deferred surgical intervention. Her diabetes regimen consisted of metformin, sitagliptin, and therapeutic lifestyle changes until 2 year ago, at which time canagliflozin was added to achieve better glycemic control. She tolerated this medication well and, in addition to improvement in hemoglobin A1c, she reported marked improvement in her nasal polyps size, symptomatology, and self-confidence in regard to her physical appearance.

Discussion

The unknown mechanism behind this patient’s response peaked our curiosity. Sodium-glucose co-transporter-2 (SGLT-2) inhibitors such as canagliflozin initially gained FDA approval for treatment of type 2 diabetes mellitus, but have since demonstrated cardiac protective benefits even in patients without diabetes. Additionally, SGLT-2 inhibitors show evidence of renal protection in those with chronic kidney disease (CKD). Evidence indicates that some of these extra-renal effects occur independent of glucose reduction, which supports the concept that SGLT-2 inhibitors have effects beyond those directed upon SGLT-2 transporters within the

proximal convoluted tubule. Our research has uncovered a few potential mechanisms that may explain these effects, as well as the effects seen in this patient. Most notably, we propose a potential mechanism involving inactivation of High Mobility Group Box Protein 1 (HMGB1). HMGB1 is associated with expression and secretion of markers of inflammation and oxidative stress and is thought to contribute to the development of atherosclerosis and other cardiovascular diseases. Further, HMGB1 has demonstrated a role in renal disease and has been found to be significantly elevated in patients with CKD. Interestingly, higher levels of expression of HMGB1 have also been found in the paranasal mucosa of patients with chronic rhinosinusitis with nasal polyps. Patients with chronic rhinosinusitis and diabetes are more likely to have nasal polyps than those without diabetes, though the reason for this is not clearly described in the literature. HMGB1 activation, potentially through increased MAP kinase pathway activity previously described in patients with insulin resistance, provides a potential explanation for the association between nasal polyps and diabetes mellitus. This case highlights the little-known association between nasal polyps and diabetes mellitus. More importantly, it highlights a potential mechanism of action that may explain the role of an SGLT-2 inhibitor in this patient's course, as well as helping to further understand the mechanisms surrounding the cardiac and renal protective benefits of SGLT-2 inhibitors.

WISCONSIN POSTER FINALIST - CLINICAL VIGNETTE Aiman Zafar, MD

Be Careful with the Bee's !

Aiman Zafar, MD

Title

Be Careful with the Bee's !

Introduction

Acute myocardial injury after bee sting is rare. Kounis syndrome is an acute coronary syndrome (ACS) due to mast cell activation from allergic or anaphylactoid reactions and is also referred to as "allergic angina" or "allergic myocardial infarction". It is implicated that mast cell activation releases inflammatory cytokines that leads to coronary vasospasm and atheromatous plaque erosion and/or rupture.

Case Presentation

38-year-old healthy male was brought to the emergency room for evaluation of syncope after bee sting (possibly wasp) while working on a cranberry marsh. His other symptoms were lightheadedness, fatigue, headache and itching. There was no prior history of anaphylaxis or bee allergies. Physical exam was remarkable for erythematous maculopapular and urticarial rash on trunk and legs. Significant labs were leukocytosis, hypokalemia and mildly elevated troponin I 0.09 ng/ml (cutoff 0.04 ng/ml). Due to anaphylaxis concern he was treated with prednisone, epinephrine, IV fluids and diphenhydramine. His EKG was unremarkable. Troponin I 2 hrs. later was further elevated to 0.5 ng/ml. Patient was referred to tertiary hospital for cardiology evaluation. Subsequently high sensitivity troponin was also checked and was elevated to 410 ng/ml. An echocardiogram was done and it was unremarkable. Coronary CT angiography revealed normal coronary arteries without stenosis. A specific IgE to wasp was elevated to 2.23. Patient remained stable during hospital stay and was discharged with an epi-pen. He was further evaluated by allergy specialist and workup revealed he had allergic sensitivity to yellow jacket (9.85), yellow faced hornet (0.94) and white-faced hornet (4.79) but negative for systemic mastocytosis. Patient was advised to consider a different occupation due to significant further risk of a life-threatening reaction but this was not possible for him. He was instructed to begin venom immunotherapy and advised to take anti-histamines, H2 blockers and Montelukast on daily basis during stinging insects' season and to keep epi-pen always available.

Discussion

Our patient's presentation resembles to Type I Kounis syndrome. There are three variants of Kounis syndrome. Type I Kounis syndrome includes patients with normal coronary arteries without predisposing factors for coronary artery disease (CAD) in whom an acute allergic insult leads to coronary artery vasospasm with normal cardiac biomarkers or infarction with positive cardiac biomarkers. Mild reaction is treated with antihistamines and steroids and anaphylaxis with epinephrine. Beta-blockers should be avoided when using epinephrine as that can cause un-opposed alpha-adrenergic activity leading to further vasospasm. Morphine should also be avoided as it can potentially stimulate histamine release and exacerbate pathologic cascade. Our patient almost had a near fatal allergic reaction after bee sting which was timely and appropriately treated. This case helps us recognize a potentially rare consequence of ACS after a bee sting which can have a more severe manifestation in people with underlying CAD. We also learn that patient's with anaphylaxis type reaction after bee sting should be prescribed an epi-pen and instructed to keep it always available to them. These patients should also be referred to an allergy specialist.