

American College of Physicians and Society of Hospital Medicine Medical Student Day 2018

Poster Presentation No. 1

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Potential for Mobile Health Technology to Reduce Health Disparities in Underserved Communities

Introduction

Mobile health (mHealth) is changing how patients make healthcare decisions and interact with clinicians. We sought to determine the readiness for such patients to use mobile health technology to guide their medical decision-making.

Methods

This was a prospective observational study of patients presenting to the urgent care section of an urban ED. We included patients >2 years that presented for lower acuity chief complaints (cold symptoms, sore throat, etc). We excluded patients that would require hospital admission. A study team member conducted an interview with each patient about their willingness to use mHealth tools for healthcare guidance.

Results

There were a total of 560 patients included in the study. 88% of patients were adults, 64% female, and 90% Black. Among adults, the mean age was 28 ± 9 years, and children's mean age was 9 ± 5 years. Mobile phone access for mobile apps/Internet searches was very common (96%), and 76% of patients reported using mobile apps. While 67% of patients received medical advice from friends/family members, and equal number also reported using online references. When asked when a mHealth tool advised the patient that their current health problem was low risk, 68% of patients responded they would go to a primary care physician (30%), not seek urgent medical care (28%), or telehealth (11%).

Conclusion

In an urban community of young adults and parents, there is a high degree of capacity and willingness to implement mHealth to guide medical decision-making. MHealth may reduce disparities in healthcare in these communities.

Poster Presentation No. 2

Presenter: Rachel Glenn

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Rapid Onset of Collapsing Focal Segmental Glomerulosclerosis Not Associated with HIV: A Case Report

Introduction

Collapsing variant of FSGS usually presents with severe nephrotic syndrome and greater functional impairment than FSGS not otherwise specified. It is most commonly seen with HIV or other conditions, is rarely idiopathic, and the disease presents over weeks to months.

Case Presentation

A 28 year old African American female with no significant medical history presented to emergency department with nausea and vomiting. She had no abnormal laboratory findings and an unremarkable urinalysis, was given IV fluids, and discharged home. A week later she again presented to emergency department, but this time with 6 days of lower extremity swelling. Vital signs were significant for hypertension at 150/60. Examination revealed significant bilateral lower extremity pitting edema. Her laboratory findings revealed anemia (8.5), thrombocytopenia (95), hyperlipidemia (HDL 13 and LDL 257), triglycerides (632), elevated creatinine (7.32 mg/dl), and proteinuria (10 g/day). Venous duplex showed thrombosis of the right peroneal vein. Renal biopsy revealed collapsing variant of focal segmental glomerulosclerosis involving all glomeruli with tubulointerstitial disease. Work up for secondary causes was negative for HIV, HCV/HBV, lupus, and malignancy. Her creatinine stabilized at 6, she was started on prednisone, and was instructed to follow up with outpatient nephrology outpatient for dialysis.

Discussion

Our case is unique because the onset and progression occurred within one week, along with the rapid emergence of complications of nephrotic syndrome. This case shed light on the rapid progression of collapsing variant without underlying secondary cause, and also on associated co-morbidities like DVT, protein calorie malnutrition, and hyperlipidemia.

Poster Presentation No. 3

Presenter: Shayla Mena

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It Started with Shingles: Lumbar-Onset Amyotrophic Lateral Sclerosis with Frontotemporal Dementia

A 68-year-old male with a history of hypothyroidism and depression was seen by his physician for a shingles follow-up. The patient complained of postherpetic neuralgia and confusion. Two days later he checked into emergency with a similar complaint. Computed tomography (CT) of the head and laboratory work-up were negative. He was given lorazepam and discharged with instructions to return to his physician. A head magnetic resonance imaging (MRI) was scheduled and significant only for "chronic microvascular disease." Interestingly, the patient's family history was notable for dementia and neuropathy. Within six weeks, he developed increasing cognitive impairment. Repeat head CT and head/neck CT angiography were negative. However, brain positron emission tomography demonstrated a decrease in metabolic activity in the parietotemporal cortex, with "patchy areas of possible minimal decrease" in the frontal lobes. The report suggested early Alzheimer's. Three weeks later the patient presented with subtle difficulty in right lower extremity movements. MRI of the lumbar spine was inconclusive. Within two and a half months he developed visual hallucinations, facial asymmetry, and right foot drop. During this interim consults were obtained. Electromyography studies at the University of Michigan Neuromuscular Clinic pointed towards amyotrophic lateral sclerosis (ALS). At a multidisciplinary clinic the diagnosis was expanded to include frontotemporal dementia (FTD). The patient was referred to hospice in mid-2017 and succumbed less than one year from initial presentation.

This case illustrates the challenge in diagnosing a mixed ALS-FTD pathology; although rare, early recognition can be achieved by paying close attention to pertinent family history.

Poster Presentation No. 4

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Cardiac Perforation as a Complication of Chest Tube Placement

The placement of a tube thoracostomy is a useful therapeutic procedure performed for multiple clinical indications, but associated with a variety of possible complications. Perforation of the heart, however, has not been previously reported. A 56-year-old female was admitted from the emergency room after an outpatient echocardiogram for shortness of breath. Evaluation revealed large bilateral pleural and pericardial effusions. A left tube thoracostomy was placed but failed to resolve the pleural effusion. This was removed and a second 14Fr pigtail chest tube was placed with immediate drainage of 1800ml of blood. The patient decompensated and went into cardiac arrest. The chest tube was clamped, the patient was resuscitated, returning to normal sinus rhythm. A chest Xray and CT scan demonstrated the thoracostomy tube to have entered the left ventricle. The patient was taken to surgery where the tube was removed and the damaged myocardium was repaired. The patient recovered cardiovascular function but suffered anoxic encephalopathy. Multiple cases have been reported of complications from chest tube placement, including perforation of the lungs, diaphragm, liver, mediastinal and abdominal organs, while no reports of ventricular perforation. When performing a thoracostomy, full attention needs to be given to all aspects of the procedure to prevent complications. Among these would be the angle of chest tube insertion, the depth of trocar advancement, and monitoring of the type and amount of fluid immediately aspirated. Complications, when they occur, need to be quickly recognized and expeditiously treated to decrease the possibility of death or significant morbidity.

Poster Presentation No. 5

Presenter: Alexandra Ortiz

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Impact of Free and Reduced-Cost Drug Programs on Type 2 Diabetes Outcomes

Background: With the controversies surrounding drug affordability and insurance coverage, individuals with type 2 diabetes (T2DM) may need to rely on retail pharmacy-driven free and reduced-cost drug programs for long-term management.

Methods: This study consists of a retrospective chart review using outpatient data collected from an Electronic Medical Record (EMR) database and a patient survey collected from patients in waiting rooms at CMU Health Internal Medicine and Family Practice Clinics from June to August 2017. The primary outcomes of interest are whether patients who either receive their metformin for free or at a reduced cost have: 1) more significant improvements to their HbA1c values, 2) self-report higher adherence to treatment regimen, and are (3) more satisfied (assessed by validated instrument courtesy of Merck) with their treatment than their counterparts who pay full price for their metformin prescriptions. Secondary outcomes include the effects of demographic classes on disease outcomes and patient satisfaction. The primary variables of interest included: utilization of a free or reduced-cost drug program (determined via e-prescription to participating pharmacies), metformin prescription dosage and frequency, changes in HbA1c over the follow-up period, medication adherence, and patient satisfaction with treatment.

Conclusion: Our preliminary analysis has shown that there do not appear to be differences in any of the primary outcomes of interest between groups of patients based differences in access to metformin. Our study suggests that there are other factors beyond cost of medication which affect adherence and/or patient satisfaction with their treatment regimen.

Poster Presentation No. 6

Presenter: Louis Saravolatz

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Lack of Effect of Recent Antibiotics on Results of Vertebral Biopsy Cultures in Patients with Vertebral Infections

Background: Patients with vertebral infections require identification of pathogens to assure appropriate therapy. The effect of recent antibiotics on the yield of biopsies has not been formally evaluated.

Methods: We performed a retrospective evaluation of vertebral infections during 2003-13. The following information was obtained: underlying diagnosis, demographics, Charlson Weighted Index of Comorbidity (CWIC), receipt of prior antibiotics within 72 hours of biopsy, and microbiology. Patients with biopsies were compared by whether or not they received pre-biopsy antibiotics using Chi square and a $p < 0.05$ was considered statistically significant.

Results: A total of 173 patients met inclusion criteria, mean age was 59.4 +/- 11.9 years and 66.5% (115/173) were male. Patients had the following diagnoses: 124 (86.1%) vertebral osteomyelitis, 92 (63.9%) diskitis and 27 (18.8%) epidural abscess. Among 164 (95%) with blood cultures, 110 (67%) were positive. There were 66 patients who had percutaneous biopsies and 32 (48%) were positive. In patients undergoing percutaneous biopsy, 47.2% and 50%, respectively had positive cultures when antibiotics were administered prior or after the procedure ($p=0.83$). In patients who had an open biopsy, positive cultures occurred in 66% vs 72.7%, respectively when antibiotics were administered prior or after the procedure ($p=0.67$). Only 8 of 72 patients (11.1%) with *S. aureus* bacteremia had a percutaneous biopsy compared to 16 of 38 patients (42%) with other organisms, $p < 0.0001$.

Conclusion: In patients with biopsies for vertebral infections, there was no effect of recent antibiotics on the yield of cultures. Larger studies should be performed to confirm this finding.

Poster Presentation No. 7

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Prostate in Prostration

Prostate cancer is the second most common cancer in men and usually has an indolent course. Advanced disease typically presents with weight loss, anemia, and bone pain from bone metastases but uncommon forms challenge this paradigm.

A healthy 84-year-old man presented to the ER with abdominal pain and bloating for three weeks. Abdominal and pelvic CT revealed moderate ascites and liver appeared mildly-cirrhotic. Alcohol, illicit drug use, and recent travel were denied. Liver function tests were normal. Liver biopsy showed mild fibrosis without active hepatitis. Ultrasound of portal and splenic veins demonstrated normal blood flow. Diagnosed with cryptogenic cirrhosis, furosemide was initiated. Despite diuresis, his ascites worsened requiring multiple paracentesis. Two months after his initial visit, he experienced increasing shortness of breath from new bilateral pleural effusions. Repeat paracentesis and fluid cytology revealed anaplastic adenocarcinoma of the prostate. Abdominal CT now showed prominent bilateral pleural effusions with nodularities, extensive retroperitoneal adenopathy, diffuse mixed lytic and sclerotic bone lesions, and diffuse omental nodularities, indicating widespread metastasis. PSA at time of diagnosis was 2510.9 ng/mL. Patient is currently undergoing treatment with docetaxel, bicalutamide, and leuprolide. His pleural effusions have not returned, ascites has not progressed, and current PSA is 32.9 ng/mL.

This case illustrates an uncommon form and presentation of a commonly-diagnosed cancer: anaplastic prostate cancer which rapidly progressed and metastasized within three months. USPSTF recommends against PSA-based screening for prostate cancer in men aged 70 years or older. In the healthy, highly functional geriatric population, cancer screenings should be offered.

Poster Presentation No. 8

Presenter: Samrath Singh

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Corrosive Esophageal Injury due to Suicide Attempt: Psychiatric Obstacles in Proceeding with Care

Caustic ingestion of bleaching agents, such as Drano, have long been reported to follow a benign clinical course. Rare, but fatal cases of household bleach ingestion have been reported in the context of attempted suicide. These reports have outlined the patient's clinical course, emphasizing gastrointestinal, neurological, and surgical outcomes. Current literature has failed to discuss the psychiatric obstacles present when treating patients with a history of prior suicide attempt, particularly via ingestion of a corrosive substance. A 19-year-old, unemployed, Caucasian female presented to the emergency department (ED) with bloody emesis and diffuse pain following ingestion of Drano and Febreze. At the time of this suicide attempt, the patient had a history of intentional self-harm and previous suicide attempts. She was transferred to a tertiary care facility where an esophagogastroduodenoscopy and jejunostomy yielded jejunostomy tube (j-tube) placement. In the following 22 months, she visited the ED on several occasions regarding complaints such as abdominal pain, suicidal ideation, j tube displacement, and sepsis. She also presented with multiple bouts of community acquired pneumonia (CAP), atelectasis and pneumothorax. On her current extended admission, the treatment team has experimented with targeted combinations of psychiatric medications in hopes of symptomatic improvement of her mood disorder and suicidal ideation. The team hopes that an improvement in psychiatric symptoms will lead to increased compliance with treatment, and ultimately stabilize her condition, allowing for surgical placement of an esophageal prosthesis.

Poster Presentation No. 9

Presenter: Erin Dunneback

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Quality Improvement: Assessing Wasteful and Unnecessary Medical Tests and Treatments Incorporating Choosing Wisely Guidelines

Background: This study examines the amount of medical waste regarding six services at Mercy Health Saint Mary's Hospital, with the goal of reducing waste by implementing guidelines from Choosing Wisely. The goal is to decrease unnecessary utilization of identified resources by 5%.

Methods: Study timeline is 7/2016-7/2018. MSU medical students on the Internal Medicine clerkship are instructed how to implement guidelines for reducing waste regarding 6 orders (repeat CBC, telemetry, RBC transfusion, IV fluids, supplemental oxygen, and antibiotics). The students remind the care team of the guidelines and they decide if any changes should be made. The students then record whether the orders were continued or discontinued. Data is tracked to determine if there is a decrease in the utilization of these orders. The Crimson Database will be utilized to determine total number of orders placed prior to initiation of this project, as well as quarterly throughout the project.

Preliminary Results: Data collected from medical students from 7/2016-12/2017: After discussing the waste-reducing guidelines with the care team the following percentage of orders were discontinued: CBC 6.7%, telemetry 4.4%, RBC transfusion 2.2%, IV fluids 27.4%, supplemental oxygen 8.1%, antibiotic therapy 6.7%. Crimson Database data is pending.

Conclusions: Preliminary data demonstrates that when the care team is reminded of the Choosing Wisely guidelines, orders are subsequently discontinued. Further data analysis is necessary, as well as analysis of Crimson Database data, to determine the effect of this project.

Poster Presentation No. 10

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Moyamoya Disease: Not Your Everyday Puff of Smoke

Stroke is an acute neurological injury due to increased blood within the cerebral cavity or decreased cerebral blood flow. Ischemic stroke refers to conditions that result in tissue damage due to reduction in blood flow. Our case involves a 44-year-old African American woman with a medical history significant for stroke, tobacco abuse, and migraine headaches who presented for a 6-hour history of left upper extremity and facial numbness. Vitals included a temperature of 36.7 Celsius, blood pressure of 231/92 mm Hg, pulse of 76, and oxygen saturation of 99% on room air. Neurological exam revealed a NIH stroke scale of 4, with diminished sensation in the left upper extremity and face. MRI of the brain showed acute left and right infarcts. Magnetic resonance angiography displayed chronic right middle cerebral artery occlusion and stenosis of the terminal portions of both internal carotid arteries. Catheter angiography confirmed the findings and revealed abnormal vascular networks diagnostic for moyamoya disease. Moyamoya disease (MMD) is an occlusive disease of the cerebrovasculature which involves progressive stenosis of the terminal portions of the internal carotid artery and abnormal vasculature at the base of the brain. Moyamoya means a "hazy puff of smoke" in Japanese and refers to the unique radiologic image produced by moyamoya vessels; these are irregular perforating vascular networks near the occluded or stenotic vessels. This case demonstrates the importance for providers to consider MMD in patients presenting with stroke, the need for advanced imaging for diagnosis, and prompt involvement of subspecialists for neurosurgical intervention.

Poster Presentation No. 11

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Mid-Michigan Amish Community Medical Needs

OBJECTIVE: To gain an understanding of what conditions or illnesses are prompting the Amish community to access care at MidMichigan Medical Center (MMMC); which, if any, are preventable diagnoses that could benefit from community education or outreach; and to assess the costs for both the Amish community and MMMC.

METHODS: This is a descriptive study that will analyze 250 self-identified Amish patients who accessed MMMC hospitals in Midland, Alpena, Clare, Gladwin, and Gratiot from July 1, 2015 through June 30, 2016 (FY16). The data will be de-identified and provided by MMMC-Clare.

The most frequent preventable codes for each region will be identified: primary diagnoses that are considered non-emergent and could be appropriately handled within the primary care setting or through increased immunization and vaccination measures will be considered "preventable" codes. Diagnostic codes that were most expensive for the system and most expensive for the patient will be identified. Excel pivot tables will be used to generate graphs and summaries. Student t-tests will be used for numerical data and chi square analysis will be used for categorical data in order to determine if the proportions are random.

POTENTIAL IMPACT: By identifying the most frequent and highest cost diagnoses in this patient population, targeted interventions to improve health and decrease costs could be developed. Preventable ED visits may be identified, allowing for community outreach and education on early warning signs, disease prevention, or proper medical offices to seek for care.

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Poster Presentation No. 12

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A Vexing Vulvitis: A Case Report on Plasma Cell Vulvitis

BACKGROUND:

Plasma cell vulvitis (PCV) is a rare idiopathic, benign, chronic inflammatory condition found in the genital mucosa of females. Symptoms typically include itching, burning, and dyspareunia.

CASE DESCRIPTION:

A 66-year-old female with multiple chronic health conditions presented with severe redness, itching, and pain of her external genitalia with associated dysuria. Biopsy confirmed PCV. She showed gradual improvement with clobetasol propionate 0.05% cream.

DISCUSSION:

The ambiguous presentation, lack of specific treatments, possibility of relapse, and the severity of symptoms make PCV a difficult disease for both patients and providers.

CONCLUSION:

Physicians should pursue biopsy for refractory vulvar lesions and keep PCV as a differential.

Poster Presentation No. 13

Presenter: Mohammad Ahmadzai

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GRK2 Contributes to the Pathogenesis of Asthma and Allergic Airway Inflammation

G-protein coupled receptor kinase 2 (GRK2) is a ubiquitously expressed cytoplasmic protein that mediates the desensitization and internalization of G-protein coupled receptors. In addition to these well-studied functions, GRK2 also scaffolds the recruitment of binding-partners that trans-activate diverse signal transduction cascades. These non-canonical signaling roles of GRK2 contribute to various chronic illnesses, including diabetes and cardiovascular disease. The role of GRK2 in the pathogenesis of asthma and allergic airway disease, however, remains unknown. Here, we demonstrate that Grk2 gene expression is significantly elevated in asthmatic human lungs compared to healthy controls by $41.6 \pm 9.14\%$ (SEM; $n=4-5$, $p < 0.05$). Furthermore, C57BL/6 mice that are heterozygous for Grk2 expression (Grk2^{+/-}) exhibit attenuated airway inflammation following sensitization and challenge with house dust-mite extract (HDME), as measured by serological and histopathological markers of inflammation. In particular, Grk2^{+/-} mice had a ~50% decrease in serum IgE and whole-lung IL-4 and IL-13 levels and airway leukocytosis, compared to their wild-type counterparts. Given the central role of mast cells in the pathogenesis of allergic airway disease, we utilized genetic and pharmacological techniques to characterize how GRK2 contributes to airway inflammation. Remarkably, the specific inhibitor of GRK2, paroxetine, robustly inhibited mast cell degranulation in vitro ($pIC_{50} = 4.66 \pm 0.311$, $n=12$). Additionally, silencing the expression of GRK2 in mast cells using lentivirus also obliterated mast cell degranulation. Taken together, our study reveals a pathological role for GRK2 in the development of asthma and suggests that GRK2 may constitute a novel therapeutic target in the treatment of this disease.

Poster Presentation No. 14

Presenter: Taylor Huizenga

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A Rare Babesiosis Divergens-Like/MO-1 Infection in an Asplenic Patient

Protozoan intraerythrocytic parasites of the genus *Babesia* cause infection when transmitted via ticks or by blood transfusion from an infected donor. Babesiosis often results in multi-organ failure in the elderly, immunocompromised, or asplenic patient. The vast majority of Babesiosis in the U.S. are caused by the species *B. microti* transmitted via *Ixodes scapularis* ticks. There are only 5 recorded cases of *B. divergens-like/MO-1* infections. This case describes the 6th. A 60-year-old female with hereditary spherocytosis status post splenectomy, and a history of pancreatic and colon cancer status-post whipple procedure presented in multi-organ failure. A peripheral blood smear showed numerous intraerythrocytic parasites consistent with *Babesia* sp. and a parasitemia of 25-30%. Due to her high level of parasitemia she underwent a two volume RBC exchange transfusion, which reduced her parasitemia to 3.5%. She also received 4 weeks of antibiotic therapy with clindamycin, atovaquone, and azithromycin. Throughout her hospitalization she required mechanical ventilation, pressor support, and renal replacement therapy. Follow up with infectious diseases day 29-post presentation showed no parasitemia and her condition improving.

Multiplex PCR for the *Babesia* species performed was positive for *B. divergens-like/MO-1*. The CDC laboratory in Atlanta, GA confirmed this result. *B. divergens-like/MO-1* infections are severe, especially in the asplenic patient. The previous 5 cases were in asplenic individuals with a 60% mortality rate. Red blood cell exchange transfusion is critical if parasitemia is above 10%. The maltese cross is the characteristic finding on a blood smear. Physicians should be alert for additional cases, particularly in asplenic patients.

Poster Presentation No. 15

Presenter: Silvan Omerovic

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Epstein-Barr Virus Encephalitis in Immunocompetent Non-Pediatric Patient - A Case Report

Introduction: Epstein-Barr virus (EBV) presents as acute mononucleosis in teens, and typically remains latent in adults, and may persist asymptotically in patients life-long. In adults, EBV central nervous system infections are often due to reactivation of the virus, and patients may present with fever, myositis, delirium, ataxia, and diplopia.

Case: A 40-year-old immunocompetent female presented with fever, myalgias, nausea, and vomiting for four days. Her exam revealed delirium, dysarthria, and ataxia. Non-contrast MRI demonstrated a hypoattenuating lesion in the splenium. Lumbar puncture showed mixed lymphocytic and neutrophilic pleocytosis, with a negative initial microbiological workup. The patient was empirically started on IVIG pending anti-NMDA receptor antibody test for possible paraneoplastic syndrome, the result of which was negative. The patient showed partial improvement with residual dysarthria and ataxia. Monospot antibody test was positive, and further investigation found a positive quantitative EBV DNA PCR. The patient was started on burst steroid treatment for three days which resulted in almost complete resolution of the patient symptoms and repeat MRI revealed the disappearance of the previously mentioned splenium lesion.

Discussion: The incidence of EBV encephalitis in adults is very rare. Data about management of this disease is limited, with cases reporting the use of acyclovir, IVIG, steroids or just supportive care. Standard preparations of IVIG contain anti-EBV antibodies, and due to the rapid response while on steroids, we believe IVIG and glucocorticoids may have played a role in management of encephalitis in our patient.

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Poster Presentation No. 16

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Biosand Filtration: Sustainable Purification of Amazon River Water

Our Water Filter Project is an initiative as part of MSUCOM's Peru Global Outreach that provides a sustainable and affordable filtration system that is easily reproducible, and can be delivered to our patients along the Amazon River Basin. Our goal is to prevent our patients' pathology prospectively by delivering a practical filter whilst providing education regarding the necessity of water sanitation.

In 2017, in conjunction with Engineers without Borders we implemented 22 redesigned filters to increase durability and longevity. Our modified Biosand filtration design works immediately to eliminate sediment, parasites, and hard metals from the turbid water, delivering clear water within minutes; eventually a 'biolayer' develops, removing disease causing bacteria and viruses. Data from our filters demonstrated removal of heavy metals and disease-causing micro-organisms specific to the Amazon River. Furthermore, we established a reliable method of data collection in conjunction with our local biologist, who is intimately connected to the community and has expertise with our filter design.

Our long-term goal is to develop a remote clinic with physicians from MSUCOM's outreach to treat patients, establish follow-up care, and collect patient-focused health outcomes to assess the efficacy of our filters on renal and gastrointestinal function. We believe our project provides an ongoing contribution to these communities and expands the short-term impacts of a 'medical mission' approach. Our filters truly improve the quality of life of our patients and we believe our filter design will have a global impact when extrapolated to communities with similar water sanitation issues.

Poster Presentation No. 17

Presenter: Sefali Patel

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Clerkship Director: Richard Thiede, MD, ACP Member

A Rare Case of Tricuspid Valve Fungal Endocarditis Causing Septic Pulmonary Emboli

Introduction

Fungal endocarditis is rare and constitutes only 1% of endocarditis cases. Candida is the most common fungal agent and contributes to 24-46% of fungal endocarditis cases. While right sided infective endocarditis (RSIE) has better prognosis than left sided endocarditis, fungal etiology is associated with poor outcomes.

Case

A 25 year old, morbidly obese, Caucasian woman with history of chronic pain, hypogammaglobinemia with selective antibody deficiency, non-healing left hip Methicillin resistant staphylococcus aureus hip wound on treatment with intravenous vancomycin through a right upper chest port and recent provoked right segmental pulmonary emboli presented with the chief complaint of redness and pain at her chest port site. She was afebrile and hemodynamically stable. CT scan of the abdomen and pelvis done to rule out a possible abscess at left hip wound site showed bibasilar nodular opacities in the lungs with central cavitation concerning for septic emboli. Chest port and blood cultures grew Candida Parapsilosis. Transesophageal echocardiogram showed a 9 mm tricuspid valve vegetation with moderate tricuspid regurgitation. Antifungal therapy for 6 weeks was started with Amphotericin and oral Flucytosine, but was switched to micafungin and fluconazole due to progressive creatinine elevation. Cardiothoracic surgery recommended valve replacement.

Discussion

Fungal endocarditis has a high mortality rate of 50%. Complications such as embolic phenomenon are more common with fungal endocarditis than bacterial endocarditis. Treatment consists of 6 weeks of dual parenteral antifungal therapy in addition to surgery (Class I recommendation). Lifelong suppression with Azoles is recommended to reduce relapse.

Poster Presentation No. 18

Presenter: Bahar Zarrabian

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Delineating Adult Onset Still's Disease from Other Infectious and Rheumatologic Diseases

Adult-onset Still's disease is an inflammatory disorder characterized by daily fevers, rash, and arthralgia/arthritis. The non-specificity of these findings and the infrequency with which it is encountered can make its recognition a diagnostic challenge.

A 38 year-old woman with a history of Raynaud's phenomenon arrived to the ED for evaluation of a four day history of sore throat, daily fevers, a maculopapular rash involving all extremities and trunk, and bilateral wrist and knee arthralgia. Her labs revealed leukocytosis with bandemia and an elevated ESR. Given her stable vitals and a history of an elevated ANA titer, she was diagnosed with a lupus flare and advised to follow-up with her PCP. After a third visit to the ED, she was admitted for refractory symptoms. Labs revealed a WBC count of 42,000/mcL with bandemia of 37,700/mcL. Her ESR was 76 mm/hr and CRP was 20.8 mg/dL. Still's disease was suspected because of a refractory clinical course while ruling out other infectious and rheumatologic etiologies. Subsequently, a serum ferritin was ordered and was 7,799 ng/mL. Patient was started on IV Solumedrol and Anakinra for suspected Still's disease. Following the third day of treatment, mild joint pain and swelling was noted in her left wrist only and residual rash only along her chest.

This case illustrates the need to include Still's disease on a patient with refractory symptoms that mimic other rheumatologic and infectious etiologies. A high clinical suspicion is warranted in a patient with leukocytosis and bandemia, elevated inflammatory markers, and hyperferritinemia.

Poster Presentation No. 19

Presenter: Mohammed Ahmed

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Buttock Claudication in the Setting of Persistent Sciatic Artery

Background: The sciatic artery is a continuation of the internal iliac and serves as the major blood supply to the lower extremities during early fetal development, prior to the development of the femoral artery. Normally, it involutes but could rarely persist (<0.05%), and has been associated with increased risk of peripheral arterial disease (PAD) and aneurysms.

Case Presentation: A 60-year-old male with a history of Diabetes Mellitus and Coronary Artery Disease presented with buttock claudication. Femoral and popliteal pulses were palpable on examination. Doppler and pulse-volume recording showed an ankle-brachial index of 0.7 bilaterally with elevated velocities at the common iliac arteries suggesting bilateral common iliac artery stenosis. He failed supervised exercise training combined with optimal medical management, and was considered for percutaneous revascularization. Invasive angiography, performed through the right common femoral artery, revealed bilateral persistent sciatic arteries.

Management: Following discussion with the patient, a staged intervention with percutaneous transluminal angioplasty (PTA)/stenting of the right and left common iliac artery to the external iliac artery through a brachial approach was performed with care not to interrupt the internal iliac artery.

Outcome: Patient symptoms improved following successful revascularization.

Discussion: The presence of a pulsating gluteal mass and or lower limb ischemia has been reported as signs of aneurysm or occlusion respectively in the case of persistent sciatic artery. However in this patient, the sciatic artery wasn't occluded and it compensated for lower extremity perfusion despite stenosis of the iliac arteries. Anatomical variants should be considered in patients with PAD.

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Poster Presentation No. 20

Presenter: Spencer Darlin

Additional Authors: Anthony Mells, Jason Wasserman PhD

School: Oakland University William Beaumont School of Medicine

Clerkship Director: Pradeep Kaminoulu, MD and Maham Siddiqi, MD

Clinical Uncertainty Uncovers Bias Against Homeless People in Health Care

INTRODUCTION

Although health care professionals often provide equal treatment to homeless and non-homeless individuals, social stigma against homeless individuals prevails when clinical uncertainty exists. That is, only when the appropriate course of treatment of a patient is relatively unclear (clinical uncertainty), differences between the treatment of homeless and non-homeless individuals appear.

METHODS

The study will be conducted using statistical analysis of a national compilation of data from the National Hospital Ambulatory Medical Care Survey (NHAMCS), a survey designed to provide objective, reliable information about ambulatory medical care services in the United States. The medical treatment of homeless and housed patients will be compared at equivalent situations of clinical uncertainty using the NHAMCS data.

RESULTS

Exclusively for triage level 3 visits, homelessness patients are less likely than non-homeless patients to be cared for by an attending physician.

Visits by homeless patients with pain levels of 8 or more are less than half as likely to result in a prescription for a schedule I, II, or III medication than housed patient visits with the same pain score.

CONCLUSION

Homeless people deserve to be treated without bias in the health care system.

Additionally, the decision to provide a patient with narcotics is multifactorial and should be individualized for each patient while avoiding clinically relevant incorrect assumptions about homeless people as a whole.

The evidence of prejudice against homeless people will hopefully inspire health care providers to be vigilant about making assumptions about homeless people.

Poster Presentation No. 21

Presenter: Sara Dykowski

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A Platelet-Induced Acute Hemolytic Transfusion Reaction

A 61-year-old female with a past medical history of acute myeloblastic leukemia with recent induction chemotherapy presented with fever, chills, and hematuria that started during a platelet transfusion at an outpatient infusion center. On presentation, she reported mild exertional dyspnea with no chest pain or cough. Pertinent exam findings included normal blood pressure and heart rate, conjunctival pallor, scleral icterus, clear lungs, and petechiae over the lower extremities. Laboratory studies revealed a white cell count of 1000 cells/mL, hemoglobin of 5.5 g/dL (decreased from 9 g/dL one week prior), platelets of 56000 cells/mL, lactate dehydrogenase of 1125 U/L, haptoglobin <8 mg/dL, total bilirubin of 3.5 mg/dL (direct 1.0 mg/dL), fibrinogen of 273 mg/dL, and a normal prothrombin and partial thromboplastin time. Coombs test was positive for C3d. The patient had A positive blood type and she received the platelets transfusion from an O positive donor. Delayed transfusion reaction was thought to be unlikely given the chronological relationship of her symptoms with platelets transfusion and the intravascular nature of hemolysis. The transfusion reaction evaluation revealed this event was an acute hemolytic reaction due to a high anti-A alloantibody (greater than 1:512) in the transfused O blood type platelet unit that hemolyzed the patient's A positive blood. This case acts as a reminder that although rare, hemolytic platelet transfusion reactions do occur. ABO identical platelets should be transfused whenever possible. If unavailable, staff should be made aware so that additional monitoring can occur in these patients to minimize adverse reactions.

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Poster Presentation No. 22

Presenter: Kanav Gupta

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Assessing Perceived Life Satisfaction of OUWB Students in the Context of Empathy and Future Patient Care

Emerging adulthood is a period of life where individuals attain the independence and status of adulthood without many of the full-fledged responsibilities that accompany it. It is often characterized as an age of instability, self-focus, and identity exploration. The challenges emerging adults encounter often negatively impact their mental status and levels of life satisfaction. These challenges are only increased in severity for medical students, the majority of whom are emerging adults. We explored these challenges, in the context of life satisfaction and patient empathy, for OUWB School of Medicine students in their pre-clinical vs. clinical years. Data was collected via two standardized indexes utilizing the Qualtrics platform. The sixty-two participants included students in all four years of the OUWB curriculum. The assessments asked the participants to rank how well they identify with a number of statements. The two assessments were modified versions of the Life Satisfaction index (Diener, E., et al., 1985) and the Jefferson Scale of Physician Empathy index (Hojat, M., et al., 2001). Preliminary data suggests lower reported levels of life satisfaction among pre-clinical students, but no overall difference in reported empathy for patients between pre-clinical and clinical students. These results will assist to produce curricular recommendations and a better understanding of potential curricular revisions that could improve the life satisfaction of OUWB students and their empathy for patients.

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Poster Presentation No. 23

Presenter: Derrick Huang

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Emergency Department Homeless Patient Medicaid Status: Differences in Morbidity, Costs, and Care

INTRODUCTION

Homeless patient Emergency Department (ED) use is associated with significant health care costs through drug dependency and higher utilization. These factors may be attenuated by Medicaid or primary care access. Our objective was to identify differences in drug use, psychiatric comorbidities, and ED course between homeless patients with Medicaid [INS] and without insurance [NOINS].

METHODS

This is a cross sectional study of 2007-2010 National Ambulatory Medical Care Survey data collected via 4 stage probability sampling of representative US hospital EDs. Descriptive statistics and bivariate analyses examined relationships between demographics and ED use variables in INS vs NOINS. Important variables focused on demographics, ED utilization history, drug and psychiatric comorbidities, and primary care follow up.

RESULTS

From 2007-2010, approximately 3 million ED homeless patients were seen with about 34% on Medicaid. Bivariate analysis was most significant for more psychiatric diagnoses (25.8 vs 20.0%) and higher ED use within the last year for INS, and higher prevalence of hospital discharge within the last week for NOINS ($p < 0.05$). NOINS was more associated with drug dependency and having received controlled substance medications (23.0% vs 18.5% and 16.8% vs 12.7%, respectively). No significant differences were identified in demographics, admission status, and primary care follow up orders.

CONCLUSION

Insuring the homeless facilitates psychiatric disease diagnosis but is associated with greater total ED use in the year. Non-insurance was associated with greater drug dependency and higher ED post-discharge revisits. Results highlight the need to increase insurance and improve primary care use in the homeless population.

Poster Presentation No. 24

Presenter: Paula Jeon

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Investigating the Downstream Target of ZMIZ1 in T-Cell Acute Lymphoblastic Leukemia

INTRODUCTION

NOTCH1 was found to be the most frequently mutated oncogene in T-cell acute lymphoblastic leukemia (T-ALL), raising hopes for first targeted therapy. However, Notch inhibitors exhibited toxicity because Notch has important physiologic roles. Zmiz1 was identified as a direct and selective cofactor of Notch1 in T-Cell development and leukemia, and target genes regulated by Zmiz1-Notch1 interaction were identified. The purpose is to identify genes that drive leukemic cell growth for potential therapeutic targets while bypassing side effects of total Notch1-blockade.

METHODS

We transduced target genes into primary murine T-ALL cell line that depend on Zmiz1-Notch1 interaction for proliferation, engineered to express activated NOTCH1, Zmiz1^{f/f}, and Rosa26-CreERT2 transgene. 4-hydroxytamoxifen induces Cre, deleting endogenous Zmiz1, leading to cell death. Important target genes would sufficiently compensate for endogenous Zmiz1 by rescuing cell growth. Due to strong NOTCH1 dependence of the cells, we tested the effect of low-dose gamma-secretase inhibitor (GSI), to match the Notch signal seen in primary human T-ALL cells in order to create an environment more dependent on Zmiz1-Notch1 interaction for growth.

RESULTS

Compared to untreated cells, low-dose treated cells showed greater rescue. Compared to the empty vector, GSI treated Zmiz1 rescue was at 98x and Intracellular Notch1 (ICN1) was at 66x. Untreated rescue was at 19x and 3.1x respectively.

CONCLUSION

Data suggest that T-ALL cells are more dependent on Zmiz1 to raise Notch signal and maintain cell proliferation when the intramolecular concentration of Notch1 is limiting, that Zmiz1 inhibitors would be more effective when combined with Notch1 inhibitors.

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Breast Cancer-Related Lymphedema: Bibliometric Investigation of Publications From 2007-2016

Introduction: Breast cancer-related lymphedema (BCRL) research surged within the last decade. We conducted a bibliometric analysis to characterize BCRL publications in order to understand which countries, institutions, and groups contributed most to the field over the last decade.

Methods: A search for indexed English abstracts was performed in PubMed. Only original research articles involving human subjects were included. Data collected for each article included: name(s) of the first and last author(s), journal of publication and impact factor (IF), publication year, country of author(s), income level of country, institution(s) of author(s), study type, and study purpose.

Results: A total of 1,144 publications were identified. Five hundred seventy (570) met our inclusion criteria. The ratio of publications by year is as follows: 2007 (5.6%), 2008 (5.4%), 2009 (7.7%), 2010 (7.7%), 2011 (9.6%), 2012 (11.2%), 2013 (11.2%), 2014 (11.1%), 2015 (14.2%), and 2016 (16.1%). The most common purpose of the lymphedema studies is educational / diagnostic (35.5%), followed by treatment (30.2%), risk/risk factor (25.3%), and prevention (9%). Authors who produced the largest number of BCRL-related publications are primarily located in the USA (32.8%), Australia (9.6%), and South Korea (6.7%). Eight of the top ten BCRL research institutions are in the USA and the remaining two are located in Australia.

Conclusions: BCRL research is predominantly being performed in developed countries. BCRL research is starting to grow as healthcare providers increasingly focus on the quality of life-impairing aspects of breast cancer. This analysis of existing literature emphasizes the need for further investigation into BCRL.

Poster Presentation No. 26

Presenter: Guneet Kaleka

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Paclitaxel-Eluted Stents for the Treatment of Superficial Femoral Artery Disease, a Real-World Experience

Introduction:

Peripheral vascular diseases (PAD) affects 8.5 million patients in the United States, with increasing prevalence in older patients. Over the last decade, a revolutionary advancement in percutaneous treatment of vascular disease in the coronaries arteries, has shed the lights into the potential use of antiproliferative-coated stents for PAD. The initial experience with sirolimus-coated stents in the PAD were associated with surprisingly high prevalence of in-stent restenosis up to 37% of patients at 1 year. Paclitaxel-eluted stents offer a new and promising way of treating PAD. We are reporting outcomes of Zilver PTX stents for the treatment of superficial femoral artery disease (SFA).

Methods:

A retrospective study for all patients who received Zilver PTX stent for the treatment of PAD at Beaumont Health System in Royal Oak, Michigan from 1/1/2011 to 1/1/2016. Patients clinical demographics, along with PAD characteristics were reviewed. The primary outcome was the target lesion revascularization (TLR).

Results:

During the study period, 99 patients met the inclusion criteria. The median age was 69. Most patients had hypertension (95%), whereas 57% had diabetes, 60% had hyperlipidemia. One third of patients had history of stroke, and 80% had history of coronary artery disease. Mean follow up was 25 months. Primary outcome of TLR occurred in 11 patients (11.1%), 1 (1%) of them was due to acute stent thrombosis while the others were due to in-stent restenosis.

Conclusion:

PTX Zilver stents are associated with positive clinical outcomes with only a small percentage of patients requiring intervention for in-stent restenosis.

Poster Presentation No. 27

Presenter: Matthew Lipphardt

Additional Authors: Richard Easton, MD, and Cecile Pestano, RN, BSN, CCRP

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Urinary Retention: Incidence and Impact on Length of Stay Following Spine Surgery

INTRODUCTION

Urinary retention is the inability to urinate voluntarily. In surgery, Post-Operative Urinary Retention (POUR) is a complication caused by pain, trauma, medications and anesthesia. Patients are monitored to ensure ability to spontaneously void. Re-catheterization is often necessary if POUR symptoms persist. Data on the incidence of POUR is limited when it comes to spine surgery. This study aims to determine incidence following spine surgery and its impact on length of stay.

METHODS

Following IRB approval, we retrospectively reviewed 601 spine surgery patients' medical records who had surgery between Dec 2014 until May 2015 for age, gender, medical history, surgical details, POUR diagnosis, and length of stay. The subjects were divided into two groups: POUR and non-POUR. We compared demographics, history of benign prostatic hypertrophy (BPH), diagnosis of POUR, dates of admission and discharge.

RESULTS

Of the 601 patients, we identified 60 patients who developed POUR, this corresponds to a 10% incidence. The length of stay differed significantly between the two groups by 1.2 days. The POUR group was found to be older than the non-POUR by 4.7 years. Strong evidence of an association between BPH and POUR was identified. No evidence of an association between gender and POUR was found.

CONCLUSION

POUR following spinal surgery could prolong hospital stay. Further understanding of its incidence and mechanism may help clinicians become vigilant to mitigate its prevalence. Patients at greater risk may benefit from early identification and treatment. A study to investigate common factors among this population is therefore suggested.

Poster Presentation No. 28

Presenter: MerryJean Losso

Additional Authors: Mohammed Ahmed, Torey Asao, Baibing Chen, Basad Essa M.D.

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Cerebrovascular Complications in Liver Transplantation

Background: Liver transplantation is known for a sequelae of central nervous system dysfunctions. Most frequently this entails adverse effects from immunosuppressive drugs, but also consists of seizures and cerebrovascular complications. Stroke is the third leading cause of death in the United States. Additionally, it is the most a leading cause of long term disability.

Case Presentation: A 60-year-old Middle-Eastern female with a history of end-stage liver disease (ESLD) from non-alcoholic steatohepatitis (NASH) complicated by hepatopulmonary syndrome was admitted for orthotopic liver transplantation. On presentation, she denied abdominal pain, hematochezia or melena. Her physical examination revealed an afebrile, alert and oriented individual with no acute findings. Her MELD score was 26. She was first seen by our institution for the same diagnosis two years prior, but was deemed too high-risk for surgery at the time, due to cardiopulmonary status and high BMI. Nine days following transplant, the patient suffered cardiac arrest after her central line was pulled. She was resuscitated after two rounds of CPR. Subsequently, she suffered left-sided hemiparesis and the stroke team was called. Her NIH Stroke Scale was 18. CT scan days 1 and 30 after stroke showed right front lobe hemorrhage with persistent vasogenic edema of the white matter.

Discussion: Cerebrovascular complications after liver transplantation are rare. Their diagnosis can be confused with non-transplant related etiologies such as hypertension and ischemia. Unconventional locations of brain lesions, and reversibility on MRI support the diagnosis of transplant related complications.

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Poster Presentation No. 29

Presenter: Vincent Tang

Additional Authors: Dwayne Baxa, Ph.D., Bhavinkumar Dalal, M.D.

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A Comparison of Medical Student Engagement in DxR Clinician Versus Case-Based Discussion

INTRODUCTION

In today's medical school curriculum, there is ongoing need to pioneer novel teaching methods that integrate expanding knowledge requirements with student engagement. DxR Clinician is an interactive digital tool that utilizes real patients to adopt virtual encounters covering a broad spectrum of clinical problems. The application allows students to formulate hypotheses, test interpretations, make diagnoses and create treatment plans using various patient modalities. The purpose of this study is to understand student perceptions and evaluate whether they find DxR computer-based activities more functional than professor moderated case-based teaching.

METHODS

The overall methodology in this crossover study is to divide the participants into two groups: DxR Clinician and professor led case discussion. Following the intervention, student responses are collected via survey for analysis of their perceptions. The inclusion criteria for this study is 125 M1 students at Oakland University William Beaumont in the year 2017. Statistical analysis of the data is performed by comparing the frequencies and proportions of student agreement.

RESULTS

Compared to the case-based discussion, examination of results demonstrate that a significant proportion of students find DxR Clinician to better promote their interest, engagement, understanding and collaboration in learning. The results illustrate that students are more receptive to an interactive digital tool that allows them to facilitate their didactic learning.

CONCLUSION

The utilization of a virtual patient encounters through DxR Clinician promote student engagement in the classroom setting. Providing educators with a valuable resource for curriculum development, this study has the potential to revolutionize medical education delivery.

Poster Presentation No. 30

Presenter: Catherine Tarantine

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Clerkship Director: Pradeep Kaminoulu, MD and Maham Siddiqi, MD

Evaluation of the Dengue Fever Surveillance System in Barranquilla, Colombia

Background: Dengue fever is an important public health issue in Colombia with an immense epidemiologic surveillance system.

Methods: The surveillance system was evaluated through data analysis of case records, clinical activities, and vector control programs.

Results: Average time-lags between each step in the surveillance system were calculated. Patients presented to care on average 4.76 days after developing symptoms. After presenting to a health facility, physicians notified the surveillance system after an average of 1.75 days; 70.6% of the cases were reported within one day. The timeliness of the reporting was analyzed over time. There were only minor changes in the timeliness; the system notified cases as quickly as during epidemics. Thirteen percent of the records were later modified, which took an average of 16.7 days. Second, in 2009-2013, the positive predictive value (PPV) (reported to the surveillance system and confirmed by laboratory test) was 58.60%. There was variation in the PPV based on the incidence of dengue cases. Third, the records were also not always complete or accurate. Twenty mandatory fields were missing from more than 25% of the records. Fields were also misspelled or mistakenly entered. Overall, the surveillance system appears to be accurate, simple, flexible, stable, and acceptable. Findings support: increasing education, encouraging the use of viral isolation and paired serum samples to confirm diagnosis, utilizing an entomologist in the field, encouraging pupa indices rather than larvae indices, and validating data reporting tools with personnel.

Conclusion: The surveillance system is extremely useful with minor areas for improvement.

Poster Presentation No. 31

Presenter: Carla Villarreal

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Vegetable Fiber in an Infected Ovarian Dermoid Cyst

Tuboovarian abscesses (TOAs) are inflammatory masses involving the fallopian tube, ovary, and occasionally other adjacent pelvic organs. A 32-year-old female, with no significant past medical history, presents with a chief complaint of lower abdominal pain. Patient was experiencing chills at night but denied diarrhea, constipation or dysuria. Initial computerized tomography (CT) of abdomen was suggestive of a colon abscess, however, a repeat CT suggested a TOA. Pelvic ultrasound further characterized the mass and suggested left ovarian necrosis. Operative laparoscopy revealed a normal left tube, enlarged left ovary and obvious dermoid cyst. The left ovary was densely adherent to the left pelvic sidewall and recto-sigmoid colon. Contents of the ovary were consistent with dermoid and suspected of superinfection. The left ovary was dissected off the pelvic side wall, adhesions lysed, and left oophorectomy was completed along with the removal of the left dermoid cyst. Pathological examination of the tissue revealed normal ovarian cortical tissue, hair cells, melanin, epidermal and neural tissue as well as evidence of a foreign object resembling vegetable matter. The vegetable fiber found in this patient's biopsy was of an unclear etiology, but probably indicate a perforation of the bowel. Any cause of bowel perforation adjacent to adnexa can lead to TOA, therefore providing a rational speculation for this case. In review of the literature we found two case reports of somewhat similar findings. Our case is unique however, since the patient had no gastrointestinal symptoms explaining the presence of the vegetable fiber in the ovarian abscess.

Poster Presentation No. 32

Presenter: Kevin Weisz

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The Management of Refractory Status Epilepticus in Metastatic Melanoma

Hematogenous spread to the CNS is one of the most feared outcomes of malignant melanoma. Unfortunately, it is quite common and occurs in 10 to 40% of melanoma patients in clinical studies, and is present in up to 90% of autopsy studies. Lung and breast are the only malignancies that account for a larger percentage of CNS metastases than melanoma (10%). The present study reports the case of a 77-year-old male with a past medical history of metastatic melanoma (T3bN2M1 stage IV) who presented to our emergency department following an episode of slurred speech and generalized tonic-clonic seizure. The patient was diagnosed with melanoma and treated with wide excision & left axillary lymphadenectomy two and a half years before presentation to the emergency department. The patient presented with new onset mental status changes and partial status epilepticus, which was refractory to treatment. The patient continued to have seizure activity 16 days after his second admission and was referred to palliative care. Of note, MRI was unable to be obtained due to a fractured pacemaker lead and initial CT imaging was negative.

Management of refractory status epilepticus (RSE) depends on numerous factors, including identifying the underlying etiology, EEG findings, comorbidities, and the clinical status of the patient. Although brain metastasis is a known cause of RSE, there are often unanticipated challenges in management of these patients. Here we will discuss important factors, and obstacles, to consider when developing a treatment regime for patients in RSE secondary to melanoma CNS metastasis.

Poster Presentation No. 33

Presenter: Nimesh Patel

Additional Authors: Kanika Thapar, Kimmy Lau, Bharat Nathoo, Andre Charest

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Clerkship Director: Pradeep Kaminoulu, MD and Maham Siddiqi, MD

Efficacy of Hepatitis B Vaccination in Peritoneal Dialysis Patients: A Dual Approach

Introduction:

Data on response to Hepatitis B (HB) vaccination in peritoneal dialysis (PD) patients remains limited. Vaccination protocol for this subgroup is based on studies focusing on hemodialysis (HD) patients. We report on HB vaccination response in PD patients that received care at our institution.

Methods:

18 patients on PD, non-immune to HB, were identified. They initially received a standard intramuscular (IM) vaccination protocol of 4 doses (40 mcg each) at 0, 1, 2, and 6 months. Responders were patients achieving antibody titers above 10 IU/L. Non-responders were started on weekly intradermal (ID) vaccinations of 10mcg for a maximum of 12 doses or until seroconversion. Duration of immunity was assessed by the most recent titers available after seroconversion.

Results:

78% (14/18) of patients initially responded to IM vaccination. 3 non-responders completed ID vaccination with 1 patient was lost to follow-up. After dual vaccination (IM then ID), response rate increased to 94% (16/17). Age, gender, BMI, hemoglobin, PD duration, creatinine, eGFR, erythropoietin use, and being diabetic were not statistically different between responders and non-responders. By Kaplan-Meier curve, more than 80% maintained immunity after 25 months.

Conclusion:

PD patients comprise 10% of prevalent dialysis population in the USA (USRDS 2017 Annual report). Using a dual vaccination approach leads to a higher seroconversion rate. Majority of patients remained immune after 25 months, an important period when many of these patients transition to hemodialysis therapy. Studies with larger cohorts of PD patients are required.

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Poster Presentation No. 34

Presenter: Awlad Bhuiyan

Additional Authors: Hadid, Lori DO

School: Ross University School of Medicine

Clerkship Director: Monica Nicola, MD, FACP

Two is Better Than One: The Combined Effects of Glycolic Acid and Salicylic Acid on Acne Related Disorders

There are many medications and cosmetics in the market that are used for acne that can lead to harmful side effects. Our clinical observations suggest that the combined use of glycolic acid and salicylic acid on acne related disorders can improve skin and minimize the risk of side effects.

We designed a retrospective study to assess the efficacy of our serum. Inclusion criteria included patients with mild to moderate inflammatory and cystic acne that would be appropriate to treat with prescription strength medication and willing to stop using all other treatments. 66 patients were selected ranging in age from 17 to 46. They were asked to apply the wake-up serum at night for two weeks. At the follow-up appointment, the patients were asked to fill out a multiple-choice questionnaire, which consisted of yes and no choices regarding the changes they have noticed with their skin.

Over 90% of the patients reported they had significant overall improvement in acne. Physical exam findings are consistent with patient findings. With this study we can say that there is an overall improvement in acne with the use of glycolic acid and salicylic acid together.

Poster Presentation No. 35

Presenter: Joshua Gleason

Additional Authors: Bill R. Christian, MS-4, Montana Keller, MD

School: Ross University School of Medicine

Clerkship Director: Monica Nicola, MD, FACP

Management of Chemotherapy Induced Acute Respiratory Distress Syndrome (ARDS) Using Extracorporeal Membrane Oxygenation (ECMO)

Introduction: Chemotherapy-induced pulmonary toxicity can include non-cardiogenic pulmonary edema compatible with Acute Respiratory Distress Syndrome (ARDS). The extracorporeal membrane oxygenation (ECMO) device is mechanical cardiopulmonary support system that circulates blood forward, removes carbon dioxide, and adds oxygen to venous blood using an artificial membrane lung. We report a case of neoadjuvant combination chemotherapy induced ARDS successfully managed with ECMO.

Case Report: A 64-year old female underwent a right pneumonectomy with mediastinal lymphadenectomy for non-small cell lung carcinoma (NSCLC). She had first undergone neoadjuvant chemotherapy with paclitaxel, bevacizumab, and carboplatin. Five weeks after surgery the patient was readmitted to the hospital due to dry cough and dyspnea. Chest radiography showed left diffuse alveolar-interstitial infiltrates. Computed tomography (CT) scan demonstrated reticular opacities with areas of patchy consolidation. Laboratory findings revealed an inflammatory syndrome, with a normal differential count. Blood cultures were negative for aerobic and anaerobic bacteria. Serologies for chlamydia, mycoplasma, and respiratory viruses were negative. Urine testing for Legionella antigen was negative. Cardiac enzymes and electrocardiography (EKG) were normal. After an unsuccessful attempt with continuous positive airway pressure (CPAP) she was intubated and mechanically ventilated. After 5 days of mechanical ventilation she was transferred to an ECMO center for the management of ARDS, which significantly improved her oxygenation, with extubation 12 days afterwards.

Conclusion: This case report should remind clinicians of the association between chemotherapy and ARDS following lung resection for NSCLC. ECMO may be an effective therapeutic alternative for patients with ARDS compared with conventional care.

Poster Presentation No. 36

Presenter: Olivia Koury

Additional Authors: Mina Guerges MD, Robert Robinson MD

School: Ross University School of Medicine

Clerkship Director: Monica Nicola, MD, FACP

Incidental Finding of Massive Gastrointestinal Stromal Tumor

Introduction

Gastrointestinal stromal tumors (GIST) are the most common mesenchymal tumors of the GI tract, with majority residing in the stomach. The prognosis of GIST is dependent on factors such as size, location and mitotic rate. This case report discusses successful resection of one of the largest recorded gastric GISTs in the US.

Case Presentation

A 71-year-old female presented to the ED with lower extremity weakness and numbness. Physical exam was unremarkable aside from a palpable epigastric mass. CT scan of the abdomen and pelvis showed a 22cm gastric mass. Endoscopy revealed a submucosal gastric mass in the mid-body along with small ulcerated areas indicative of mucosal invasion. Subsequently, the patient developed large volume hematemesis and was brought for urgent exploratory laparotomy. The mass was noted to be confined to the lesser curvature of the stomach and was resected en toto. There were no post-operative complications and the patient was discharged home on lifelong imatinib therapy 400mg daily.

Conclusion

This mass was 22 x 17 x 14 cm, located in the stomach, with high grade mitotic activity of 19/50hpf. Therefore, the patient has an 86% chance of long-term recurrence. Considering the highly aggressive nature and large size of this tumor, it was unusual for it to be an incidental finding and asymptomatic. This case highlights the value of a thorough physical exam and investigating beyond the scope of evident differentials. Once diagnosed and symptoms are present, resection is warranted along with adjuvant therapy of a tyrosine kinase inhibitor.

Poster Presentation No. 37

Presenter: Peter Boshara

Additional Authors: Humaira Rizvi MD

School: St. George's University School of Medicine

Clerkship Director: Raymond Hilu, MD, FACP

An Atypical Presentation of ANCA-Associated Vasculitis

Introduction: ANCA-associated vasculitides comprise three rare multi-system autoimmune necrotizing inflammatory diseases of small-to-medium sized blood vessels: Granulomatosis with polyangiitis, Eosinophilic granulomatosis with polyangiitis, and Microscopic polyangiitis. Peak incidence is observed between 65-74 years old, and in those of European descent.

Case: A 73 year-old German-Irish female with a history of hypertension, psoriasis, and recurrent sinusitis presented with episodic low-grade fevers, night sweats, fatigue, temporal headaches, blurry vision and unintentional weight loss for one month. On examination, the patient was febrile, with bilateral conjunctival injection and dry oral mucous membranes. Lab studies were significant for WBC 14,000, platelets 472,000, BUN 27, creatinine 1.25 (subsequently trending down to her baseline 0.90-1.00), ESR 101, CRP 179.9, C-3 154, rheumatoid factor 43.7, elevated c-ANCA, and positive MPO antibody. A CT of her chest, abdomen and pelvis showed mild reactive inguinal lymphadenopathy, not concerning for malignancy. A temporal artery biopsy revealed diffuse transmural destructive inflammatory infiltrate with prominent eosinophils, neutrophils and associated necrosis, which in the setting of a positive c-ANCA, is suggestive of ANCA-associated vasculitis rather than classic giant cell arteritis. She was diagnosed with early systemic vasculitis and discharged on a course of prednisone 60mg daily for 30 days with subsequent follow-up.

Summary: ANCA-associated vasculitides typically present with some constellation of lower respiratory tract and renal manifestations. Prognosis is excellent with early diagnosis and treatment with a combination of corticosteroids and cytotoxic agents. This case highlights an atypical presentation of ANCA-associated vasculitis, wherein there was no evidence of active pulmonary or renal involvement.

Poster Presentation No. 38

Presenter: Abdulla Nasser

Additional Authors: Tarik Hadid-MD

School: St. George's University School of Medicine

Clerkship Director: Raymond Hilu, MD, FACP

Disseminated Thrombosis as a Complication of Primary Familial Polycythemia

Polycythemia is a myeloproliferative neoplasm characterized by an increased red blood cell production.

It is classified as Primary (low-normal erythropoietin (EPO)) and secondary (high EPO). We present a rare case of primary familial polycythemia (PFP).

Case report:

A 34-year-old man presented with dyspnea, pleuritic chest pain and bilateral calf muscle pain for 2 weeks. Physical exam was unremarkable. Laboratory studies showed a hemoglobin 19.1g/dL and a CT-angiography of the chest showed bilateral pulmonary embolism. A Transthoracic and transesophageal echocardiogram revealed right ventricular dilatation and a freely mobile right atrial mass protruding through a patent foramen ovale (PFO) to the left atrium. A lower extremity Doppler ultrasound showed bilateral deep vein thrombosis. He was started on anticoagulation and underwent cardiac embolectomy and closure of PFO. EPO was low-normal at 5 mUnit/mL. Although JAK2 mutation was negative, EPO receptor (EPOR) mutation was detected, and therefore he was diagnosed with PFP. In addition to warfarin, he was initiated on aspirin, hydroxyurea, and phlebotomy with an improvement of his hemoglobin.

Discussion:

More than 96% of Primary polycythemia cases are caused by JAK2 Mutation, with additional 2-3% caused by its variant, JAK2 exon 12 Mutation. Only 1% are caused by EPOR mutation. This mutation is typically inherited in autosomal dominant manner but can rarely occur de-novo (our patient). Treatment includes: life-long anticoagulation (if thrombosis is present), aspirin, phlebotomy and sometimes hydroxyurea, interferon and/or JAK inhibitors such ruxolitinib. If appropriately treated, patients should have a near-normal life expectancy.

Poster Presentation No. 39

Presenter: Dave Patel

Additional Authors: Dr. Farah Tanveer MD, Dr. Leonard Johnson MD

School: St. George's University School of Medicine

Clerkship Director: Raymond Hilu, MD, FACP

Polyarticular Septic Arthritis Caused by Streptococcus Pneumonia

Introduction: Invasive pneumococcal disease (IPD) is a serious illness, mostly seen at extremes of age or in certain immunocompromising conditions. Septic arthritis is an uncommon presentation of IPD. We present a rare case of pneumococcal bacteremia with hematogenous seeding of multiple joints in an immunocompetent patient with no extra-articular focus of pneumococcal disease.

Case: A 48-year-old obese female with a past history of left knee total arthroplasty presented with left knee pain for three days and bilateral shoulder pain for one day. She denied fever, chills or respiratory complaints. Examination revealed swelling, warmth, tenderness and limitation of movement at the left knee and both shoulder joints. Labs revealed WBC count of 46,000 cells/mm³. Blood cultures grew *Streptococcus pneumoniae*. Synovial fluid analysis was suggestive of septic arthritis. Gram stain from all three sites showed gram positive cocci, and grew the left shoulder and left knee fluid also grew *S. pneumoniae*. Chest x ray and transthoracic echo were unremarkable. HIV testing was negative and serum immunoglobulin levels were within normal limits. She received prolonged intravenous antibiotics and repeated arthroscopic washouts of the involved joints, with significant improvement of her symptoms.

Discussion: Pneumococcal septic arthritis is classically described as painful monoarticular arthritis that may complicate pneumonia and is usually seen in patients with underlying joint disease, prosthesis, HIV, alcoholism or immunodeficiency. IPD in a healthy adult should prompt investigation for underlying disease. Our case is unusual due to the polyarticular involvement and the absence of an extra-articular focus of infection or immunocompromising condition.

Poster Presentation No. 40

Presenter: Sara Samaan

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Candida Krusei Empyema: How Did It Get There?

Introduction: *Candida krusei* is an uncommonly isolated *Candida* species that is becoming more prevalent but is a very rare cause of empyema.

Case: A 79 year old female with hypertension, coronary artery disease, and hyperlipidemia presented with worsening dyspnea for three hours. She was recently hospitalized for two days after choking on a piece of chicken at home, and was discharged a few hours prior with a hiatal hernia diagnosis. On present examination, the patient was tachypneic, hypotensive, and afebrile, with diminished breath sounds in the left lower lung, extending two-thirds of the way up. Chest imaging revealed a large loculated pleural effusion with compressive atelectasis of the left lung. Initial WBC was 14.2. The patient was treated with empiric ampicillin-sulbactam for aspiration pneumonia and possible empyema. She underwent thoracentesis and video-assisted thoracoscopic surgery with chest tube drainage. Pleural fluid cytology was negative for malignancy, but the culture grew *Strep mitis oralis*, *Strep salivarius* and *Candida krusei*, which prompted the addition of anidulafungin to the treatment regimen. Upper endoscopy and CT abdomen revealed an esophageal fistula within the hiatal hernia at the gastroesophageal junction. The patient was scheduled for laparoscopic repair of the fistula and continued on ceftriaxone and anidulafungin.

Summary: *Candida* species tend to colonize mucous membranes and the digestive tract, so thoracic involvement typically results from an esophageal perforation or fistula. *Candida krusei* is an uncommon species that is known to be fluconazole-resistant. Identification of *Candida* species in the pleural space should prompt upper gastrointestinal evaluation.

Poster Presentation No. 41

Presenter: Etai Shachar

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School: St. George's University School of Medicine

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Pseudo-Obstruction: A Rare Gastrointestinal Complication of MELAS Syndrome

Introduction: Mitochondrial encephalomyopathy, lactic acidosis and stroke-like episodes (MELAS) syndrome is a rare mitochondrial inherited disease. It is characterized by muscular and neurological manifestations including seizure, dementia and paralysis. Gastrointestinal (GI) manifestations have been largely overshadowed by GI complications of other mitochondrial diseases, primarily mitochondrial neuro-gastrointestinal encephalopathy syndrome (MNGIE).

Case: Patient is a 24-year-old male who presented with status epilepticus due to medication non-compliance. During his hospital course he had three separate episodes of sudden abdominal distention resulting in projectile vomiting. During the first episode he was receiving post-pyloric feeds by Cortrak while the next two episodes he had a Percutaneous Endoscopic Jejunostomy tube. In every scenario he developed severe abdominal distention a few days after feeds were at goal. There was marked gastric residual requiring constant nasogastric suctioning. In each case, X-ray showed gaseous colonic distension consistent with severe ileus. Barium enema did not demonstrate obstruction. These episodes ultimately led him to two intubations and the requirement of a tracheostomy.

Discussion: There have been few cases describing this complication in MELAS when compared to MNGIE. It is important to note that prompt diagnosis and identification of pseudo-obstruction can avoid unnecessary surgical procedures, reducing morbidity and mortality in these patients. It is unclear how to completely avoid this phenomenon, but a multidisciplinary approach including gastroenterologists and dieticians may be required. MELAS-induced pseudo-obstruction should be considered in the differential diagnosis of severe ileus, in addition to more common causes such as anti-seizure medications and Ogilvie's syndrome.

Poster Presentation No. 42

Presenter: Joshua Stevens

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Slowly Progressing Ascending Weakness and Numbness in a Patient with Rheumatoid Arthritis

Ascending motor weakness is may be challenging in patients with rheumatoid arthritis (RA) if symptoms are attributed to their RA. A rapid, correct diagnosis is imperative to institute appropriate treatment.

Case: A 75-year-old woman with a history of rheumatoid arthritis on immunosuppression treated with with Plaquenil and Orencia and lumbar spondylolisthesis requiring spinal fusion presented to her rheumatologist with worsening distal extremity weakness for six weeks. Prior to her weakness, she had upper respiratory symptoms. She initially noticed numbness in her extremities which progressed gradually to weakness and difficulty ambulating. She had been cane dependent and believed this could be a flair of her rheumatoid arthritis. She was referred for electromyography which showed absence of lower and upper extremity sensory potentials, prolonged motor latencies, and delayed or absent F responses and H reflexes. On examination: plantar, lower leg and hip flexion strengths were decreased; there was ankle, patellar and brachioradialis areflexia; and biceps brachii hyporeflexia. Within 24 hours of admission plasmapheresis was initiated, resulting in symptomatic improvement.

Plasmapheresis was continued while the patient completed inpatient rehabilitation.

Discussion: Guillain-Barre Syndrome (GBS) should be promptly recognized and treated to avoid rapid ascending progression that could compromise respiration. Here we report a case of GBS likely the acute motor and sensory axonal neuropathy variant that presented with a delayed course of six weeks possibly related to ongoing therapeutic immunosuppression of her rheumatoid arthritis.

Poster Presentation No. 43

Presenter: Bhanu Swamy

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Diagnostic Dilemma: Chronic Obstructive Pulmonary Disease Exacerbation or New Onset Heart Failure?

Introduction: Dyspnea is a leading cause of visits to the emergency department (ED)⁶; yet, 60% of dyspneic patients are misdiagnosed upon presentation³. Symptoms of chronic obstructive pulmonary disease (COPD) and new onset acute heart failure (HF) often overlap⁵. Acute flail leaflet causing mitral insufficiency and HF may be overlooked. The prevalence of HF nears 20.9% in patients with COPD, thus prompt identification may decrease mortality¹.

Case Presentation: A 65-year-old male with COPD presented with shortness of breath, dry cough, weakness, and anorexia. He was tachypneic, tachycardic, and hypoxic on room air; he improved with Bilevel Positive Airway Pressure (BIPAP). Lung auscultation showed wheezing, crackles, and decreased air entry bilaterally. He had hypercarbic respiratory failure, negative troponins and bilateral lower lobe consolidations. Upon admission for COPD, he improved with breathing treatments and was discharged. He returned the following day with similar symptoms. He demonstrated radiographic evidence of HF, elevated Pro-BNP and a systolic murmur at the apex. Echocardiography showed mitral insufficiency and aortic stenosis. Cardiac catheterization demonstrated 75% occlusion of the ostial left main artery. He underwent mitral valve repair, transcatheter aortic valve replacement and a coronary artery bypass graft.

Discussion: An echocardiogram and measurement of N-terminal pro B-type natriuretic peptide (NT-pro-BNP) in the workup of dyspnea in the ED may allow early detection of HF.

Echocardiography can identify mitral insufficiency, which is often inaudible to chest auscultation², particularly in COPD patients. In COPD patients, noninvasive assessment of cardiac function may avoid delays in the diagnosis and therapy of unrecognized HF.

Poster Presentation No. 44

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Nephrotic Syndrome Secondary to Diabetes Mellitus Presenting as Diabetic Dermopathy

Introduction: Diabetic dermopathy (DD) is the most common cutaneous manifestation of diabetes mellitus as it occurs in approximately one-half of diabetic patients. Furthermore, 20-30% of type 1 diabetics will have moderately increased albuminuria after a mean duration of 15 years, and approximately half of these patients will progress to overt nephrotic syndrome. There is a report that 72% of type 1 diabetic patients with dermopathy suffer nephropathy simultaneously.

Case Report: A 26-year-old female with a history of uncontrolled type 1 diabetes and stage IIIa chronic kidney disease presented to the emergency department for bilateral leg pitting edema for a two-week duration and new onset shortness of breath. The patient also had a 1-year history of painful, itchy, nodular lesions on her lower legs bilaterally. Labs demonstrated acute kidney injury, and 24-hour urine was significant for over 3.9 grams of protein. Chest radiography demonstrated a left pleural effusion, and atelectasis. Lower extremity Doppler was negative for a deep venous thrombosis. Patient was subsequently diagnosed with nephrotic syndrome. The workup for the lower extremity lesions considering sarcoidosis and SLE was negative. Dermatology diagnosed the lower extremity skin changes as lichen sclerosis secondary to diabetic dermopathy.

Conclusion: Diabetic dermopathy occurs in over one half of diabetic patients especially those with microvascular complications. It is important to recognize the many clinical manifestations and complications of diabetes in order to gain a holistic view of the patient.

Poster Presentation No. 45

Presenter: Andrew Chevalier

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School: University of Michigan Medical School

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A Stressful Past, or Cushing's Disease?

Case Presentation

A 74-year old woman with history of hypokalemia, HFpEF, and poorly controlled HTN was admitted with parotitis, worsened hypertension, and bruising. Labs showed leukocytosis and hypokalemia. Chest CT revealed right pleural effusion and vertebral compression fractures. Thoracentesis yielded transudative fluid. Outside records revealed admissions in 2011 and 2015 for hypokalemia, edema, transudative effusions, and worsened hypertension. Cortisol and ACTH were significantly elevated during these admissions. However, in follow-up, cortisol levels had normalized, and no further workup had been pursued.

Given her history, testing was repeated. 24-hour urine cortisol and midnight salivary cortisol were elevated. Overnight 8 mg dexamethasone suppression test revealed elevated cortisol and ACTH. Inferior petrosal sinus sampling lacked an ACTH gradient between the pituitary and periphery. Given her results and history, she was diagnosed with cyclic Cushing's syndrome.

Discussion

Cyclic Cushing's is an uncommon disease with fewer than 100 reported cases. It can present in diverse ways. Cortisol secretion may cycle over a few days or several years. Patients may display a few acute problems from hypercortisolism, or typical Cushing's syndrome with normal biochemical testing. Once recognized, workup should be rapid. Delayed workup may result in negative biochemical evaluation, confusing the diagnosis and leading to future complications.

Conclusion

Cyclic Cushing's syndrome is a rare disease that can be difficult to identify. It should be considered in patients with atypical features of Cushing's or episodic hypercortisolism. Subsequent workup should be prompt, as cortisol secretion may normalize, rendering diagnosis difficult and increasing risk for complications from hypercortisolism.

Poster Presentation No. 46

Presenter: Bipin Sunkara

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Drug Induced Liver Injury in a Hydroxychloroquine-Naïve Patient with Systemic Lupus Erythematosus and Porphyria Cutanea Tarda

A 29 year-old previously healthy woman first developed persistently painful blisters on her hands and forearms one year prior to presentation to our institution. An anti-nuclear antibody test was positive at 1:2560; antibodies to Ro/ SS-A and double-stranded DNA (80 IU/L, normal <30 IU/L) were present. Her renal function was normal and her urinalysis was free of proteinuria and hematuria. She was initiated on Hydroxychloroquine 400mg/day.

Three days later, she presented to the ED with nausea, malaise, and dark urine. She was found to have marked transaminitis (ALT 6,380 and AST 4,472 IU/L).

Her exam showed mild alopecia with hirsutism of her upper cheeks and eyebrows. She had erythema on her bilateral cheeks, flesh colored waxy papules on the nose, with multiple ulcerated lesions with bullae and scabs on both upper extremities. A biopsy of one of her bullous lesions was obtained; the histologic features were not consistent with bullous lupus. Direct Immunofluorescence was characteristic for porphyria cutanea tarda (PCT). A liver biopsy showed early bridging fibrosis and nodularity, consistent with post necrotic cirrhosis.

This case identifies porphyria cutanea tarda as an important differential diagnosis for the rheumatologist to consider when evaluating patients with bullous skin lesions.

Hydroxychloroquine in lower doses is an effective treatment for porphyria cutanea tarda; at doses used to treat systemic lupus erythematosus, there is a potentially life-threatening complication of hepatotoxicity.

American College of Physicians and Society of Hospital Medicine Medical Student Day 2018

Poster Presentation No. 47

Presenter: Zeinab Baydoun

Additional Authors: Cameron A. Harter, Andrew Beckman, Clara Tift, and Michael Gapuz

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Resistant Starch is Degraded by Few Species of Bifidobacteria in the Human Gut

Dietary fibers are recommended for good health. Some of these fibers are polysaccharides inaccessible to human digestive enzymes, but can be degraded by bacteria in the colon. The bacteria that can degrade these “resistant” fibers generate products that can be used by other bacteria to form health-promoting metabolites such as butyrate and other short chain fatty acids. When undergraduates supplemented their diet with resistant starch from potato, the most common response was an increased abundance of gut bacteria belonging to the genus *Bifidobacterium*. Here we show that the ability of *Bifidobacteria* to degrade resistant starches is more restricted than their ability to degrade other polysaccharides such as inulin or sensitive starch. In particular, we found that resistant starch from potato may be degraded by three *Bifidobacterium* species from the students—*faecale*, *angulatum*, and *adolescentis*. Some individuals may lack these primary degraders, however, and may benefit from probiotics containing primary degraders along with resistant starch from potato.

Poster Presentation No. 48

Presenter: Lucy Chau

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Impact of the MELD-Na Based Allocation on Liver Transplantation Outcomes

Background: The Model for End-Stage Liver Disease-Sodium (MELD-Na) score was introduced for liver allocation in the United States in January 2016. The aim of this study was to evaluate the impact of MELD-Na based liver allocation on waitlist and transplant outcomes. **Methods:** We examined two patient groups from the United Network Organ Sharing registry; MELD-era group composed of patients who were registered as transplant candidates between June 18, 2013 and January 10, 2016 and MELD-Na era group composed of patients who were registered between January 11, 2016 and September 30, 2017. Waitlist and transplant outcomes, and association with serum sodium were evaluated in these two eras.

Results: There were 18,850 and 14,512 patients in the MELD and MELD-Na eras, respectively. 90 day-waitlist mortality decreased (HR=0.738, $P<0.0001$) and transplant probability increased significantly in the MELD-Na era (HR=1.217, $P<0.0001$). Although mild, moderate and severe hyponatremia (130-134, 125-129, $<125\text{mmol/L}$) were independent risk factors for waitlist mortality in the MELD era (HR=1.354, 1.762, and 2.656; $P<0.0001$, <0.0001 and <0.0001 , respectively [Ref. 135-145mmol/L]), these adverse impacts were reduced in the MELD-Na era (HR=1.092, 1.271 and 1.374; $P=0.27$, 0.018 and 0.037, respectively). A transition point of liver transplant survival benefit shifted towards a higher score category in the MELD-Na era.

Conclusions: The MELD-Na score based liver allocation successfully improved waitlist outcomes without affecting transplant mortality. Given the discrepancy in transplant survival benefit, the current share rules for liver allocation may be suboptimal and require revisiting.

Poster Presentation No. 49

Presenter: Alex Diaczok

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Autonomic Dysreflexia---a Known Complication in C-6 and Above Paraplegics Undergoing Procedures--is Preventable

INTRODUCTION

Approximately 250,000 individuals are living with spinal cord injuries in the US. Autonomic dysreflexia (AD), a loss of coordinated autonomic control, has been reported to occur in between 20 to 70% of T-6 level and above paraplegics undergoing surgical or diagnostic procedures. Signs include accelerated hypertension, bradycardia and flushing of skin above the cord lesion, early recognition and prompt treatment of AD prevents cardiovascular morbidity and mortality.

CASE

A 72-year-old man with a history of AD was admitted for cystoscopic right ureteral stent replacement. During the procedure the patients' blood pressure rose from 160/95 to 220/95 and his heart rate dropped from high 70's to low 60's. A propofol infusion was initiated and his vital signs improved. The remainder of the procedure was uneventful.

DISCUSSION

AD can be brought on by any noxious stimulus below the level of spinal cord injury. In addition to surgery, stimuli include bladder distention, fecal impaction, and debridement of decubitus ulcers, sexual intercourse and placement of urinary catheters. These stimuli excite afferent nerves that activate the sympathetic nervous system. The sympathetic response raises peripheral vascular resistance and blood pressure. In patient with C6 and above spinal cord lesions, parasympathetic counter responses results in bradycardia, piloerection and flushing above the spinal cord lesion. The parasympathetic activity is not able to vasodilate splanchnic vascular beds that would reduce blood pressure. This results in unopposed sympathetic activity and accelerated blood pressure. Treatment includes removal of the offending stimulus; sitting the patient upright and administration of vasodilators.

Poster Presentation No. 50

Presenter: Albert Gjeluci

Additional Authors: Mr. Reynald John, Dr. Amreeta Sharma, Dr. Deepshikha Garg, Dr. Michael Yacoub

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Good Times Turned to Bad Joints

Introduction:

Reactive arthritis (ReA) is an autoimmune acute arthritis complicating enteric/genital infection that can present weeks after the infection. Initial presentation is usually an asymmetric oligoarticular arthritis without prominent constitutional symptoms. The full triad of uveitis, arthritis and urethritis is rarely seen, much less the severe disability seen in our patient.

Case:

A 33-year-old male presented with bilateral knee swelling, arthralgias and difficulty ambulating for 4 weeks. Examination showed severe contractures of 45 degrees in both knees. Patient had multi-finger onycholysis, right middle digit contracture, hyperkeratotic, non-blanching vesicles over palms, soles, back, and genital vesicular lesions. History revealed previous antibiotic treatment for gonococcal conjunctivitis and urethritis 3 weeks prior to the onset of symptoms. We treated him empirically with ceftriaxone and azithromycin based on history. His skin findings, Keratoderma Blennorrhagicum and Circinate Balanitis were treated with steroids. He responded well and was discharged with surgery outpatient follow-up for contractures.

Discussion:

ReA can be a complication of enteric or genital infection. Commonly from Salmonella, Shigella, Yersinia, Chlamydia, or Gonorrhoea. Major manifestations include arthritis, enthesitis, dactylitis, low back pain. Our patient developed debilitating contractures in a short time and looked as if he would never ambulate normally again. While prompt antibiotic treatment of acute urethritis may prevent occurrence of ReA, trials found no role of antibiotics once ReA is established. Treatment is supportive with NSAIDs, steroids, and disease modifying agents as last resort. This was a classic textbook presentation of ReA which is rarely seen in clinical practice.

Poster Presentation No. 51

Presenter: Abraham G. Hussein

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Omental Caking: What's Baking in the Abdomen?

A 45-year-old female with history of excessive Tylenol and alcohol consumption presented to the ED with abdominal distention and ascites for two weeks. Review of systems was otherwise negative. Other histories were significant for 10+ years employed as a healthcare worker. Labs, including liver function tests, were all normal except for hypoalbuminemia at 2.4 g/dL. Abdominal ultrasound showed moderate ascites and a diffusely coarse and nodular liver suggestive of cirrhosis. During admission, the patient developed a fever and was treated for assumed SBP after blood and fluid cultures taken were negative. Therapeutic paracentesis was performed and revealed a low (<1.1 g/dL) SAAG, not suggestive of cirrhotic causes of ascites. Abdominal CT showed omental caking and retroperitoneal lymphadenopathy with a nodal biopsy revealing non-necrotizing granulomas and no acid-fast bacilli. The patient was discharged on Lasix and spironolactone for planned outpatient workup to rule out sarcoidosis and malignancy. The patient returned one week later with re-demonstrated ascites fever, chills and abdominal pain. A second paracentesis again showed low SAAG. MRI of the pelvis revealed no evidence of malignancy and repeat fluid cultures (standard, anaerobic, fungal, and mycobacterium) were negative. TB Quantiferon Gold test came back positive. Chest x-ray and three AFB sputum cultures were negative, favoring Peritoneal TB as the most likely diagnosis. TB therapy and infectious disease follow-up have led to significant improvement of the patient's symptoms. We report this case of Peritoneal TB to illustrate the importance of complete and thorough workup in the face of conflicting evidence.

Poster Presentation No. 52

Presenter: Bradley Kolb

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Gram Negative Subdural Empyema Without a Demonstrable Source of Infection Presenting with Coma and Brain Herniation

Chronic subdural hematoma can act as a nidus for infection, with subsequent transformation to a subdural empyema. This rare complication usually results from the local spread of untreated sinusitis or other infections of the head and neck.

A sixty year old man with an unknown past medical history was transported by EMS to our institution after being found unresponsive in a hotel room. At the time of initial evaluation, the patient had a Glasgow Coma Scale of 5. Emergent computed tomography scan of the head was performed to evaluate for intracranial pathology. It revealed a large right-sided fluid collection with a significant left midline shift. Emergent craniectomy revealed a membranous sac containing subacute blood and a large volume of malodorous pus. Wound cultures grew *Escherichia coli*. Subsequent analysis of imaging and laboratory results did not show a source of infection: blood cultures taken at admission demonstrated no growth, and analysis of CT and subsequent MRI demonstrated no paranasal sinusitis or other evidence of local bacterial spread. Despite a transient improvement in clinical status, the patient suffered from further symptoms related to increased intracranial pressure, and is unlikely to make a significant neurological recovery.

E. coli empyema without a demonstrable source of infection, presenting with coma and significant brain herniation, is an extremely rare complication of chronic untreated subdural hematoma, with few reports described in the medical literature. This case illustrates the importance of early diagnosis and appropriate management of suspected subdural hematoma in at risk populations.

Poster Presentation No. 53

Presenter: Syed Mahmood

Additional Authors: Douglas Michael Piernick

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Family History of Renal Agenesis in a Case of Waardenburg Syndrome

Waardenburg syndrome (WS) is a rare disorder caused by mutations that lead to dysfunction of neural crest cells and their derivative cells such as melanoblasts. It is a genetically heterogeneous condition that is associated with sensorineural deafness, depigmentation of the hair, skin, and eyes, and Hirschsprung disease. Renal abnormalities such as duplicated ureteral collecting system, multicystic dysplastic kidney, and horseshoe kidney have been documented in WS patients and may be associated with the disease.

A 41 year old Hispanic female presented to the clinic due to cysts on her scalp. Her past medical history was significant and congenital deafness of the right ear. On physical exam, the patient had grey hair and diffuse freckling on the forehead, cheeks, and lips. The patient reported a family history consistent with WS, including maternal aunt and grandmother with freckling, early grey hair, heterochromia, and congenital deafness. Investigation of medical records showed that one of her daughters has freckling and renal agenesis.

There has only been one previous report of renal agenesis associated with WS, but other cases of a variety of renal malformations have been published. There are 4 subtypes of WS, each classified based on phenotype and supported by genetic differences. The genes involved in WS are PAX3, MITF, EDN3, EDNRB, SOX10, and SNAI2. Further investigation of genetics and epidemiology is needed to establish a relationship between renal agenesis and WS.

Poster Presentation No. 54

Presenter: Georgiana Marusca

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Curious Case of Lower Extremity Weakness and Numbness

A medical assistant in her late 40s presented to her primary care doctor for follow-up on a new back pain in May of 2013. A lumbar spine herniated disk was causing her constant severe low back pain radiating down her left lower extremity. From May 2013 to September 2014, the patient underwent two L5-S1 discectomies. However, the numbness and tingling in her left leg recurred in a month's time. She decided to continue with physical therapy after the last surgery.

In January of 2018, the patient presented to her primary care doctor for acute onset of weakness in both hips and legs, diminished sensation to pinprick and light touch from T7 level down. Two days prior, she experienced a headache, abdominal pain, nausea, vomiting and diarrhea. All resolved except for the weakness and numbness. On arrival to the ED, her vitals were BP118/62mmHg, Pulse 79, SpO2 94% (T not recorded). The neurologic exam determined diminished sensation to light touch and pin prick bilaterally up to the T7 level. MRI of the thoracic spine showed T2 signal hyperintensity of the anterior spine at T7 level making spinal cord infarct a likely etiology. Pertinent information includes a brother who passed away due to aortic dissection and occasional use of Hydrochlorothiazide for hypertension; this is peculiar since hypotension is listed in the literature as a common cause of acute spinal ischemia.

Poster Presentation No. 55

Presenter: Krishna Modi

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Ataxia and Hearing Loss in a Patient with Copper Deficiency

Copper deficiency is rare as humans require minute amounts. Possible etiologies are impaired absorption following gastric surgery without supplementation, or from zinc competition.

Manifestations are subacute onset ataxia, anemia. B12 deficiency presents similarly, resulting in misdiagnosis. We present a copper deficient patient with gait ataxia and sensorineural hearing loss.

A 34-year-old woman presented with 2-years of recurrent vomiting and diarrhea. The patient had bilateral sensorineural hearing loss and a wide-based gait with diminished sensation in lower extremities. History was negative for gastric surgery; B12 supplementation had not improved symptoms. Laboratories revealed macrocytic anemia (hemoglobin 6.5gm/DL), low methylmalonic acid (239nmol/L), and normal folate levels. Imaging revealed dorsal and lateral cord degeneration from T2 to conus medullaris. Serum copper was low (< 0.5ug/ml), zinc normal, and elevated IgA against deamidated gliadin peptide. Treatment included fluid and Cu supplementation.

The ataxia and peripheral neuropathy are consistent with copper deficiency, likely from gastrointestinal loss. Elevated IgA against DGP suggest celiac disease, which has been reported to cause copper deficiency. Hearing loss is not described with copper deficiency; but the temporal relationship with ataxia, lack of other etiology and young age suggest copper deficiency. Ocular nerve involvement has been described with copper deficiency. Additionally, hearing loss has been observed in patients with celiac disease. Sensorineural hearing loss could therefore be another manifestation of copper deficiency neural involvement.

Differential diagnosis of myeloneuropathy includes copper deficiency. Sensorineural hearing loss may be a consequence of copper deficiency.

Poster Presentation No. 56

Presenter: James Purtell

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It's What's on the Inside that Counts: Appropriate Extracutaneous Evaluation of a Patient with Sebaceous Carcinoma

Case: A 60-year-old woman presented with a firm, nodular lesion of 1x1 cm with ulceration on the surface of the nose that appeared and grew rapidly over three months. No other symptoms or relevant histories were reported. Biopsy showed high-grade sebaceous carcinoma (SC), which may exist as a manifestation of Muir-Torre syndrome (MTS). PET and CT showed no evidence of metastasis or additional lesions. Two previous colonoscopies showed tubular adenomas of the ascending and transverse colon. Excision was performed. Follow up to this date has shown no recurrence. Evaluation of DNA mismatch repair (MMR) mutations has not been performed.

Discussion: With a variable clinical presentation and overall paucity of data (even epidemiology is unclear), a lack familiarity with SC can lead to delays in diagnosis, inappropriate management and poor outcomes. One established necessity after diagnosing SC is evaluation for MTS due to the risk for visceral malignancies. MTS, a subset of Lynch syndrome, is a clinical diagnosis that should be supported with immunohistochemistry of MMR. SC has also shown high rates of recurrence and a potentially aggressive nature, so maintained follow up and increased screening is necessary - some studies have advocated for serial lymph node biopsies in SC/MTS patients after excision.

SC cannot just be excised and forgotten – proper care involves interdisciplinary long term follow up and requires early recognition, genetic analysis, surveillance for visceral malignancies and metastasis, and continued review of updated literature on both SC and MTS to optimize outcomes and treat efficiently.

Poster Presentation No. 57

Presenter: Richard Raad

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School: Wayne State University School of Medicine

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An Atypical Presentation of Disseminated Cutaneous Herpes Zoster in an Immunosuppressed Host

Introduction: Immunocompromised patients are at greater risk for atypical presentations of herpes zoster.

Case: A 71-year-old male on immunosuppressive therapy for a renal transplant secondary to ESRD presents with a painful rash on his left arm. Five days prior to presentation he spilled hot oil on a small area above his left wrist. Subsequently, he noticed a rash with progressive blistering and pain developing over the next five days; he denied prodromal burning or tingling. On examination, the lesions had coalesced, covering the entire left forearm & hand. Skin involvement proceeded up towards the trunk to involve portions of the chest and back, corresponding to dermatomes C5-T2; the right side of the body was spared.

Diagnostic Dilemma: There was concern for disseminated cutaneous herpes zoster, so IV acyclovir was initiated. However, the presentation was so uncommon that a wide array of differentials had to be considered. Diagnosis was later confirmed with VZV PCR positivity from fluid in the bullae.

Discussion: The incidence of herpes zoster in transplant patients is 10 to 100-fold higher than the general population. Atypical cutaneous manifestations, including involvement of multiple dermatomes and greater severity of lesions, are more common in immunocompromised patients, which makes the diagnosis challenging. Early management is crucial to reduce the risk of post-herpetic neuralgia and visceral dissemination.

Unique features to our case include the following: 80-100% involvement of one limb on presentation, bullae (not vesicles), lesions so coalesced that the limb looked like second-degree burns, and lack of systemic symptoms.

Poster Presentation No. 58

Presenter: Benjamin Ueberroth

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Idiopathic Mediastinal Fibrosis Causing Hemoptysis and New Onset Hypertension in a Healthy 20yo Male: A Zebra Among Horses

A previously healthy 20-year-old male presented to a local emergency department with massive, life-threatening hemoptysis preceded by two months of cough, exercise intolerance and increasing sputum production. Computed tomography imaging upon admission demonstrated a large soft tissue mass arising in the middle mediastinum, encasing the distal trachea, carina, main bronchi and esophagus, as well as the right main pulmonary artery and lobar branches. Suspicion was high for hematologic malignancy, and fine needle biopsy was performed with negative immunohistochemical staining. The patient was lost to follow-up for roughly one year. He then had two subsequent admissions for similar symptoms, undergoing multiple biopsies of the mediastinal mass, ultimately culminating in a surgical resection of the mass both for relief of symptoms and diagnosis. Surgical biopsy indicated a lymphocytic and plasma cell infiltrate with a significant fibrosing component consistent with fibrosing mediastinitis. The patient has had inconsistent follow-up since his diagnosis and is currently undergoing evaluation for a definitive post-surgical treatment plan.

This case features a diagnosis of idiopathic mediastinal fibrosis. A mediastinal mass in a 20-year-old male is classically taught as a malignancy until proven otherwise. In our patient multiple biopsies with negative immunohistochemical staining ruled out a malignant process and pathology is consistent with mediastinal fibrosis. Fibrosing mediastinitis is a rare disorder often tied to a prior histoplasmosis, sarcoidosis, or less commonly, tuberculosis infection. Given the lack of granulomatous inflammation on multiple biopsies, these diagnoses become less likely. We are left with the diagnosis of idiopathic mediastinal fibrosis.

Poster Presentation No. 59

Presenter: Ebony White

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Lack of Food Access and Food Consumption Patterns of Late Midlife Women in Southeast Michigan

Food access is a key social determinant of health for older adults at high risk of chronic disease and physical disability. This cross-sectional analysis examined correlates of food access and the relationship between food access and food consumption characteristics in late midlife women. The sample included 316 women from Southeast Michigan in 2015-2016. Lack of food access, defined as access to self-perceived adequate grocery shopping resources in one's neighborhood, was reported by 20.9% of women. Women who reported lack of food access were less likely to report making meals at home ($p=0.02$) and had less frequent consumption of fresh fruits ($p=0.04$), fresh vegetables ($p=0.001$), and lean meats ($p=0.048$) as compared to those that did not report a lack of food access ($p=0.04$, $p=0.001$, $p=0.048$). Being African American (OR: 2.49; 95% CI: 1.20-5.17) and experiencing economic stress (OR: 2.86; 95% CI: 2.53-5.33) were major correlates of reporting lack of food access. Interventions to improve food access for midlife women may help address differences in chronic disease risk associated with diet quality among racial/ethnic groups and across socioeconomic status.

Poster Presentation No. 60

Presenter: Patricia Choi

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Fighting Diagnostic Confirmation Bias: ABPA, CF, or Both?

Allergic bronchopulmonary aspergillosis (ABPA) often complicates CF and other chronic lung diseases. It is often indistinguishable from cystic fibrosis (CF), especially in adults who often have “mild” presentation. A high index of suspicion is critical for early diagnosis.

A 58-year-old female was diagnosed with asthma as a child. With bronchiectasis and growth of *Aspergillus fumigata* (AF), ABPA was diagnosed in her 40's. Right upper lobectomy was done secondary to “eosinophilic granuloma.” She progressed to frequent exacerbations and hemoptysis. Precipitins for AF were positive, and IgE was 711 IU/L. Relevant history include two bowel perforations, pancreatitis, asthma, malnutrition, and baseline FEV1 of 35%. Sweat chloride test revealed 40 mmol/L initially, then 22 mmol/L later. Standard 32-mutation panel for CF transmembrane conductance regulator (CFTR) was positive for 394delTT (CF-causing variant). Patient was labelled CF carrier. Four years later, due to clinical deterioration, full CFTR gene sequencing was performed, revealing an additional variant of varying clinical consequence (p.Leu967Ser). After starting proper CF treatment, her FEV1 is now 58%. This case illustrates how anchoring of ABPA diagnosis without proper CF work-up (i.e. completing the full CFTR gene sequencing) can lead to unnecessary hospitalizations, lung function deterioration, and delayed treatment. CF patients diagnosed as adults often have an atypical presentation. Although their mutation can confer some CFTR function, there is no correlation with lung disease severity. The CF foundation has published new guidelines for diagnosing CF in non-screened population with emphasis on the need to refer to a CF care center when diagnosis is unclear.

Poster Presentation No. 61

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Deserts, Swamps, Mirages, and Oases: Reconciling the Spectrum of Food Environments

Introduction

Community access to quality healthy food is linked to the well-being of its people. Benefits include optimal academic performance potential, decreased malnutrition and developmental difficulties, and reduced incidence of chronic disease. Challenges to equity in access remain remarkable though as >43.1 million Americans live in poverty, >12 percent of American households are food-insecure, and many chronically rely on food-assistance as primary food sources.

As communities are increasingly studied, researchers have established various classifications for the food environments their study populations reside in. However, the definitions vary largely and there is no centralized resource to compare each environment's varied interpretations.

Methods

PubMed, Scopus, and Google Scholar were searched for primary and review articles that included definitions and characterizations of different food environments. In total, 40 sources were identified for inclusion.

Results

Literature review found the following number of different interpretations:

Food Desert: 19

Food Swamp: 6

Food Mirage: 6

Food Oasis: 3

Discussion

Terminology to describe food environments is essential for understanding their characteristics. Reasons include elucidation of unique deficits, stronger advocacy and policy, and optimized community interventions. Not standardizing definitions may contribute to future mischaracterizations, errors in conclusions, and misallocation of resources and manpower. Food security, diversity, and accessibility impact community well-being. Furthermore, food access is multi-dimensional and is not limited to previously identified factors such as availability, accessibility, affordability, accommodation, and acceptability. It is incumbent upon medicine and public health to understand difficulties shouldered by community members to best devise sustainable solutions that meet their needs.