SMA's 2021 Annual Scientific Assembly Abstract Presentations

The following abstracts were accepted and presented during Southern Medical Association's Annual Scientific Assembly, October 28-30, 2021, and are listed in order of SMA's multidisciplinary categories. Abstracts are published as submitted.

Category: Bioethics & Medical Education

Evaluating Perceptions of Fertility and Family Planning During Medical School in the United States

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Background/Knowledge Gap: The make-up of the medical student body is changing nationwide - in 2019, more women were enrolled in medical school than men, and while the average age is 24, we consistently see individuals matriculating to medical schools in their 30s and 40s. Even with the increase in women in medicine, residencies and careers viewed as more demanding, such as surgery or academia, have struggled to recruit a proportional number of women to their ranks. Additionally, a recent study reported that infertility is much higher in female surgeons (30%-32%) when compared to the general population (11%) which has caused discouragement among medical students who may wish to pursue the field of surgery as a career. Herein, this survey aims to collect thoughts and awareness surrounding the availability of fertility planning resources and assess the potential for future initiatives to assist and support family preparation during medical training.

Methods/Design: Tulane IRB exemption approved for up to 1000 responses. Eligibility criteria include all medical students enrolled at a US medical school. Survey employs a mixed-methods approach using quantitative and qualitative variables of interest to assess knowledge and availability of fertility and family planning resources at US medical schools, the relative prevalence of pregnancy during medical school, barriers to having children during medical school, and the perceived culture surrounding parenthood while pursuing "demanding" residency training programs.

Results/Findings: To be collected. Pilot phase in process, anticipating 80 responses from a single center by 8/16/2021. Study phase to begin 9/1/2021.

Conclusion/Implication: We hope to gain insight into the real and perceived barriers to parenthood and fertility preservation services during medical school to address any gaps in knowledge and resources. We anticipate that providing support for parental policies and fertility resources will help further diversify medical specialties.

Learning Objectives:

- Assess the view medical students in the United States have on fertility and family planning and how these impact future career endeavors.

Category: Emergency & Disaster Medicine

Macroglossia With A Peritonsillar Abscess: A Pediatric Airway Challenge in the Emergency Department From Beckwith-Wiedemann Syndrome

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Background/Knowledge Gap: Pediatric airway management is a critical skill for emergency physicians. Beckwith-Wiedemann Syndrome (BWS) is an overgrowth disorder caused by genetic mutations with a prevalence of 1 per 15,000 births. Excessive growth can affect almost any body part, including bones, muscles, blood vessels, organs, skin and adipose. Emergency physicians should anticipate a difficult airway when managing peritonsillar abscess in the presence of disorders involving macroglossia, such as Beckwith-Weidemann Syndrome,

Methods/Design: A 6 year-old female presented with a sore throat for one week, a negative strep swab, and inability to tolerate her own secretions. Her history revealed Beckwith-Wiedemann Syndome with a previous Wilms tumor, visceromegaly, and surgical repair of an omphalcele at birth. Physical exam findings demonstrated significant macroglossia and right extremity hemihypertrophy.

Results/Findings: Mallampati score of 3 was appreciated. Computed tomography (CT) scan of soft tissue neck showed evidence of right palatine tonsil lesion measuring 1.7 x 1.0cm with concern for early peritonsillar phlegm/abscess formation. With anatomical landmarks obscured by macroglossia, neither direct nor video laryngoscopy were recommended for definitive airway management. Appropriate options include either awake intubation or fiberoptic bronchoscopy. Difficult airways such as this are most successfully managed in a facility with a full panoply of equipment and trained experts to provide the best outcome. Thus, the patient was

transferred to a pediatric hospital where fiberoptic bronchoscopy was successfully utilized for intubation and peritonsillar abscess drainage in the operating room.

Conclusions/Implications: Macroglossia in pediatric patients is a clinical indicator of increased likelihood of airway problems and of greater difficulty in managing the airway. Clinicians should consider BWS in pediatric patients presenting with macroglossia, extremity hemihypertrophy, visceromegaly and a history of abdominal defects. Findings may include a higher Mallampati score and, with a peritonsillar abscess, and increased difficulty tolerating secretions.

Learning Objectives:

- Recognize the clinical presentation of Beckwith-Wiedermann (BWS).
- Summarize assessment and evaluation of peritonsillar abscess in BWS.
- Identify pediatric airway management in overgrowth disorders presenting with macroglossia.

Focal Neurologic Findings After A Syncopal Episode: An Unusual Confluence

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Spinal cord injuries are prevalent and need to be appropriately recognized, diagnosed, and treated so that patients with these injuries can have as much neurological function as possible. Although automobile crashes account for the majority of spinal cord injuries, other mechanisms such as falls and gunshot wounds, may cause this problem. By recognizing these injuries and completing the appropriate work-up, these conditions can be managed most efficiently, providing the best patient care.

Case Presentation: 61-year-old presented to the emergency department with a chief complaint of bilateral upper extremity weakness and paresthesias post syncopal episode while sitting on the commode. Upon waking, she was unable to move any extremities. On arrival in the emergency department, her legs were neurologically intact and some function had returned to her arms. She denied neck pain, back pain, and incontinence. She also denied any constitutional symptoms including fever or chills, as well as chest pain, dyspnea, nausea, and vomiting. She reported she was in her usual state of health until this syncopal episode. Her only medication is a 325 mg aspirin daily.

On admission, her temperature was 98.3 F, pulse 90, respirations 16 per minute with a patent airway, oxygen saturation was 98% on room air, and blood pressure was 119/57. The patient was alert and oriented and did not appear to be in distress. Neurologically, she had difficulty resisting gravity in her upper extremities bilaterally with concomitant paresthesias. She had an NIH Stroke Score of 5 based on presentation, but tPA was not given based on clinical judgement and a concern for a traumatic injury.

Her labs were unremarkable and a CT head without contrast was negative for any acute intracranial findings. A CT of the cervical spine demonstrated horizontal, non-displaced fractures in the C3 and C4 vertebral bodies extending to the left lamina, a displaced corner fracture of the C4 body, and a mildly displaced fracture of the C4 spinous process. MRI of the cervical spine demonstrated a 2mm thick epidural hematoma anteriorly and posteriorly, and a ligamentous injury from C2-C3 to C6-C7. The cervical MRI also showed a focal cord signal abnormality at the C4 level consistent with central cord syndrome, which was likely due to her reported hyperextension injury. An MRI of the thoracic spine was negative for any acute findings and CT angiography of the neck was negative for dissection, stenosis, or occlusion.

Diagnosis: central cord syndrome

Management: The patient was transferred for care by neurosurgical and trauma services.

Discussion: This case illustrates the prompt and accurate diagnosis of central cord syndrome in a patient with painless and unexplained post-syncopal neurological findings.

Learning Objectives:

- Learn how to identify the incomplete spinal cord injuries (anterior cord syndrome, posterior cord syndrome, central cord syndrome, and Brown-Sequard syndrome)
- Gain more experience in reading radiograph images pertaining to the spine

Category: Global Healthcare

Covid 19 Related Pericarditis

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Introduction: As we move forward in the current state of the ongoing pandemic, we have started to look at other aspects of COVID-19 which have caused substantial changes to the human anatomy at a molecular level and looking at the clinical symptoms and signs at the hospital level. Although there have been decrease in trends for the number of cases all over the globe, New variants are emerging which could wreck havoc on our bodies that we don't know of yet. From our current research and data analysis, there have been several cases of Post covid complications, which have emerged. Patients with post covid symptoms and complications have been referred to as "long haulers". One of the most common one is chronic fatigue. This is could be attributed to the pulmonary functioning post covid which has been seen in multiple literature reviews. In terms of Heart complications, Heart failure with either preserved ejection fraction or reduced ejection fraction were seen. Pericarditis is a rare complication of Covid 19 Sequelae. Although acute pericarditis has been seen in some cases. One review showed a finding of pericardial effusion in 4.8% cases in 83 patients, which had severe covid . However the cases seen in literature review were diagnosed within one week after covid 19 infection and not as a later manifestation after recovery. Our case presents an immunocompetent female coming to the hospital following pleuritic symptoms after recovery from Covid 19 infection.

The case discusses the initial presentation; workup and outpatient follow up following resolution of her symptoms.

Case Discussion: We are presenting the rare case of 83-year-old female with past medical history of hypertension,hyperlipidemia and osteoarthritis who came to the hospital with complaints of fatigue, dyspnea and non-productive cough. Physical examination was within normal limits and inconclusive other than muffled heart sounds.The patient initially went to her primary care physician and got chest x-ray done which showed enlarged

cardiac silhouette. The last chest Xray done couple of months before when she had been diagnosed with Covid had shown normal cardiac image. In the ED; Doppler done for her heart showed pericardial effusion. Ct chest (Figure 2) confirmed Pericardial effusion as well. Blood work did not show any significant changes with electrolytes being normal, H&H being stable with no leukocytosis.Management: Cardiology was consulted for pericardial effusion. Echocardiogram (Figure 3) was done which showed 400 to 500 cc of pericardial effusion with normal chamber sizes and filling pressures with 73% ejection fraction. Recommendation to CT surgeon was made for pericardial window and they were able to drain 80 cc of fluid. Chest tube output for next 2 days showed drainage of 50 cc following which it was removed. Pericardial fluid analysis showed fibrinous pericarditis. Patient was stabilized and discharged on colchicine for 3 months and advised to follow up in cardiology clinic.

Management/Follow Up: She followed up in the cardiology clinic with repeat Chest x ray which showed resolution of the pericardial effusion. She was advised to stop taking the colchicine as her symptoms had resolved.

Learning Objectives:

- Patient with covid especially children are being seen with inflammatory condition of the heart which is leading to pericarditis. It's been termed Multisystem inflammatory syndrome in children.
- Multisystem inflammatory syndrome in adults (MIS-A) after recent COVID infection is a Kawasaki like disease found in children. These cases are usually found in young to middle aged people. They can present with various features of cardiovascular disease, acute kidney injury and elevated inflammatory markers. It has been seen that patients with myocardial injury are typically older and have more comorbidities.
- Upon completion of this lecture, learners should be better prepared to think and identify pericarditis in a patient who had covid 19 exposure with subtle signs and symptoms.

Category: Medicine & Medical Specialties

Intranasal Deferoxamine Modulates Memory, Neuroinflammation, and the Neuronal Transcriptome in the Streptozotocin Rodent Model of Alzheimer Disease

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Background: Intranasal (IN) Deferoxamine (DFO) has emerged over the past decade as a remarkably promising candidate therapeutic in preclinical development across neurodegenerative and neurovascular disease. As an iron chelator, its mechanisms are multimodal, involving the binding of brain iron and the consequent engagement of several disease-nonspecific pathways to counter pathogenesis across multiple diseases. We and other research groups have shown that IN DFO rescues cognitive impairment in several rodent models of Alzheimer Disease (AD), including the inducible intracerebroventricular (ICV) streptozotocin (STZ) rat model.

Methods: We designed this study in an effort to ease the translation of IN DFO to clinical trials, probing dosing regimes and mechanisms within the ICV STZ model.

Results: We found that a 1%, but not 0.1%, solution of IN DFO rescued cognitive impairment caused by ICV STZ administration as measured by the Morris Water Maze (MWM) test. Treatment with IN DFO rescued STZ-induced hippocampal neuron loss and decreased hippocampal apoptosis. Furthermore, IN DFO modulated several aspects of the neuroinflammatory milieu of the ICV STZ model, which we assessed through a novel panel of brain cytokines and immunohistochemistry. Using RNA-sequencing and pathway analysis, we found that STZ induced several pathways of cell death and neuroinflammation, and that IN DFO engaged multiple transcriptomic pathways involved in hippocampal neuronal survival.

Conclusions: In sum, to our knowledge this study represents the first to assess the transcriptomic pathways and mechanisms associated with either the ICV STZ model or DFO treatment, and the first to demonstrate this therapeutic's efficacy at low doses. We significantly elucidate the mechanisms and role of the ICV-STZ rodent model of AD. We present these mechanisms and methods as a framework for future therapeutic development.

Learning Objectives:

- Describe the advantages and disadvantages of the streptozotocin model of Alzheimer Disease
- Discuss the mechanisms by which deferoxamine may counter Alzheimer pathogenesis
- Identify areas for future research to better understand Alzheimer disease and generate targets for therapeutic intervention

A Triple HIT Dilemma: Balancing Pulmonary Emboli, Hemorrhagic Shock, and HIT Syndrome

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Heparin Induced Thrombocytopenia (HIT) is a dangerous immunologically mediated drug reaction to unfractionated heparin. It is important to personalize management for these patients especially if they have a comorbid condition, including recently resolved bleed and obesity.

Case Presentation: A 67-year-old man with morbid obesity (BMI 43) and recent prostatectomy was admitted 2 weeks for bilateral pulmonary emboli (PE). He was discharged on an enoxaparin bridge to warfarin therapy, then re-admitted for hemorrhagic shock due to a retroperitoneal hematoma. Anticoagulation was held until his hemoglobin stabilized. He was then started on heparin.

The day after starting heparin therapy, his max temperature was 99.9°F, blood pressure 122/72 mmHg, respiratory rate 18 breaths/minute, and 96% O2 saturation on 2L nasal cannula. He had right flank bruising and

legs symmetrical with 1+ edema to knees. We ordered a CBC, CMP, coagulation studies, hepatitis panel, and CT abdomen.

Over the next 24 hours, the patient's platelets decreased from 111 to 70 and his hemoglobin was 8.0. His HIT score was 5 and his platelet serotonin-release assay was positive. Differential diagnoses for thrombocytopenia are HIT, disseminated intravascular coagulation, and medication-induced.

Final Diagnosis: Heparin-Induced Thrombocytopenia.

Management: Heparin drip was discontinued, and an alternative anticoagulant for his HIT and PEs was sought. Due to the patient's BMI of 43 and lack of data in this population, a direct oral anticoagulant (DOAC) could not be used. We chose to use a low-dose argatroban therapy (typically for critically ill). Although our patient was no longer critically ill, this strategy balanced the need to anticoagulate with the risk of further hemorrhage and allowed for rapid reversal if needed. His platelet counts are improving and his hemoglobin remains stable. The treatment plan for this patient is to transition from argatroban to fondaparinux for three months continued outpatient anticoagulation for provoked PE's.

Learning Objectives:

- Review treatment options for HIT.
- Understand argatroban dose-adjustments for critically ill patients.

Lung Cancer Presenting Solely as Ascending Paralysis and Bilateral Bells Palsy from Leptomeningeal Carcinomatosis

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Leptomeningeal Carcinomatosis is diagnosed in approximately 5% of patients with metastatic cancer however incidence of post-mortem diagnosis is considerably higher. Despite its rare occurrence, it has been described in patients with lung cancer particularly in advanced stages. Neuroimaging show findings consistent with cranial and peripheral nerve involvement which may explain a presentation of ascending paralysis and Bell's palsy. While most documented neurological presentations of lung cancer are typically paraneoplastic syndromes, leptomeningeal carcinomatosis may result as a direct CNS invasion by malignant cells. Here, we present a patient with ascending bilateral lower extremity weakness and bilateral bell's palsy who was diagnosed with leptomeningeal carcinomatosis secondary to Lung adenocarcinoma.

Case presentation: 63 year old male presented with 3 months of worsening bilateral lower extremity weakness. His weakness started from his feet and spread towards both hips. His mobility worsened progressively and he required a cane, walker and eventually a wheelchair. Medical history notable for recent diagnosis of left-sided bell's palsy, also of 3 months duration.

Examination revealed left-sided facial weakness, new onset right-sided facial weakness, ptosis and drooling. 3/5 motor strength and absent reflexes in bilateral lower extremity. Sensation intact, no atrophy or fasciculations noted.
CT head, MRI/MRA head and neck were unremarkable.
Lumbar puncture showed WBC – 444, glucose – 29, total protein of 1521.
Patient was started on steroids and IVIG for suspected AIDP/inflammatory neuropathy.
He was then discharged to rehab, 2 days thereafter he was re-admitted due to non-improving extremity weakness and dysphagia, now requiring NG tube feeds.
Further investigation with MRI thoracic spine showed post-contrast leptomeningeal enhancement.
Repeat LP with CSF analysis showed malignant cells consistent with adenocarcinoma. Chest CT showed left upper and lower lobe opacities suspicious for malignancy with destructive left 9th rib lesion.

Diagnosis: Leptomeningeal Carcinomatosis likely from primary lung malignancy

Management: Oncology, Infectious disease, Neurology, patient and his family, all agreed with hospice care, as the patient's performance status was very poor and he has probably limited chance of neurologic recovery.

Learning Objectives:

- Identify that Leptomeningeal metastases (neoplastic meningitis) are a rare but frequently devastating complication of advanced cancer. Leptomeningeal metastasis (LM) results from dissemination of cancer cells to both the leptomeninges (pia and arachnoid) and cerebrospinal fluid (CSF) compartment. Breast cancer, lung cancer, and melanoma are the most common solid tumors that cause LM;
- Demonstrate the ability for tumor cells to gain access into the CSF in several ways; Hematogenous spread via the arachnoid vessels or direct extension from the brain parenchyma are probably the most common means;
- Identify that multifocal involvement is a hallmark of leptomeningeal disease, with headache or other focal neurological deficits being the most common symptoms.

A Culture Negative - Isolated Pulmonary Valve Endocarditis With 5 cm Vegetation

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Introduction: Isolated pulmonary valve endocarditis(PVE) is rare entity accounting for 1.5-2% of the all-cases of endocarditis. It’s often missed during echocardiographic evaluation given the limited visibility of pulmonary valve(PV), low index of suspicion and rarity of the pathology. Prompt identification and treatment is necessary to gain favorable outcome. Here we present a case of isolated PV endocarditis with large vegetation measuring over 5-cm which clinically manifested as cavitary pneumonia and was radiographically masquerading as thromboembolism.

Case presentation: A 37-year-old Caucasian male with no prior medical history sparing intravenous methamphetamine and heroin use presented to ED complaining of fever(T-max-104C), chills, dyspnea, productive-cough, malaise since four weeks. Physical exam was notable for murmur at right upper sternal border and scattered exploratory wheezes in both lung. WBC, inflammatory markers were severely elevated. CT-chest showed numerous cavitary pulmonary-lesions, dilated pulmonary-artery suggesting pulmonary arterial hypertension possibly related to chronic thromboembolism. Blood cultures were positive for MSSA. TTE showed mobile density involving the pulmonic valve on pulmonary artery side measuring 1.77x0.772 cm was concerning for vegetation. No acute abnormality was identified on the electrocardiogram(EKG).

Working diagnosis: Treatment was started with IV vancomycin with working diagnosis of endocarditis. After 4-weeks treatment with IV Vancomycin, patient had significant clinical improvement. Repeat blood cultures were negative however a repeat TEE was obtained which showed persistent vegetation of the pulmonary valve that grew exponentially and was now measuring in excess 5-cm. Given the size & rapid growth of the vegetation despite being on IV vancomycin, patient was sent for surgical correction.

Management: He underwent transverse pulmonary arteriotomy and resection of a 5-cm vegetation adherent to posterior-leaflet of PV. Pathology report confirmed the fibrin deposition with acute inflammation compatible with vegetation. Patient was discharged on 6-week therapy with Daptomycin for bacteremia and Ceftaroline for better lung penetration.

Learning Objectives:

- Right sided endocarditis accounts for approximately 10% of all cases of infective endocarditis. Endocarditis with simultaneous PV involvement is seen in less than 2% of the cases. Risk factors for right sided endocarditis include IV-drug use, ICD, intravenous devices such as central line, intra-aortic balloon-pump, ventricular assist device and immunocompromised status. Commonly identified causative agents are staphylococcus aureus, coagulase-negative Staphylococci, and group-B-Streptococci. IE carries high in-hospital mortality-rate of 15-20% and a 1-year mortality rate of 40%. Modified-DUKE criteria are used as diagnostic tool for patients with suspected IE. Given the low incidence of PVE, Transthoracic echocardiography(TTE) is usually the initial test in most patients however transesophageal(TEE) should be considered when TTE is negative and the index of suspicion is high. A review of literature done by Gonzalez-Alujas et al. reported sensitivity of TTE between 40-63% and that of TEE to be 90-100%. As seen in our case, both TTE and TEE were diagnostic of TVE showing both smaller 1.77x0.772 cm as well as larger >5cm vegetation. Cardiac MRI is an excellent modality to evaluate pulmonic valve and to quantify pulmonic insufficiency, however given lack of PI findings on TTE and TEE, cardiac MRI was deferred in our case. Review of available literature suggest that PVE usually has a benign course. It is thought to be reversible and responds well to parenteral antibiotic therapy administered for a recommended duration of 4-6 week. Surgery can be considered in patients that have persistent bacteremia, septic pulmonary emboli and formation of abscess despite adequate antibiotic therapy. Early surgical intervention is recommended in patients with hemodynamic instability and in those with vegetation larger than 2 cm & causative organisms identified to be staphylococcus. Vegetations >2cms carry a mortality rate of as high as 25% as compared to 3.8% with those <2 cm.

A Case of Extrapericardial Tamponade caused by Bullous Emphysematous Chronic Obstructive Pulmonary Disease and Intra-thoracic Adhesions following recent Cardiothoracic Surgery

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Introduction: Cardiac tamponade is a well-documented condition usually caused by accumulation of fluid in the pericardial cavity. Extrapericardial tamponade is a life-threatening and very rare condition, which is sparsely mentioned in literature and has only a few reported etiologies. This case is the first unique case to our knowledge of extrapericardial tamponade secondary to bullous emphysematous chronic obstructive pulmonary disease and intra-thoracic adhesions, which resulted in near catastrophic cardiac and respiratory compromise.

Case Presentation: 69-year-old Male, with a past medical history significant for chronic obstructive pulmonary disease, atrial fibrillation, and tobacco abuse disorder, presented due to shortness of breath, orthopnea, and non-productive cough. Notably, only one week prior, he underwent ablation for atrial fibrillation, complicated by perforation of the left superior pulmonary vein for which he underwent repair of the left superior pulmonary vein and left atrial junction by cardiothoracic surgery. Even at that time, surgery had noted expansive lung architecture creating difficulty in viewing the heart.
Significant vitals included blood pressure 70/40 mmHg and oxygen saturation 96% on 2L nasal cannula. On exam, he had decreased breath sounds bibasilarly, jugular venous distention, and mild end-expiratory wheezing diffusely. Significant initial laboratory findings included troponin 0.17 and pro-brain-type natriuretic peptide 5073.

Final/Working Diagnosis: Extrapericardial tamponade secondary to bullous emphysematous chronic obstructive pulmonary disease and intra-thoracic adhesions after cardiothoracic surgery

Management/Outcome/Follow-up: The patient later required intubation. Emergency bedside thoracotomy was performed but the heart was not well-visualized. So, emergency cardiothoracic surgical exploration was performed. On the mediastinal approach, lung tissue was observed to be compressing the pericardial cavity. The right lung crossed the midline with dense adhesions to the left lung, pericardium, and the posterior plate of the sternum. The adhesions were then lysed at these points of contact and the lung was reduced. The patient was extubated the next day and successfully recovered.

Learning Objectives:

- Discuss extrapericardial tamponade as extrinsic compression on the pericardial cavity causing decreased ventricular diastolic filling and subsequently poor cardiac output;
- Identify prior known etiologies of extra pericardial tamponade as hematoma following surgery or trauma as well as herniation following esophagectomy;
- Diagnose extrapericardial tamponade by echocardiography and treat extrapericardial tamponade acutely through urgent intervention including surgery.

"Rash" Decisions- A Case Presentation and Management of a Rare Skin Lesion

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Introduction: Urticarial vasculitis (UV) is a rare immune-complex mediated lesion that be infectious, autoimmune or drug induced, associated with low or normal complement levels. The exact prevalence is unknown, some describe the incidence to be between 2%-20%. It can present as painful purpura or urticaria lasting >24 hours among other manifestations. We aim to describe one such case below.

Case Presentation: A 43-year-old-female presented to our facility with a 2-day history of a painful pruritic rash that initially started on her back and quickly spread cephalo-caudally. She mentioned being scratched by a friend's cat few hours prior to onset of the rash. Denied having any relief with oral antihistamines or steroids. She reported a history of type 2 diabetes and coronary artery disease status post a CABG surgery 8 years ago, and a recent drug eluding stent placement on dual antiplatelet therapy (DAPT). Medications included aspirin, clopidogrel, lisinopril, hydrochlorothiazide, rosuvastatin, glimepiride and metformin.
When examined, the patient had a diffuse urticarial rash with erythematous borders, associated angioedema of the face and lips. She was afebrile, pulse 75 beats/min, respirations 18 breaths/min, BP 106/71, saturating at 96% on ambient air. Labs, including autoimmune studies, were unremarkable with normal complement levels.

Final/Working diagnosis: She was diagnosed with drug induced normocomplementemic UV

Management & Outcome: ACE inhibitors are a rare but known cause of UV with angioedema, and lisinopril was suspected to be the causative agent with a Naranjo adverse drug reaction probability score of 5 and therefore discontinued. She was treated with topical and IV steroids, antihistamines, and mast cell stabilizers with resolution of the rash. A biopsy was not obtained as the risk of stent re-thrombosis would be high with discontinuing DAPT to obtain the biopsy. The patient was seen outpatient at regular intervals with no reported recurrence of the rash.

Learning Objectives:

- Diagnosing Urticarial Vasculitis: Urticarial vasculitis can last more than 24 hours after exposure to an inciting agent. It can be associated with normal or low complement levels. Normocomplementemic disease is considered mild and self-limiting, hypocomplementemic UV can be more severe with a systemic inflammatory response and is associated with a positive C1q antibody. Biopsy can help in confirming the diagnosis.
- Managing Urticarial Vasculitis: Mild disease usually responds to antihistamines, non-steroidal anti-inflammatory drugs, and steroids; while severe cases may warrant immunosuppression with drugs like azathioprine, hydroxychloroquine, and dapsone. In cases that are resistant to therapy, plasmapheresis and anti-cytokine monoclonal antibodies have shown some promise.

It's Time to B. Cereus: Bacillus-derived Fatal Hemorrhagic Bullous Soft Tissue Necrosis

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Bacillus cereus is a gram-positive, spore-forming, facultative, aerobic rod that is ubiquitous in the environment and is traditionally associated with toxin-mediated emetic and diarrheal illness that results from consuming improperly stored food. While mainly associated with food poisoning, it can cause a variety of systemic and local infections.

Case: 63-year-old female with history of hemochromatosis and total right hip arthroplasty 10 months prior presented with complaints of worsening right hip pain for the past 2 weeks since falling from standing height. Initial vitals were BP 82/51, HR 100, RR 26, temperature 94.6F, SpO2 100% on room air. Exam revealed a mildly tender small area of ecchymosis to the right medial thigh without fluctuance or erythema. Labs were significant for WBC 3.2K/uL with 53% bandemia, hemoglobin 7.4g/dL, lactic acid 11.9 mmol/L, and ferritin 1,807ng/mL. CT right hip showed no acute pathology. Patient was admitted to the ICU with norepinephrine gtt, broad-spectrum IV antibiotics, and volume resuscitation. Blood cultures resulted positive for bacillus cereus in 2/4 bottles in 1/2 sets. Over the next day patient had a persistent lactic acidosis despite continuous renal replacement therapy, and developed blood-filled bullous lesions to her right thigh raising concern for necrotizing infection. Bedside fasciotomy was performed discovering dusky-appearing, necrotic tissue with serous fluid collections in multiple thigh compartments. Deemed too unstable for complete debridement, family elected for comfort care, expiring around 48 hours from time of admission.

Final diagnosis: Hemorrhagic bullous lesions and necrotizing soft tissue infection due to Bacillus cereus

Discussion: Uniquely presented is a B. cereus bacteremia that originated from rapidly progressing, fatal necrotizing soft tissue infection despite lack of penetrating trauma and appropriate antibiotic coverage. Iron overload from hemochromatosis is hypothesized as a risk factor for b. cereus infections due to NEAT surface transporter protein upregulation.

Learning Objectives:

- Describe a non-gastroenterological manifestation of bacillus cereus infections and specific risk factors for this particular pathogen.
- Outline appropriate early treatment for necrotizing soft tissue infections.

Refractory Rhabdomyolysis: A Rare NAMe to Remember

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Introduction: Myositis is a common medical diagnosis in the inpatient setting. We present a unique case/work up with an unclear etiology to this diagnosis.

Case presentation: A 68-year old female with a past medical history of CAD, diabetes mellitus, HTN, hyperlipidemia, CVA, and G tube presented with worsening generalized weakness for the past few days. The patient also reported that her G tube was malfunctioning. Physical exam: HR 98, BP 115/77, RR 16; showed an obese female in no acute distress. Heart: RRR no MRG; Lungs: clear; Abdomen: soft, nontender to palpation; Neurologic: 1/5 muscle strength in the LUE and LLE, 2/5 muscle strength in the RUE and RLE. Labs: CPK 8478, troponin 226, alkaline phosphatase 241, ALT 213, AST 391. Hospital course: G tube was replaced and patient was treated for MRSA infection located at the G tube site; CPK trended up to 15,000. Suspecting myositis, a muscle biopsy was performed of the vastus lateralis muscle and pathology showed numerous necrotic and regenerating fibers suggestive of necrotizing autoimmune myopathy. EMG and NCS also showed axonal peripheral neuropathy. The patient was placed on prednisone 40mg daily after an initial loading dose of 125 mg resulting in resolution of the elevated CPK before discharge.

Final Diagnosis: Necrotizing autoimmune myopathy (NAM) is a rare subgroup of myopathies that is a branch off of a group of diseases called idiopathic inflammatory myopathies (IIM). NAM is characterized by progressive proximal muscle weakness and findings of necrotic muscle fibers with absent or minimal inflammation on muscle biopsy. IVIG, plasmapheresis, immunosuppressive therapy, and high dose corticosteroids have been associated with strength improvement and favorable outcome.

Management: NAM is a rare disorder of musculature that is associated with statin use, autoimmune disease, and malignancy. Timely muscle biopsy and early aggressive treatment have been associated with improved outcomes.

Learning Objectives:

- Recognize the differential diagnosis and workup of persistently elevated CPK
- Understand the diagnosis of necrotizing autoimmune myositis

Epidermodysplasia Verruciformis – Tree Man Disease: A rare skin disorder

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Epidermodysplasia verruciformis (EV), also known as “tree man disease” is an extremely rare skin disorder with unknown prevalence and a total of around 501 patients described worldwide. EV is characterized by abnormal susceptibility of the skin coating to human papillomaviruses (HPVs). There are 2 forms of EV- classic inherited and late onset acquired forms, both of which create conditions to facilitate replication of HPV. In the acquired form, immunodeficiency facilitates viral multiplication.

Case Presentation: We report a case of 48-year-old immunocompetent African American female who presented with generalized weakness with bilateral lower extremity chronic pain and multiple verrucous lesions leading to functional disability. Her symptoms started with bilateral leg swelling in 2015 that progressively worsened over a year leading to the development of typical “tree bark like lesions”, that rendered her bedbound since then. She does not have any immunodeficiency disorders and denied family history of similar skin lesions or history of consanguineous marriages. Physical exam showed multiple, diffuse, dry, non-tender, black wart-like lesions extending from knees to feet. Bilateral lower extremity sensation was diminished to both pin prick and light touch. Peeling off a warty lesion caused bleeding. WBC on presentation was 8600 with 63% neutrophils and 26% lymphocytes. Hemoglobin, serum electrolytes and blood glucose were within normal limits.

Diagnosis: Diagnosis of EV was established by skin biopsy which showed histological findings of hyperkeratosis, acanthosis and vacuolated cells in epidermis and presence of HPV virus.

Management: There are no curative therapies for EV, management is conservative. Our patient began physiotherapy as inpatient and was advised to maintain hygiene and adequate hydration and not walk barefoot. Upon discharge to rehab-facility she was advised to adopt sun protection measures to prevent development of non-melanoma skin cancer. During follow up after two weeks, she was found to be functionally doing better.

Learning Objectives:

- Describe and identify Epidermodysplasia verruciformis which is an extremely rare disorder associated with formation of tree bark like verrucous skin lesions. Learners will also get to identify unique case where the acquired variant of EV is seen in an immunocompetent person as traditionally EV has been associated with immunosuppressed condition.
- Discuss about the pathogenesis of EV which includes creation of conditions facilitating replication of HPV. In the inherited form, there is mutation in TMC 6 and TMC 8 genes which helps in HPV multiplication. In the acquired form, immunodeficiency facilitates viral multiplication. Because of this, acquired EV is usually reported in patients with acquired cell-mediated immunodeficiency like HIV-positive patients or in patients on immunosuppressive treatment such as organ transplant recipients.
- Also, EV commonly affects people under 20 years of age, but rarely it may occur later. Our patient started developing progressive “tree bark like lesions” when she was in her 40s.

Rare Case of Mixed Adenoneuroendocrine Carcinoma in a 73 Year Old Male with Dysphagia

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Introduction: Mixed adenoneuroendocrine carcinoma (MANEC) is a rare tumor of the gastrointestinal tract, and can appear anywhere from the esophagus to the colon or appendix. The pathogenesis of MANEC is unpredictable and it's prognosis uncertain. Despite the lack of standardized treatments, surgical resection and aggressive multimodal cancer therapy is often recommended.

Case Presentation: A 73 year old male with a 50 pack year smoking history presented to clinic with stable dysphagia, inability to swallow solid foods, and 20 pound weight loss for two months. Vomiting the undigested food would relieve the sensation of obstruction in his midepigastrum. Physical exam was unremarkable. Initial differential diagnoses included dysphagia, gastroesophageal reflux disease, and unintentional weight loss. Esophagogastroduodenoscopy (EGD) showed nodular duodenitis at the duodenal bulb including nodular, friable, and ulcerated areas from the gastroesophageal junction (GEJ) up to 35 cm from the bite block. The upper esophagus was unremarkable. Pathology of the biopsies revealed mixed moderate to poorly differentiated adenocarcinoma that stained positively for cytokeratin AE1/AE3, CDX2, and cytokeratin 7, and high-grade neuroendocrine carcinoma that was strongly positive for CD56.

Final Diagnosis: Mixed adenoneuroendocrine carcinoma (MANEC)

Management and Outcome: The patient received neoadjuvant taxane-based chemotherapy and radiation followed by successful distal esophagectomy with reanastomosis to the GEJ. PET scan was negative for metastasis and paraesophageal lymphadenopathy. More than a year after treatment he no longer had dysphagia, but had persistent nausea, loss of appetite, and lost 45 pounds over the last few months. His CMP and CBC labs were unremarkable. Barium swallow revealed severe gastroparesis with narrowing of the gastric lumen at the diaphragm level. Repeat EGDs showed no signs of cancer recurrence. However, long areas of friability, blanching, and narrowing of the gastric antrum and body was present. Biopsies were unremarkable with no signs of intraepithelial lymphocytosis. A percutaneous endoscopic gastrostomy (PEG) tube was placed and he was admitted to a rehabilitation facility. Abdominal cellulitis developed around the tube site and he was sent to the hospital for evaluation and successful replacement of his PEG tube for a jejunostomy tube. However, his hospital course was complicated by sepsis, pneumonia, and ascites. Despite proper management, the patient did not survive the full course of his admission.

Learning Objectives:

- Identify an incredibly rare type of gastrointestinal tumor manifesting in the distal esophagus in patients with a long history of smoking and new complaints of dysphagia.
- Predict patient outcomes after aggressive treatment of the tumor, including the risk of developing severe gastroparesis, malnutrition, and progressively worsening weight loss.

Detecting True Hypertensive Crises and Ensuring Appropriate Use of As Needed Anti-hypertensives in the Inpatient Setting

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Most collegiate groups define hypertensive crisis as systolic blood pressure greater than 180mmHg and/or diastolic blood pressure greater than 120mmHg and further categorized as hypertensive urgency or emergency by whether signs or symptoms of end-organ damage are present [1]. Variations in blood pressure are a natural physiologic occurrence and elevations can arise in response to stress, such as pain or acute illness. In an inpatient setting, factors such as delayed administration of home medications and hypervolemia due to intravenous (IV) fluid resuscitation can increase blood pressure [1]. In addition to the patient-specific causes of hypertension, abnormal values can be obtained by improper technique as well as errors in data entry.

While the consequences of chronically uncontrolled blood pressure are widely known, acute management does not improve long-term outcomes [2] and there is not much data on untreated acute severe blood pressure elevations [1]. Controlling elevated blood pressure in the inpatient setting may lack any benefit and be potentially harmful. [1]. Irrespective of this evidence, widespread use of IV anti-hypertensives increases the overall cost of treatment and has caused critical drug shortages [2].

Several studies have shown that most of these medications are given inappropriately to patients who do not meet criteria for either sub-type of hypertensive crisis [1]. We have designed a quality improvement project that ensures that these medications are only given when indicated. Prior to program initiation, education will be provided for correctly measuring blood pressure. Using electronic medical record alerts, a user who submits vitals outside normal range must repeat measurements and enter new values. If those values are abnormal, the user will be asked to confirm associated symptoms using a checklist. A hard stop will advise notifying a physician if the information entered is consistent with hypertensive crisis.

Learning Objectives:

- Discuss the possible outcomes of acutely controlling hypertension in the inpatient setting.
- Decide the best management for acute severe elevations in blood pressure.
- Identify different causes of acutely elevated blood pressure in hospitalized patients.

A Case of Scleroderma Renal Crisis (SRC) in a patient with New Onset Diffuse Systemic Sclerosis and Chronic Essential Hypertension

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Although rare, SRC is a life-threatening kidney manifestation seen mainly in patients with diffuse rather than limited scleroderma. Predisposing factors include early-stage disease and rapid progression of skin changes. The hallmark of scleroderma renal crisis is the acuity of findings; Acute Kidney injury (AKI) without appreciable history of kidney disease, acute onset of malignant hypertension with complications such as flash pulmonary edema and/or hypertensive encephalopathy. Pathophysiology shows overexpression of Endothelin-1 with potent renovascular vasoconstriction, resulting in severe renal hypoperfusion. ACE inhibitors are the therapy of choice and steroids should be avoided. A good index of suspicion is necessary to diagnose SRC in patients who have baseline hypertensive disease as prognosis of SRC is poor and if left untreated, may lead to early initiation of hemodialysis, need for renal transplant, and/or death. Here, we present a case of Scleroderma Renal Crisis in a patient with established Hypertension.

Case report: A 60-year-old female presented with 1 week of progressive shortness of breath, cough, orthopnea and weight gain. Three weeks prior, she was managed for similar symptoms as well as new-onset AKI. Medical history includes Essential Hypertension on Atenolol monotherapy and a recent diagnosis of Diffuse Scleroderma and Pulmonary Hypertension 6 months before presentation.

At presentation, BP was 214/101, SpO2 89%. Serum Creatinine was 1.5 with a baseline of 0.6 a month prior. Chest X-ray showed pulmonary edema.

Final/Working diagnosis: An initial diagnosis of Hypertensive Emergency with Flash Pulmonary Edema and AKI was made. However, due to patient's Scleroderma history and recent clinical manifestations, SRC was suspected.

Management and Outcome: Patient was managed with Supplemental O2, IV anti-hypertensive medications and diuretics however BP remained elevated. With suspicion of SRC, Captopril was initiated and up-titrated with good results. Patient was discharged on low-dose Lisinopril and advised to follow-up with her Rheumatologist.

Learning Objectives:

- Maintain a high index of suspicion in patients with established Essential hypertension who also have Scleroderma.
- Demonstrate the need for ACE-Is as first line SRC therapy. There is no empirical role for ACE-Inhibitor use in Scleroderma, however it is recommended that patients with hypertension should be started on ACE-Is or ARBs if they are at high-risk for SRC.
- Be made aware of the need for urgent intervention given poor disease prognosis if untreated.

Suicide Left Ventricle Post -TAVR

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Background: Aortic stenosis is narrowing of the aortic valve opening, leading to a reduced amount of blood leaving the left ventricle. Transcatheter Aortic Valve Replacement (TAVR) is an option for patients who are poor candidates for Surgical Aortic Valve Replacement.

Case Presentation: An 80-year-old lady presented for dyspnea. She had a history of congestive heart failure, chronic obstructive pulmonary disease (Stage II), type II diabetes mellitus, hypertension, hypercholesterolemia, and polymyalgia rheumatica. Physical examination revealed a grade 3 systolic murmur in the aortic area. Echocardiography showed a preserved ejection fraction with heavily calcified aortic cusps and moderate to severe stenosis with a mean gradient of 36.4mmHg and a valve area of 1.1sqcm.

Patient underwent an uneventful TAVR. Post procedure she manifested with refractory hypotension and supraventricular tachycardia. She was treated with adenosine and normal saline and started on norepinephrine and dopamine. She continued to decline and was intubated and put on the ventilator, she remained hypoxemic, requiring an FIO2 of 100% and PEEP of 14 to achieve saturations in the mid-'80% range. Chest x-ray showed pulmonary edema. She was started on furosemide. Repeat bedside echo showed a well-positioned and functioning aortic valve with a hyperdynamic collapsed left ventricle despite 3 L normal saline. We made a diagnosis of suicide left ventricle post TAVR, and discontinued inotropic agents and started on metoprolol and phenylephrine. Over the next couple of hours, repeat echocardiogram showed improved left ventricular cavity size with hemodynamic and respiratory improvement. However, she remained unresponsive, and an MRI showed large bilateral acute strokes.

Final Diagnosis: Suicide Left Ventricle

Discussion and Management: The patient presented above manifested with a suicide left ventricle. This develops following removal of the fixed obstruction in the aortic outflow tract when there can be development of dynamic left ventricular outflow tract obstruction due to abrupt reduction in afterload to a stenotic aortic valve. An echocardiogram post TAVR showing a small left ventricular cavity with a relatively normal or increased ejection fraction should raise the suspicion of a suicide left ventricle which presents with Circulatory collapse. Recognition of this phenomenon is challenging and treatment involves increasing afterload, reducing heart rate and pacing in the setting of conduction abnormalities. Other modalities like ECMO and LVAD support may be helpful if available.

Learning Objectives:

- Identify a rare but fatal complication of TAVR.
- Outline the best approach to the management of this complication.

Acute Aortic Occlusion Secondary to Embolism from Left Ventricle Thrombus Precipitated by Stress Cardiomyopathy

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: The incidence of left ventricular thrombus (LVT) in patients with stress induced cardiomyopathy is 5 to 8%. In a systematic review, the incidence was noted to be 5% with one third of patients developing a resultant embolic phenomenon. Here we discuss an elderly gentleman who presented with acute limb ischemia secondary to infrarenal aortic obstruction secondary to embolic phenomenon, originating from LVT related to stress induced cardiomyopathy.

Case Report: A 65-year-old male with past medical history of seizure disorder and peripheral artery disease status post remote right common/external iliac stenting presented with acute onset left flank pain for 2 days. He was involved in a motor vehicle accident (MVA) 3 weeks prior to his presentation, requiring spinal instrumentation.

On arrival, patient was afebrile and hemodynamically stable. Examination was remarkable for absent bilateral femoral and pedal pulses with associated pallor and poikilothermia. Sensory/motor sensation was intact bilaterally. Ankle-brachial index 0.0 on right and 0.39 on left. Abdominal exam was benign. ECG showed normal sinus rhythm with right bundle branch block and associated ST-segment abnormalities. Peak troponin-I was 0.562 ng/mL. Urgent computed tomographic angiography revealed acute segmental left renal infarct with acute infra-renal aortic occlusion besides an incidental finding of radiopaque density within left ventricular cavity on partial chest slices suspicious for presence of a LVT. Patient was started on IV heparin.

Transthoracic echocardiogram showed severe left ventricular dysfunction estimated at 30 to 35% with regional wall motion abnormalities consistent with left anterior descending arterial territory infarct/ischemia versus stress induced cardiomyopathy with and a moderate sized apical thrombus. Coronary angiography showed minor irregularities of the epicardial vessels without obstructive disease. Clinical presentation was deemed to be secondary to stress-induced cardiomyopathy occurring during patient's recent MVA which likely led to development of LVT.

Patient subsequently underwent right axillary bifemoral bypass with resolution of acute limb ischemia. The segmental left renal infarct was managed conservatively. Renal function remained stable throughout.

Secondary to patient's lack of reliable follow-up for warfarin therapy, he was transitioned from heparin to off-label apixaban for management of LVT besides aspirin and other guideline-directed medical therapy for peripheral arterial disease and stress-induced cardiomyopathy

Conclusion: With our case, we intend to discuss LVT thrombus with resultant embolic infarction as an infrequent complication of stress induced cardiomyopathy. Timely identification and appropriate intervention are crucial in reducing mortality in such patients, and our patient serves to highlight the same.

Learning Objectives:

- The incidence of left ventricular thrombus (LVT) in patients with stress induced cardiomyopathy is 5 to 8%.
- One third of patients developing a resultant embolic phenomenon.

Association of the RIETE Score with Occult Cancer in Patients with Venous Thromboembolism

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Background: Venous thromboembolism (VTE) may be the first sign of cancer in patients; however, current screening guidelines for cancer in patients with VTE remains ambiguous. Here, we investigate the efficacy of the Registro Informatizado Enfermedad TromboEmbolica (RIETE) score in identifying VTE patients at high-risk for cancer.

Methods: In this retrospective analysis, patients diagnosed with a VTE from January to December 2019 at an academic medical institution were assigned a RIETE score and evaluated for subsequent cancer diagnosis within 12 months. Statistical analysis was performed with IBM-SPSS using the Fisher exact test.

Results: A total of 211 patients with a VTE diagnosis were included (50% Female, 55% African American, Average age = 59.6∓15.7, Average BMI = 29.5∓8.8). Seventy-nine (37.4%) patients had a RIETE score ≥ 3 (high-score) while 132 (62.6%) had a score of < 3 (low-score). There was no statistically significant difference in the incidence of cancer diagnosis in high-score patients compared to that in low-score patients (n=4 [5.06%] vs. n=2 [1.52%], respectively, p=0.2). We found similar results when patients were stratified by sex. Among female patients, the incidence of cancer diagnosis in high-score patients was greater compared to that in low-score patients, but the difference was not significant (n=2 [11.11%] vs. n=1 [1.14%], respectively, p=0.074). Similar results were found in high- and low-score male patients (n=2 [3.28%] vs. n=1 [2.27%], respectively, p=0.62).

Conclusion: Higher RIETE score is not correlated with increased risk of future cancer diagnoses in neither female nor male patients with VTE at our institution. While the RIETE score was not an effective stratification tool, we recommend larger follow-up studies. In the interim, malignancy evaluation should be offered to patients with VTE.

Learning Objectives:

- Identify the need for better guidelines of occult cancer screening
- Examine a recently-proposed risk prediction score in identifying occult cancer in patients with venous thromboembolism

Thrombotic Events in COVID-19 vs Sepsis Patients

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Background: Since its onset, the Covid-19 pandemic has significantly altered the world's economy, livelihood, healthcare infrastructure, and patient care. The clinical disease of the virus is a primary respiratory compromise; however, emerging studies are identifying genetic and physiologic variables that impact patient survival. Although there is currently no cure for Covid-19, mortality risk stratification can assist in identifying patients who benefit from early preventative therapies. Several recent studies have demonstrated that Covid-19 infection is associated with a hypercoagulable state. Guan et al. showed an association between Covid-19 infection and elevated D-dimer, consistent with the finding in autopsy studies of fibrin thrombi and extensive fibrin deposition in small vessels and capillaries of Covid-19 positive deceased. Tang et al. found DIC (disseminated intravascular coagulation) in over 70% of patients who succumbed to Covid-19. Klok et al. reported a rate of 31% VTE (venous thromboembolism) in Covid-19 ICU patients. Al-Samkari et al. evaluated the incidence of thrombotic and bleeding events in patients diagnosed with Covid-19. They found a VTE rate of 4.8% in Covid-19 patients and a bleeding rate of 4.8%. In addition, variables such as D-dimer, ESR, CRP were associated with thrombosis. Together, these observations suggest that altered coagulability may be a part of the pathophysiology of Covid-19 disease and may be associated with adverse outcomes and mortality.

Historically, studies have also demonstrated high rates of thrombotic events among patients with sepsis. For example, a multicenter prospective study done by Kaplan et al. found that 37.2% of patients with severe sepsis and septic shock developed VTE. This rate appears similar to a meta-analysis conducted by Porfida et al., which showed a VTE rate of approximately 26% in patients with Covid-19. Therefore, whether the associated increase in thrombotic events results from Covid-19 specific infection or a general severe infection response is unknown. To further elucidate the pathophysiology of Covid-19 hypercoagulability, we aim first to compare the risk of thrombotic events in patients with Covid-19 disease and all patients with sepsis or septic shock.

Methods/Design: A retrospective chart review was performed of patients admitted to Tampa General Hospital intensive care unit with a diagnosis of COVID-19 or sepsis secondary to other organisms. These records were reviewed and subsequently performed data variables extraction by the information technology (IT) department. Patients were assessed for comorbidities including age, obesity, malignancy, heart failure, respiratory failure, rheumatologic disorders, diabetes, history of VTE. For the rest of the variables, a manual chart review is being

performed to calculate the Charlson Comorbidity Index. Subjects will be matched by age, BMI, DM2, and Charlson Comorbidity Index to compare VTE rates.

Outcome: Currently in the data collection phase and will soon start data analysis.

Learning Objectives:

- Describe the risk of venous and arterial thrombotic events in inflammatory states including COVID-19 disease and sepsis secondary to other organisms
- Compare and contrast the incidence of VTE in COVID-19 patients admitted to the ICU, and ICU patients with a diagnosis of sepsis
- Discuss comorbidities that increase risk of VTE

A Very Rare Antibody Negative Goodpasture's Disease Requiring Hemodialysis

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Introduction: Goodpasture's disease is rare and occur in fewer than two cases per million. Classic anti-glomerular basement membrane (GBM) disease presents with rapidly progressive glomerulonephritis with or without pulmonary hemorrhage, in association with deposition of antibodies in a linear patternon the GBM. It is a rare cause of end-stage kidney disease, accounting for approximately 0.8 percent of all ESKD patients. Anti-GBM antibodies can in most cases readily be detected in the circulation using enzyme-linked immunosorbent assays. Although very rare, a few cases with absence of circulating anti-glomerular membrane antibodies have been described.

Case: Although very rare, we describe a case of Goodpasture's disease in which no circulating anti-GBM antibodies were detectable in serum by well-established enzyme-linked immunosorbent assay. A 69-year-old Caucasian female with multiple co-morbidities presented with complaints of dyspnea with one episode of hemoptysis. She was found to have WBC 7.5, hemoglobin 8.3, hematocrit 25.5, platelets 184, BUN 63, creatinine 5.4. Rapid COVID unremarkable. CXR patchy bilateral infiltrates. ANA, C-ANCA, P-ANCA and anti-GBM antibodies were negative. Renal US negative for hydronephrosis, renal masses, stones. In light of her acute kidney injury of unclear etiology, findings of microscopic hematuria, renal biopsy was pursued which showed necrotizing and crescentic glomerulonephritis with anti-GBM antibody. Immunofluorescence revealed a linear immunoglobulin G deposition compatible with Goodpasture's syndrome.

Management: The patient was started on pulse steroids, daily cyclophosphamide. Over the succeeding days, her kidney function continued to worsen, and although she remained nonoliguric, she was started on hemodialysis and received plasmapheresis with good response.

Conclusions: The absence of circulating anti-GBM antibodies in Goodpasture's syndrome can lead to late diagnosis which can be detrimental as studies have shown that early aggressive therapy leads to an improved prognosis. Physicians should be aware of this rare presentation of Goodpasture's disease and consider tissue diagnoses such with kidney biopsy.

Learning Objectives:

- The absence of circulating anti-GBM antibodies in Goodpasture's syndrome can lead to late diagnosis which can be detrimental as studies have shown that early aggressive therapy leads to an improved prognosis
- Anti-GBM antibodies generally are of immunoglobulin G subclass 1 (IgG1) and can in most cases readily be detected in the circulation using enzyme-linked immunosorbent assays (ELISAs).
- On biopsy typical disease displays bright polytypic linear GBM staining for IgG by immunofluorescence and diffuse crescentic/necrotizing GN on light microscopy.

Ticagrelor Induced Dyspnea after Acute Coronary Syndrome

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Ticagrelor and elinogrel are oral reversible platelet P2Y12 receptor inhibitors, frequently used in guideline directed management of acute coronary syndromes. As compared to irreversible P2Y12 receptor inhibitors such as clopidogrel and prasugrel, oral reversible inhibitors elicit an adverse effect of dyspnea with a reported incidence of about 13%. This adverse effect is thought to be dose dependent with an uncertain pathophysiology. Incidence is lower with Cangrelor, an intravenous reversible platelet P2Y12 receptor inhibitor. We present a case of ticagrelor induced acute onset dyspnea in a patient who was initiated on ticagrelor following percutaneous coronary intervention (PCI).

Case Presentation: A 54-year-old Caucasian gentleman presented with subacute history of dyspnea, which he characterized as intermittent breath catching episodes. His symptoms started after discharge from recent hospitalization about eight days ago. Dyspnea occurred predominantly during moderate to severe activity and occasionally at rest. There were no associated symptoms of orthopnea, paroxysmal nocturnal dyspnea or pedal edema. Patient was hospitalized ten days ago with acute onset chest pain and was diagnosed to have acute inferior wall myocardial infarction. He underwent balloon angioplasty, followed by 18 hours of eptifibatide therapy with subsequent staged PCI of right coronary artery (RCA) with a drug eluting stent. He was discharged on dual antiplatelets, aspirin and ticagrelor. Patient had past medical history of chronic kidney disease stage III, hypertension, hyperlipidemia, type II diabetes mellitus, obesity and nicotine dependence. His other prescription medications were atorvastatin, lisinopril, carvedilol, nitroglycerin, insulin, sitagliptin, metformin and icosapent ethyl.

On presentation, patient was comfortable and asymptomatic. Initial vital signs revealed blood pressure of 147/89, heart rate of 86, saturation of 99% on room air. On examination, patient had a regular pulse. Cardio-respiratory examination was unremarkable without jugular venous distension.

ECG showed normal sinus rhythm without acute ischemic changes. Cardiac biomarkers revealed elevated troponin I of 0.46 ng/mL, which had down trended from previous value of 15.4 ng/mL recorded ten days ago. Chest x ray

showed normal lung fields without any infiltrates or congestion. Echocardiogram during last admission showed ejection fraction of 60-65% without regional wall motion abnormality and repeat study was not warranted.

Diagnosis: With recent RCA stenting for acute inferior wall myocardial infarction and risk of in-stent thrombosis, patient's presentation of dyspnea was initially considered to be angina equivalent warranting treatment with heparin bolus and infusion, as per acute coronary syndrome protocol. Further trending of troponin I demonstrated a downward trend ruling out an acute coronary event. In the absence of clinical and radiological signs of infection and volume overload, pneumonia and acute congestive heart failure were ruled out. As patient's reported symptoms were characteristic of cheyne-stokes pattern of breathing, ticagrelor related dyspnea was considered as the most likely cause of patient's symptoms.

Management: After ruling out an acute coronary event, therapeutic anticoagulation was discontinued. Ticagrelor was discontinued and a loading dose of prasugrel was administered. Patient was discharged on guideline directed therapy for acute coronary syndrome with replacement of ticagrelor with prasugrel. He was advised to follow-up in cardiology clinic within four weeks.

Learning Objectives:

- This case highlights the occurrence of early onset ticagrelor induced dyspnea, which is relatively more common as compared to late onset dyspnea. It leads to decreased compliance with guideline directed dual antiplatelet therapy, thereby increasing the risk of in-stent thrombosis.
- The commonly postulated hypothesis for ticagrelor induced dyspnea is increased plasma levels of adenosine through inhibition of adenosine deaminase. Alternatively, dyspnea could be due to inhibition of P2Y12 receptors on sensory neurons leading to stimulation of chemoreflex system.
- The PEGASUS TIMI 54 trial has shown lower rate of Ticagrelor induced dyspnea with a dose of 60 mg twice daily as compared to 90 mg twice daily regimen. Additionally, there was no dose related difference on inhibition of P2Y12 receptors.

Unusual Pain in the Butt: A Gluteal Abscess from Coccidioidomycosis

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Coccidioidomycosis is a fungi found commonly in the Southwestern United States often discussed as a respiratory infection, it is known to be "the great imitator" and present as infections elsewhere in the body. Extrathoracic nonmeningeal coccidioides infections occur in < 1% of all coccidioides infections and commonly occur in immunocompromised hosts. Most immunocompromised hosts of extrathoracic nonmeningeal coccidioides infections are patients with HIV or those receiving chronic immunosuppressive therapy. There have been only 4 previous reported cases of coccidioidomycosis causing gluteal abscesses.

Case Presentation: We present a case of a 74 year old female, with extensive medical history including Sarcoidosis and Pulmonary Fibrosis on chronic Prednisone therapy, who presented with weakness and left buttock pain x 2 days. Patient was admitted for sepsis secondary toESBL E.coli UTI and left buttock cellulitis, with no abscess at

time of admission. During the complicated admission, there was worsening skin breakdown that led to exploration exploration and drainage of abscess on day 7 of admission.

Final Diagnosis: Left buttock cellulitis with abscess measuring 3 x 2 x 7 cm, determined during surgical procedure with wound culture growing Coccidioides Immitis and Posadasii and Enterococcus Faecium.

Follow up: There was abscess recurrence on subsequent admission requiring additional wound debridement. Patient has outpatient treatment regimen consisting of Isovuconazonium with plan for 6 month treatment duration and wound care home visits. With complicated gluteal abscess management, in addition to management of other complex comorbidities, this case was a great example of teamwork within multiple disciplines. With the various specialists on board, there was abundant communication amongst all parts of the medical team. Also, it was excellent clinical decision making to employ further investigation and intervention before there was extension of infection into bone. We have seen poor outcomes in other patients with Coccidioides abscesses which developed osteomyelitis.

Learning Objectives:

- Identify proper management and outpatient care of patients with coccidioidomycosis gluteal abscess.

Mixed Adenoneuroendocrine Cancer of Duodenum: A Rare Cause of Gastric Outlet Obstruction

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Mixed Adenoneuroendocrine cancer (MANEC) is an extremely rare, relatively novel gastrointestinal cancer that is characterized by the presence of both adenocarcinomatous and neuroendocrine differentiation; each component representing at least 30% of the tumor. We present a case of a patient presenting with gastric outlet obstruction and was found to have a primary duodenal MANEC.

Case Presentation: A 57-year-old female with history of diverticulitis presented with intractable nausea, vomiting, epigastric pain, and weight loss. She was afebrile with mild epigastric tenderness. Labs were unremarkable except for hypokalemia. CT abdomen showed thickening of the third portion of the duodenum with surrounding abnormal lymph nodes. EGD revealed a large infiltrating mass in D3 portion of the duodenum. Pathology was positive for adenocarcinoma. After ruling out metastatic disease, patient underwent pancreatoduodenectomy. Surgical pathology revealed poorly differentiated mixed adenoneuroendocrine tumor (Ki67-70%) forming a 3.2 cm mass in the duodenum and invading through the wall of the duodenum into the adjacent pancreas and peripancreatic soft tissue. Patient was treated in ICU for post-op pancreatic leak and infection. She was eventually discharged with oncology follow-up for adjuvant chemotherapy.

Discussion: MANECs appear to be highly malignant tumors with a high risk for distant metastases. The aggressiveness depends mainly on the endocrine component, independent of its proportion. Identification of the neuroendocrine component has significant therapeutic relevance; therefore, a very attentive microscopic

evaluation should be performed in adenocarcinomas with dedifferentiated areas. Surgery is the first line of treatment for cases with a resectable tumor. Because of its aggressive nature and high recurrence rate, adjuvant chemotherapy constitutes a critical part of treatment and significantly improves survival.

Learning Objectives:

- Advocate for the focus on MANEC diagnosis as timely identification will help refer these patients to centers with expertise in NET, for appropriate diagnostic workup and management.
- Identify and manage these rare GI tumors with involvement of a multi-disciplinary team of physicians.

Evaluation of Comorbidities and Biomarkers to Predict Hospital Length-of-Stay and Mortality in VTE Patients

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Venous thromboembolism (VTE) and its associated complications are a rapidly rising cause of hospitalization and mortality in the United States. The clinical outcomes of VTE are influenced by patients' medical comorbidities and certain coagulation and inflammatory biomarkers. We investigate these associations in an ethnically diverse city with a minority-majority patient population.

Methods: A retrospective analysis was performed on patients diagnosed with a VTE from January 2019 to July 2020 at an academic medical institution. Patient demographic information, past medical history, laboratory values, and clinical outcomes were collected. Statistical analysis was performed using IBM SPSS 27 with a 2-tailed Pearson Correlation test and Receiver-Operator Curve (ROC).

Results: A total of 293 patients with a VTE diagnosis were included (53% Female, 57% African American, Average age=57.2±14.2, Average BMI = 28.8±7.1). The most common medical comorbidities were hypertension (57%), diabetes mellitus (28%), hyperlipidemia (25%) and heart failure (14%). Various coagulation and inflammatory biomarkers were collected, the average values are: WBC (9.01), Hct (28.14), Plt (186.98), PT (13.18), INR (1.24), PTT (38.13), CRP (332), Lactic Acid (27.89). Average length of hospital stay was 10.5 days and mortality rate was 3.66%. Hypertension ($r=0.27$, $p=0.037$) and acute coronary syndrome ($r=0.539$, $p<0.001$) were correlated with longer hospital length-of-stay. No comorbidities were significantly correlated with mortality. Among coagulation and inflammatory biomarkers, Hct was negatively correlated with length-of-stay ($r=-0.437$, $p<0.001$) and negatively correlated with mortality ($r=-0.343$, $p=0.002$). Interestingly, Plt count ($r=-0.339$, $p=0.002$) and WBC count ($r=-0.227$, $p=0.047$) were also negatively correlated with mortality.

Conclusion: Certain medical comorbidities and coagulation/inflammatory biomarkers may be useful in predicting length-of-stay and mortality of VTE patients. Here, we find that in addition to hypertension and acute coronary syndrome, Hct, Plt and WBC levels can all be useful in determining VTE prognosis. Underlying mechanisms should be further evaluated to substantiate these relationships.

Learning Objectives:

- Examine the relationship between medical comorbidities and coagulation/inflammatory biomarkers with hospital length-of-stay and mortality.

A Case of Pottery Induced Hypersensitivity Pneumonitis

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Hypersensitivity pneumonitis is known as an immune-mediated lung disease presenting as Interstitial Lung Disease in susceptible individuals after an environmental exposure. Definitive diagnostic guidelines have been examined and proposed by several governing organizations. Hypersensitivity pneumonitis presents a challenge when identifying exact related exposures.

Case Presentation: 67 year-old female with past medical history of hypertension, acid reflux, diabetes mellitus type 2, obstructive sleep apnea and remote breast cancer presented with chronic shortness of breath. Pulmonary Function Tests were essentially normal with a mildly reduced Forced Vital Capacity. Bronchoscopy was performed, during which she was found to have a membranous tracheal defect and was referred for surgical repair. During repair of tracheal defect, a palpated abnormality in the right basal segment was found which was resected. She remained short of breath unrelieved by a course of diuretics and presented back to the hospital with a pleural effusion prompting therapeutic and diagnostic thoracentesis.
Immune related labs were negative. Negative viral and bacterial studies. HSR panel also negative for related pathogens. BAL which cultured negative and showed predominant lymphocytosis. Lung tissue pathology reported subpleural scarring with early honeycomb change accompanied by patchy peribronchiolar inflammation and rare non-necrotizing granuloma with rare fibroblast foci accompanied by airway centric inflammation and peribronchiolar metaplasia.

HRCT chest: Scattered ground glass opacity and interlobular septal thickening. More superiorly along the pleural space there is new nodularity. Diffuse interstitial thickening present.

Final Diagnosis: Patient was diagnosed with Fibrotic Hypersensitivity Pneumonitis given pulmonary wedge resection histopathology results and radiographic findings. Given the new findings on CT after patient endorsed a year long history of clay inhalation, this is assumed to be the exposure causing her hypersensivity pneumonitis.

Management: This patient with evidence of HSP was prescribed a course of steroids and has been managed as an outpatient. She was advised to refrain from any pottery activities and avoid other related exposures. Physicians may see pandemic related exposures causing a variety of respiratory diseases in coming years.

Learning Objectives:

- Discuss and implement current guidelines on diagnosing hypersensitivity pneumonitis.
- Determine correct management of hypersensitivity pneumonitis.
- Screen susceptible populations for exposure related illnesses.

Severe Rhabdomyolysis: In the setting of elderberry supplementation and a 30-minute moderate workout

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Rhabdomyolysis is a condition involving skeletal muscle breakdown in the setting of a stressor leading to the release of creatine kinase (CK), lactate dehydrogenase, and myoglobin. Common causes include: crush injury, overexertion, alcohol abuse, and certain medications. Complications can involve hyperkalemia, acute renal injury, cardiac arrhythmias, and compartment syndrome, making early recognition, and treatment vital.

Case Presentation: We present a case of a 37-year-old male who presented to the ED for evaluation of myalgias and hematuria for two days after completing a 30-minute moderate intensity zoom workout. He noted that he had not exercised for two months prior, and on presentation, labs included an initial CK of 98,000, AST: 1276, ALT 290, creatinine 1.25, urinalysis with large blood, and no red blood cells. His only prescription medication was Fioricet as needed for migraines and he started taking elderberry supplements a week prior to presentation. He denied any weight loss, exercise supplements, illicit drug use, alcohol, or other herbal medications. He was started on aggressive IV fluid administration, and hospital course involved a peak CK level of 153,000 the following day. Aggressive hydration was continued with eventual decline in CK levels.

Through his hospital course, renal function continued to improve. Urine output was monitored and there were no concerns for compartment syndrome.

Conclusion: Given this patient's rhabdomyolysis was nontraumatic, it is unlikely that this level of severe CK elevation was induced solely by exercise rather than a combination of other substances such as his new elderberry supplementation. His presentation was unique in the setting of significant CK levels despite only a moderate intensity 30-minute workout. Given the recent increased incidence in exertional rhabdomyolysis, cases like this serve as an example of the importance of early diagnosis and management for patients with similar presentations with other possible contributing risk factors.

Learning Objectives:

- Recognize common causes and stressors that could induce rhabdomyolysis
- Understand complications and lab abnormalities present in severe rhabdomyolysis
- Differentiate severe rhabdomyolysis and the potential for other causes to increase the severity of presentation

Not ACS: Typical Chest pain in Uremic Pericarditis

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Acute pericarditis occurs when the fibroelastic sac between the parietal and visceral layer is inflamed. Uremic pericarditis occurs in patients with End stage renal disease and a BUN greater than 60mg/dl. We present a unique case of uremic pericarditis in a patient with typical chest pain and elevated troponin.

Case Presentation: 79-year-old female with a history of hypertension and chronic kidney disease presents with a substernal intermittent chest pain for the past three weeks. The pain radiates to her left upper extremity and neck and is associated with dyspnea, nausea, diaphoresis, and lightheadedness. Furthermore, the pain is alleviated with rest and sublingual nitroglycerin and is exacerbated with exertion. Physical examination significant for a 3/6 systolic ejection murmur best heard in the second intercostal space. EKG revealed sinus tachycardia with T wave inversions in leads II, III, V3-6. Initial troponin-I was .712 ng/ml, BUN and Cr were 86 mg/dl and 5.5 mg/dl, respectively. She was given one dose of aspirin 324mg, started on heparin drip, atorvastatin 40mg daily, and admitted for further evaluation. A transthoracic echocardiogram revealed an Ejection Fraction of 50-54%, grade 1 diastolic dysfunction, severe Aortic Stenosis, small pericardial effusion and no wall motion abnormalities. Cardiology was consulted and cardiac catherization revealed normal coronary arteries. Given the normal coronary anatomy, emergent hemodialysis was initiated for uremic pericarditis. Nephrology was subsequently consulted and a renal ultrasound showed renal cortical thinning consistent with medical renal disease. Interventional radiology performed a renal biopsy revealing chronic IgA and IgG immune complex glomerulonephritis along with arterial nephrosclerosis.

Final Diagnosis: Uremic Pericarditis

Outcome: Patient symptoms resolved after several sessions of hemodialysis and she was discharged on outpatient hemodialysis.

Learning Objectives:

- Discuss the differential diagnosis for acute chest pain
- Cite the challenges in diagnosing uremic pericarditis
- Differentiate uremic pericarditis and acute coronary syndrome

Idiopathic Pericardial Effusions in Children: Workup and Final Diagnosis

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Background: Pericardial effusions have a wide range of causes, with etiology typically guiding treatment. However, etiology can be difficult to determine, and workup for pediatric pericardial effusions is not standardized. Because idiopathic pericardial effusions are often presumed to be viral, a complete workup may not be pursued.

Some idiopathic effusions later receive an etiologic diagnosis and may experience a delay in definitive treatment. Systematic workup of adults with idiopathic pericardial effusions has been shown to be efficient in determining etiologic diagnoses, but there are no similar studies in children.

The workup for pediatric pericardial effusions is not standardized and effusions that are diagnosed as idiopathic may have a treatable etiologic diagnosis.

Methods: A system-wide retrospective chart review of children (<18 years) was conducted using ICD-9 and 10 codes for pericardial effusion (1/1/1990-10/1/2019). Effusions were grouped by diagnostic category. The idiopathic effusions were analyzed to define the workup and final etiologic diagnoses.

Results: There were 367 children with pericardial effusions identified and 52/367 effusions (14%) were labeled idiopathic. Readmission was required for 15/52 (29%) idiopathic effusions, with median hospital length of stay of 5 days. 5/52 (10%) required >2 admissions.

Eventual etiologic diagnosis was found in 14/52 (27%) patients. The most common diagnoses were autoimmune (7/14, 50%), neoplastic (4/14, 29%), infectious (2/14, 14%), and renal (1/14, 7%).

Workup was non-standard but commonly included complete blood count (46/52, 88%) and electrolytes (48/52, 92%). Other studies included rheumatologic (27/52, 52%) and thyroid (22/52, 42%).

Most patients (41/52, 79%) had eventual resolution of effusion within a median of 1 admission (range 1-4).

Conclusions: More than a quarter of children diagnosed with an idiopathic pericardial effusion have an etiologic diagnosis—most commonly autoimmune-related. Though most effusions resolved, nearly 30% required readmission prior to definitive treatment and resolution. A systematic diagnostic approach could facilitate earlier treatment and value-based care. Future studies should evaluate healthcare costs for workup and treatment of pediatric pericardial effusions.

Learning Objectives:

- Discuss common causes of pericardial effusions in children.
- Identify if there are etiologic diagnoses for patients initially diagnosed with idiopathic pericardial effusions.
- Identify workup performed for patients with idiopathic pericardial effusions.

Dialing in the Immune System: Too Low, Too High, or Just Right?

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Introduction: Hemophagocytic lymphohistiocytosis (HLH) is a rare condition classified as either primary (genetic/familial) and secondary (acquired).

Case Presentation: A 36-year-old Caucasian male presented with four days of fever, chills, cough, myalgia. PMH includes chronic pontine inflammation treated with methotrexate for 13 years and had been weaning for the last 12 months. Vital signs include a temperature of 101.5, HR 110, BP: 90/50. Labs: WBC-2.1, Hb-6.9, Platelets-26 were low, ALT-634, AST- 491, Ferritin- 1,643, Triglycerides-366 were elevated. He was started on broad-spectrum antibiotics but remained febrile. Infectious disease workup for TB, influenza, COVID-19, HIV, Hepatitis A/B/C, CMV, EBV, Mycoplasma, Cryptococcus, Legionella, Strep pneumonia, Histoplasma was negative. Autoimmune workup included IgG, rheumatoid factor, ANA, antimitochondrial Abs, anti-sm muscle Ab were also negative.

Working diagnosis: Given that ferritin and triglycerides were elevated and infectious/autoimmune etiology was ruled out, HLH was being considered and workup was broadened. Soluble IL-2 receptor was high; peripheral smear showed T cell lymphoproliferative disorder, bone marrow biopsy had normocellular marrow with megakaryocytic hyperplasia and a mild increase in T lymphocytes. Lung biopsy showed dense atypical T cell lymphocytic infiltrates consisting of small lymphocytes and larger histiocytes.

Management and follow up: We deduced that decreasing the methotrexate dose caused a gradual reduction in his chronic immunosuppression, thus leading to activation of the immune system causing HLH. He was started on steroids following which his labs improved. He was discharged with a prolonged steroid taper and is currently doing well. HLH is a hyperinflammatory syndrome with an incidence estimated to be 1.2 cases per 1 million individuals per year. Diagnosis of HLH is often delayed and challenging due to its rare occurrence, variable presentation, and diagnostic criteria. Prognosis is poor due to diagnostic difficulty. Mortality in secondary HLH is estimated at 10-15%. Treatment includes immunosuppression and potentially bone marrow transplant.

Learning Objectives:

- To highlight the importance of considering HLH as a differential in patients with unexplained fevers, cytopenias, highly elevated ferritin, acute liver failure and splenomegaly.

Meconium Pseudocyst in a Preterm Infant: A Rare Surgical Condition

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Meconium peritonitis is caused by antenatal bowel perforation with spillage of meconium into the peritoneum resulting in sterile peritonitis and formation of dystrophic calcifications. When the extruded meconium becomes walled off, it can form a rim-calcified mass representing meconium pseudocyst. Histopathological confirmation is fundamental, by showing smooth muscle in the cystic wall.

Case Presentation: A 23-year-old primi mother was admitted at 27 weeks of gestation with a complaint of leaking per vagina. Antenatal scans at 24 and 26 weeks of gestation revealed abnormal findings of polyhydramnios and fetal ascites. The mother did not receive antenatal steroids and underwent a cesarean section for the pre-labor rupture of membranes. Bag and mask ventilation was initiated and the baby was intubated and mechanically ventilated due to poor respiratory effort. On physical examination, the baby had generalized abdominal distension with abdominal wall erythema. The patient received a dose of surfactant and was transferred to the NICU. Urgent X-ray abdomen showed areas of calcification. Abdominal ultrasound showed a cyst with coarse areas of calcification in the right iliac fossa. On day 2 of life baby had hematochezia with worsening abdominal distension. X-ray abdomen on day 5 of life showed a large calcified cyst in the central abdomen.

Final Diagnosis: Meconium pseudocyst.

Management/Outcome: Pediatric surgery was consulted. Exploratory laparotomy was performed and the infant was found to have a large meconium pseudocyst in the central abdomen with collapsed proximal and distal bowel loops. A copious amount of meconium was removed, pseudocyst was resected, and ileostomy was performed. Histopathological examination of resected cyst confirmed meconium calcified cyst. Mutation analysis was negative for cystic fibrosis. The patient was extubated on postoperative day five. Tube feeds were started with an initial course complicated by feeding intolerance. As the patient tolerated feeds, she was discharged at 35 weeks postmenstrual age.

Learning Objectives:

- Meconium pseudocyst formation is rare in meconium peritonitis. It should be considered as a differential diagnosis when an echogenic intra-abdominal cyst is seen.
- Prenatal appearance can be complemented by signs of bowel obstruction, like, polyhydramnios and fetal bowel dilation.
- More than 85% of cases of pseudocyst can be diagnosed as calcified cyst on X-ray. However, histopathology and per-operative findings help to differentiate the cystic form of meconium peritonitis from a pseudocyst. The pseudocyst consists of dilated thinned out intestine filled with meconium that has smooth muscle layer connecting the cyst to the normal intestine. In contrast, cystic-type meconium peritonitis has a fibrous wall.

Muscle Infarction- A Case of Diabetic Myonecrosis

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Diabetic muscle infarction (DMI) is a rare complication of diabetes mellitus, characterized by spontaneous ischemic necrosis of skeletal muscle. It most commonly affects patients with long-standing and poorly controlled diabetes. The majority of these patients have other microvascular complications of diabetes, including retinopathy, nephropathy, and/or neuropathy.

A 36-year-old male with hypertension and type 2 diabetes mellitus was evaluated for two weeks of progressively worsening left medial thigh pain and swelling. He was taking no anti-hypertensive or anti-hyperglycemic medications due to lack of health insurance.
On physical exam, his blood pressure was 155/101 mmHg and pulse rate was 107/min. The anteromedial aspect of his left thigh exhibited a focal area of erythema, edema, warmth, marked induration, and tenderness measuring approximately 5 cm x 6 cm; thigh circumference was 44.5 cm on the left and 39.4 cm on the right. Laboratory studies showed serum glucose 504 mg/dL, WBC 8.61 x 109/L, ESR 87 mm/hr, CRP 8.4 mg/dL, CK 1158 IU/L, and A1c 15.1%. MRI of the left femur/thigh revealed extensive myositis involving the left vastus intermedius and medialis.

The diagnosis of DMI was ultimately based on the presence of uncontrolled diabetes; absence of trauma or injection drug use; and physical exam, laboratory, and imaging findings. His treatment consisted of blood glucose control, physical therapy, NSAIDs for analgesia, and indefinite therapy with low-dose aspirin. Six weeks later, his symptoms had completely resolved.

Classically, patients with DMI present with abrupt onset of muscle pain and swelling that are not preceded by trauma. The physical exam findings are typical of inflammation. Laboratory findings are nonspecific and may be either consistent with inflammation or entirely normal. MRI is the most valuable diagnostic imaging technique. Diagnosis is based on the presence of characteristic clinical features and imaging findings, as well as the exclusion of other disorders.

Learning Objectives:

- The diagnosis of diabetic muscle infarction is based on the presence of characteristic clinical features and imaging findings, as well as the exclusion of other disorders.
- MRI is the most valuable diagnostic imaging technique. Muscle biopsy provides a definitive diagnosis but is rarely needed

The Curse of Life-Threatening Spontaneity

Disclosure: The authors did not report any financial relationships or conflicts of interest

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As with any origination of ideas meant to counteract the severity of the SARS-CoV-2 virus, so was the goal of the swift and vast production of vaccines made for public use in a short time frame. While vaccines, serving as critical strategies for the ongoing pandemic have always maintained a clinical effectiveness to severe disease and even death, that is not without rudimentary outliers.

A healthy, atraumatic 40-year-old male with no significant past medical history, presented with a 9-day history of a severe self-limiting headache with progression into the worst headache of his life associated with nuchal rigidity and posterior bilateral leg pain and tightness following the first dose vaccination with Pfizer (EL0142). Vital signs on admission included blood pressure 115/56 mmHg, pulse 67 beats per minute (bpm), respiratory rate 16 breaths per minute, temperature 37.2C and oxygen saturation 100% on room air. Initial CT Head and CTA Head and Neck were unrevealing for visible blood. Nonetheless heightened clinical suspicion prompted a lumbar puncture which showed xanthochromia with elevated red blood cell count at greater than 97,000. MRI Brain revealed evidence of focal areas of subarachnoid hemorrhage along right and left frontal convexities. Laboratory data was essentially non-contributory with a normal platelet count, pro time (PT), international normalized ratio (INR), activated partial thromboplastin time (aPTT), and C-reactive protein (CRP). Two diagnostic cerebral angiograms performed 1 week apart were unrevealing for any specific structural causes to explain the subarachnoid hemorrhages and repeat Transcranial Doppler Ultrasounds remained negative for intracranial vasospasms. The initial meningeal symptoms subsided after a short course of dexamethasone taper and the patient remained neurologically intact from initial presentation through hospital discharge 9 days later.

Our case depicts the need to portray amplified awareness given the clinical hallmark and presentation of subarachnoid hemorrhages (SAH), with the spontaneous subtype being extremely rare and difficult to disentangle, comprising less than 1% of all SAH (2). Workup to include various etiologies including Reversible Cerebral Vasoconstriction Syndrome, posterior reversible encephalopathy syndrome (PRES), CNS vasculitis, auto-immune meningitis, cerebral aneurysms, and arteriovenous malformations (3) need to be ruled-out before the possibility of vaccine complications can be considered. While the mechanism of action is still unknown, with no reported episodes of Covid-19 vaccine associated subarachnoid hemorrhages, the workup must begin. As such, SAH should be considered critical in order to avoid misdiagnosis in neurologically intact patients so as to ensure an exact therapeutic strategy with good prognosis.

Learning Objectives:

- Recognize the various unsought outcomes that can originate from a contemporary vaccine
- Distinguish the significance of misdiagnosis of subarachnoid hemorrhages (SAH)

The Genetics of Early Onset Familial Alzheimer's Disease - A Literature Review

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Introduction: Alzheimer's Disease (AD) is a chronic neurodegenerative disorder leading to various cognitive and psychiatric symptoms, associated with cerebral cortical atrophy, beta-amyloid plaque formation, and intraneuronal neurofibrillary tangles. It is the most common cause of dementia worldwide. Early-Onset Familial Alzheimer's Disease (EOFAD) is a subtype of AD with the onset of symptoms consistently occurring before 65 years, with usually more than one generation of a family being affected, with an autosomal dominant mode of inheritance. Usually mutations in the PSEN1, PSEN2, or APP genes are responsible for EOFAD diseases, however many cases have no identified genetic cause due to lack of testing.

Aims: The aim of the study is to summarize the various genes identified to be responsible for EOFAD. By providing a review of published studies of EOFAD, we can highlight the need for proper genetic testing and establish a base for further studies to build upon.
Methodology: A literature search was conducted via the PubMed and Google Scholar indexes. Studies which mentioned cases of EOFAD along with the genes identified to be responsible confirmed via genetic testing were included in the review.

Results: 20 publications were analyzed to identify the genetics and mechanism of EOFAD. In majority of cases, mutations in the PSEN1, PSEN2, and APP were found to be responsible for causing the disease. However, many genetically unexplained cases remain, caused by possible mutations in the TYROPB, NOTCH3, and SORL1 genes.

Conclusions: The majority of EOFAD cases are caused by variants in the PSEN1, PSEN2, and APP genes, however regular genetic testing can help in identification of further causes of the disease, with the further goal of assisting in proper counselling, management, and prevention.

Learning Objectives:

- Describe the different gene defects associated with EOFAD (Early Onset Familial Alzheimer's Disease).
- Identify possible pathways in which mutations exert their effect, and potentially use this knowledge for clinical identification of patients.

Bilateral Lower Extremity Deep Venous Thrombosis Secondary to Congenital Inferior Vena Cava Hypoplasia

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Introduction: Congenital malformations of the inferior vena cava are a known but rare cause of deep venous thrombosis (DVT). Usually presented in the mid-twenties with recurrent or bilateral DVTs. This is a case of bilateral DVT in a young male without any known inherited thrombophilia.

Case presentation: A 17-year-old Puerto Rican male with no known medical problems and a recent appendectomy presented to the Emergency Department with persistent fever and groin pain despite antibiotics. On exam, he was hemodynamically stable his bilateral lower extremities were mildly tender with 1+ pedal edema and reduced sensation. Labs were significant for anemia Hb 10 mg/dl, wbc 8 x 10 ^3 /mcL, plt 285 x 10 ^3 /mcL, INR 1.3, PTT 40 sec, fibrinogen 127 mg/dl rest unremarkable. He was diagnosed with bilateral lower extremity DVT via CT abdomen/pelvis which showed bilateral iliac, femoral vein thrombi, and congenital hypoplastic infrarenal IVC with azygos and hemi-azygos collateralization. He underwent thrombolysis with TPA via infusion catheters and was transitioned to heparin drip after completion.

Final diagnosis: Bilateral lower extremity deep venous thrombosis

Management: Life-long anticoagulation was initiated with Xarelto due to an increased propensity to form thrombi. The patient was also referred to Vascular surgery for IVC reconstruction.

Learning Objectives:

- Identify an unusual cause leading to bilateral lower extremity deep venous thrombosis in the young.
- Treat massive deep venous thrombosis for appropriate duration and choice of agent.

An Atypical to Silent Intracranial Granuloma

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Neurosarcoidosis is a chronic disease characterized by inflammation of the central nervous system, the leptomeninges and formation of granulomas.1 It causes destruction of myelin surrounding the axons reducing body function. It is present in only 7% of sarcoidosis cases.2

We are presenting a 60-year-old male with a past medical history of pulmonary sarcoidosis and granulomatous uveitis proven by biopsy, on chronic low-dose steroid which were started recently due to dyspnea on exertion. He presented to Emergency Department after a brief episode of expressive aphasia at home that resolved in 10 minutes. He presented to the hospital 24 hours later and denied fever, chills, headache, blurry vision, weakness, and focal neurological deficits. His physical exam, labs, CT of the brain, lumbar puncture were all unremarkable. Neurology was consulted and MRI was done which showed abnormal leptomeningeal enhancement and nodularity involving the right frontal region. A biopsy of the brain granuloma was pursued, and results showed small non caseating granulomas in right frontal dura (frozen section) and small leptomeningeal non caseating

granulomas in the right frontal arachnoid and brain tissue diagnostic of neurosarcoidosis. He was started on levetiracetam and dexamethasone. He remained asymptomatic during his course at the hospital till date.

The most frequent manifestation of neurosarcoidosis is facial nerve palsy, optic neuritis, neuroendocrine dysfunction, peripheral neuropathy and other myopathies.3 Most cases of neurosarcoidosis are rapidly progressive accounting for poor prognosis without treatment. Not many asymptomatic cases with atypical presentations have been documented. It is important to think about neurosarcoidosis in a patient with history of sarcoidosis, with even a brief episode of neurological symptoms. A full work up should be done so prompt treatment with steroids or imunomodulatory therapies can result in better prognosis.4

Learning Objectives:

- It is very important to think of Neurosarcoidosis with any kind of neurological symptoms even if it is very vague in presentation in a patient with history of symptomatic or asymptomatic sarcoidosis.
- Prompt treatment can result in better prognosis
- Treatment with low dose steroids for sarcoidosis can aggravate other forms of sarcoidosis such as neurosarcoidosis.

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An Eye-Opening Presentation of Syphilis

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Syphilis is a sexually transmitted disease caused by the spirochete Treponema pallidum subsp. pallidum. In 2015 the Center for Disease Control and Prevention (CDC) reported a 7.5 per 100,000 population of primary and secondary syphilis. In 2018, the cases of reported syphilis were the highest since 1991. The community with the highest risk of infection is men who have sex with men, which also has a higher incidence of human immunodeficiency virus (HIV) infection.
Ocular syphilis manifestations occur in about 0.6-2% of all patients at any stage of the disease. The recent increased prevalence of ocular syphilis is due to the HIV epidemic. Studies have shown that the most common presentations of ocular syphilis are posterior uveitis or panuveitis.

Case Presentation: A 43-year-old Caucasian male with a past medical history of non-insulin dependent diabetes mellitus presented to the emergency room from a psychiatric facility complaining of left eye pain, redness and

decreased vision for three weeks. The onset was gradual with progressively worsening and associated photophobia. The patient denied trauma or an inciting event, foreign body sensation, pain with eye movement, or colored halos. There was no history of fevers, sore throat, cough, genital or rectal lesions. He was homeless and living at a shelter facility. He has been sexually active for the past year with multiple partners, males and females. There was no recent travel history. The patient's physical exam was unremarkable except for his ocular exam. His visual acuity was 20/100 in the left eye, the left pupil had a sluggish reaction and the intra-ocular pressure was 21 mmHg. The left conjunctiva/sclera had diffuse injection and follicles; the cornea was hazy with punctate epithelial erosions and mild edema. The anterior chamber had few inferior keratotic precipitates, cells 1+, flares 3+ and the iris had flat posterior synechiae. The patient was diagnosed with anterior uveitis of the left eye. His HIV serology was negative on repeated examination one month apart. He had a positive syphilis screen with an RPR 1:128. Computerized tomography of the head showed posterior placoid chorioretinitis. On lumbar puncture the CSF had a lymphocytic pleocytosis and slightly elevated protein. VDRL on the cerebral spinal fluid was reactive.

Final Diagnosis: He was diagnosed with neurosyphilis and anterior uveitis.

Management/Outcome: He was treated with intravenous penicillin G 24 million units via continuous infusion for 14 days, with rapid improvement of the eye, see figure #3. At the completion of intravenous therapy, he was given benzathine penicillin g intramuscular weekly for three weeks. For the anterior uveitis the patient was prescribed atropine TID and pred-forte QID as per Ophthalmology recommendations.

Learning Objectives:

- Describe the stages of syphilis
- Know how to treat neurosyphilis
- Recognize anterior uveitis in a patient

Takotsubo Cardiomyopathy: A COVID-19 Complication

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Introduction: COVID-19 has been associated with pulmonary complications but does affect other organs such as the heart. Currently, COVID-19 can cause arrhythmias, heart failure (HF), acute coronary syndromes (ACS) and more. Takotsubo Cardiomyopathy (TSCM) is a cardiomyopathy precipitated by physical and/or emotional stress and can be an uncommon complication COVID-19.

Case Presentation: A 94-year-old female with PMHx of Anxiety Disorder presents to the ER complaining of respiratory distress. She tested positive for COVID-19 one week prior after developing generalized fatigue with an exposure to COVID-19. She was instructed to self-quarantine and monitor for worsening symptoms. One week later, she developed respiratory distress thus presenting to the ER. On physical exam, BP 196/93, HR 118, temperature 99.8°F, respirations 46 and oxygenating 96% with nonrebreather-mask. She appeared in distress, restless and encephalopathic. Cardiovascular exam showed a regular rhythm tachycardia without murmurs or JVD. Pulmonary exam displayed rales and rhonchi with accessory muscle use. Differential diagnosis included COVID-19, pulmonary embolism, HF, ACS, arrhythmia, and panic attack. Chest x-ray showed clear lungs, without pleural effusion or infiltrates. Initial EKG showed NSR without ST-changes. Peak troponin 0.188 (range 0.000-0.060). NT-proBNP 1,874.

Working diagnosis: Worsening COVID-19 pneumonia.

Management: She was placed on Bipap for oxygen support and monitored in the ICU. She continued being agitated and restless. Due to severe hypoxia on Bipap, her home PO medication, sertraline, was held. On day two, telemetry showed abrupt tachycardia. STAT EKG showed: rate 162 with ST-elevations in leads II, III, aVF & V5. Troponins of 4.237. STEMI alert called, and patient went for emergent cardiac catheterization. Cardiac catheterization demonstrated patent coronary vessels but showed apical hypokinesis and midventricular hypercontractility consistent with TSCM. No interventions done. The physical hypoxia from pneumonia combined with emotional stress from Anxiety disorder, sertraline being held and wearing Bipap triggered TSCM in this patient.

Learning Objectives:

- Describe Takotsubo Cardiomyopathy (TSCM) as a stress cardiomyopathy that presents as apical ballooning with midventricular hypercontractility that is precipitated by a physical and/or emotional stress.
- Recognize the physical stress COVID-19 places on the body and its role in causing hypoxia.
- Identify emotional stress such as agitation, restlessness and encephalopathy in COVID-19 patients as these can synergistically trigger TSCM in hypoxic patient.

Amlodipine Induced Gingival Hyperplasia: A Case Report and a Review of its Pathogenesis

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Gingival hyperplasia is considered an abnormal overgrowth of gingival tissues1. Gingival hyperplasia can be caused by a variety of factors such as inflammation, medication side effects, systemic diseases, or even neoplasms 2. The main classes of drugs typically associated with gingival hyperplasia include anticonvulsants (phenytoin), immunosuppressive agents (cyclosporine), and antihypertensive drugs. Amlodipine induced gingival hyperplasia is one of the rare side effects of dihydropyridine calcium channel blockers. Of the dihydropyridines, nifedipine has been most frequently associated with gingival hyperplasia3.

Case Presentation: In this paper, we present a 60-year-old male with hypertension, multiple sclerosis, and syphilis who presented to the clinic for management of his stage I hypertension. Patient had been consistent with a daily dose of Amlodipine 5 mg without significant side effects. During the clinic visit, the patient's amlodipine was increased from 5mg to 10mg. Most common adverse effects of amlodipine include peripheral edema, heart failure, pulmonary edema, hypotension, and more severely massive vasodilation with reflex tachycardia. However, this patient returned to the clinic with persistent and worsening gingival hyperplasia after increasing his dose of amlodipine. Physical examination of the patient revealed marked swelling of the gingiva with enlargement of interdental papilla.

Final/Working Diagnosis: Amlodipine Induced Gingival Hyperplasia

Management/Outcome: Three weeks following discontinuation of amlodipine, the patient had spontaneous regression of the gingiva with marked decrease in swelling. The rare incidence of gingival hyperplasia in the subset of patients using amlodipine has raised the question of its pathophysiology. Inflammatory and non-inflammatory mechanisms have been proposed on the pathogenesis of the amlodipine induced gingival hyperplasia. Amlodipine is thought to increase the interaction between gingival fibroblasts through inflammatory mediators such as IL1A, IL1B, IL5, and IL7, eventually leading to gingival hyperplasia. However, poor oral hygiene is also considered an important risk factor for the expression of amlodipine induced gingival hyperplasia. Using this unique case, we will review the interaction between amlodipine, gingival fibroblasts, and associated inflammatory mediators4.

Learning Objectives:

- Diagnose gingival hyperplasia induced by amlodipine.

Epiploic Appendagitis: A Rare Cause of Left Lower Abdominal Pain

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Introduction: Epiploic appendages are normal outpouchings of peritoneal fat on the antimesenteric surface of the colon, sitting on a vascular stalk. Acute torsion or thrombosis of the central vein of long appendages followed by ischaemia and infarction leads to acute lower abdomen. Epiploic appendagitis is a rare, benign and self-limiting disease. It is often misdiagnosed as diverticulitis or appendicitis due to overlapping clinical features, leading to unnecessary hospitalisations and unwarranted surgical intervention. An early diagnosis of epiploic appendagitis based on characteristic imaging features can expedite the diagnosis and avoid hospitalization.

Case Presentation: Here we present a case of epiploic appendagitis in a 61-year-old woman who presented with a worsening one-week history of left lower quadrant abdominal pain. An abdominal X-ray and urinalysis did not show any acute abnormality. A complete blood cell count ruled out leukocytosis. She was started on ciprofloxacin and metronidazole empirically for possible diverticulitis.

Final Diagnosis: Given the severity of the pain, CT scan of the abdomen was performed which was consistent with a diagnosis of epiploic appendagitis.

Management: The patient was treated successfully with oral antibiotics and non-steroidal anti-inflammatory agents. Patient recovered with conservative management over the next few days.

Discussion: Epiploic appendagitis should be in the list of differential diagnosis in patients presenting with acute or subacute abdominal pain. Typical findings on CT abdomen include: ‘ring sign’ which is hyperattenuating ovoid lesion from fat density and ‘central dot sign’ from mild bowel wall thickening and a central high attenuation focus within the fatty lesion. A high index of clinical suspicion is required for timely diagnosis of epiploic appendagitis in order to alert the radiologist to look for characteristic signs on imaging study. An early diagnosis can prevent surgical intervention and a high cure rate is achievable with conservative management.

Learning Objectives:

- Have a high suspicion of epiploic appendagitis in patients presenting with left lower quadrant abdominal pain for early diagnosis and treatment.
- Identify typical CT scan findings include a ring sign and central dot sign.
- Discuss epiploic appendagitis as a non-surgical cause of left lower quadrant abdominal pain.

Pregnancy Triggered Onset Diffuse Cutaneous Scleroderma

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Systemic sclerosis (SSc), is a rare autoimmune disease that causes vasculopathy and extensive fibrosis of the internal organs and skin. The disease can present in different forms. Diffuse cutaneous scleroderma (DcSSc) is the most aggressive type that has a relatively poor prognosis. It is characterized by progressive diffuse thickening of the skin, fibrosis of the lungs, heart, and kidneys.

A 40 year old Haitian female with a history of obesity, uncontrolled hypertension, presents with fever, shortness of breath, orthopnea, and productive cough with yellow sputum over the last two days. Patient is concerned about skin tightness that started shortly after the birth of her second child two years ago.

On admission to ED the patient was tachypneic (RR 42), tachycardic (HR 116), febrile (102.1F), normotensive (BP 136/82), and hypoxemic (O2 saturation 60's). On a physical exam, the patient was noted to have fine bibasilar crackles on auscultation. Diffuse thickening of the skin along with hyperpigmentation was noted on the areas proximal to elbows, knees, anterior trunk, and face. Assessment for scleroderma, pneumonia, and heart failure was initiated.

Significant laboratory findings included: WBC 15.63, Eosinophils 8.5, fibrinogen 700, ESR 100, CRP 14, LDH 428. Sputum culture was positive. Serology was positive for antibodies: ANA, RF, anti-DNA topoisomerase I (scl70), anti-dsDNA, and anti-U3-RNP (fibrillarin). Chest x-ray showed diffuse bilateral infiltrates, and enlarged cardiac silhouette. Pulmonolgy was consulted and they suspected pulmonary hypertension related to diastolic dysfunction which was confirmed on echocardiogram. High resolution CT revealed extensive ground glass opacities, diffused reticulations, and extensive traction bronchiectasis with areas of interlobular septal thickening.

The diagnostic criteria was met for usual interstitial pneumonia with idiopathic pulmonary fibrosis (ILD Rads 4). In light of these findings, diagnosis of diffuse cutaneous scleroderma was confirmed. Methylprednisolone was started. Patient was cleared for discharge with close outpatient follow-up.

Learning Objectives:

- Discuss diagnostic criteria of diffuse cutaneous scleroderma.
- Describe the most effective way in management of the disease.

Acute ST Elevation Myocardial Infarction with Left Bundle Branch Block: Beyond Sgarbossa and Smith Modified Sgarbossa Criteria

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Incidence of left bundle branch block (LBBB) and acute coronary syndrome (ACS) events are on the rise as the global aging population increases. LBBB frequently has a baseline ST segment elevation (STE) which makes ST segment elevation myocardial infarction (STEMI) challenging to interpret on an electrocardiogram (ECG). Sgarbossa criteria and Smith modified sgarbossa criteria are used to assist in ECG interpretation for diagnosis of STEMI in patients with a baseline LBBB rhythm. Here, we present a case of a 57-year-old male patient whose ECG showed a ST segment elevation that did not meet the Sgarbossa or Smith modified Sgarbossa criteria. However, the patient had elevated troponins and underwent coronary angiogram which revealed total occlusion of the distal left anterior descending artery (LAD).

Case Presentation: A 57-year-old male with a past medical history of coronary artery disease, ischemic congestive heart failure, hypertension, and hyperlipidemia presented to our emergency department (ED) with complaints of shortness of breath. Six years prior, the patient had an ACS event requiring percutaneous transluminal coronary angioplasty (PTCA) with stenting to mid-LAD and mid-left circumflex (LCX) artery. The patient developed ischemic cardiomyopathy with an ejection fraction of 15%, and follow-up echocardiogram in 2017 revealed normal ejection fraction of 55-60% and grade 1 diastolic dysfunction. The patient had poor follow-up and self-discontinued all medications except for Furosemide.

The patient presented with complaints of worsening shortness of breath and pleuritic left sided chest pain for two hours. The patient acknowledged progressive dyspnea, paroxysmal nocturnal dyspnea and orthopnea over one month. Initial vital signs in the ED showed elevated blood pressure 190/90 mm Hg, heart rate in 120s, and oxygen saturation of 89% on room air. The physical examination showed elevated jugular venous pressure of 10 cm and bilateral rales at the lung bases. Pertinent laboratory findings included a troponin I of 0.14 (normal <0.03) and B type natriuretic peptide of 1,180. Chest x-ray revealed cardiomegaly and small bilateral pleural effusions with some superimposed pulmonary edema. ECG revealed a rate of 120 beats per minute, a QRS duration of 155 milli seconds, 1–2-millimeter ST segment elevation in V2-V6. Transthoracic echocardiogram revealed an ejection fraction of 15%, severely hypokinetic anterior and lateral walls, and moderate to severely increased left ventricular cavity size. Diagnosis of Non-ST-Elevation Myocardial Infarction (NSTEMI) was made because the STE did not meet Sgarbossa or Smith modified sgarbossa criteria. The patient was given aspirin, clopidogrel, and statin; intravenous heparin was started as per the NSTEMI ACS protocol. Troponin I increased to 9.34 after two hours. The patient was urgently taken for coronary angiogram which revealed patent mid-LAD stent, 100% occlusion of distal LAD, patent mid-LCX stent. Further management was done with balloon angioplasty and stenting of distal LAD with 2.5 x 28 mm size Xience Skypint drug eluding stent (DES).

Final Diagnosis: Left bundle branch block frequently manifests with baseline ST segment and T-wave deviations due to abnormal depolarization followed by abnormal repolarization and do not necessarily indicate acute ischemia. It is considered an uncomplicated LBBB if secondary repolarization occurs in a direction opposite of the main QRS vector. If discordance is less than 5 mm, then it is also acceptable. Timely diagnosis of STEMI is important to decrease mortality and is assisted by Sgarbossa et al and Smith modified sgarbossa et al criteria. The first two rules of Sgarbossa are the same regarding concordant STE and ST depression of less than 1 mm in precordial leads V1-V3. The third Sgarbossa rule defines 5 mm disconcordant STE in precordial leads. Smith Modified Sgarbossa criteria replaces the third Sgarbossa rule with a ratio of STE to S wave of more than 0.25 in order to increase sensitivity (1), (2). A positive finding in either criteria is diagnostic of STEMI. Although both the criteria are highly specific (90-96%), the sensitivity is around 36% and 91% for Sgarbossa criteria and Smith Modified sgarbossa criteria respectively (3). This wide range of specificity can potentially cause a missed diagnosis of STEMI, as in our case. The serial elevation of troponin I level and regional wall motion abnormalities on echocardiogram prompted urgent coronary angiography in our patient. In order to increase sensitivity for diagnosis of STEMI, we recommend adding new criteria to the existing Sgarbossa and Modified Smith Criteria. These are evidence of significant troponin elevation, rise in STE on serial ECG, regional wall motion abnormality, and new onset of heart failure.

Learning Objectives:

- Diagnose and identify patients with STEMI using Sgarbossa and/or Smith Modified Sgarbossa Criteria
- Demonstrate competence in reading EKGs
- Identify; left bundle branch block, paced rhythm and left ventricular hypertrophy on EKG

RECURRENT PULMONARY HERNIA

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Introduction: When it comes to hernias, the last thing that comes to mind is the lungs. If they are, well, that becomes a case report! Like all hernias, pulmonary hernias occur when there is a weakness in the thoracic wall. They are exceedingly rare and can either be acquired or congenital. About 80% are acquired usually by significant injury to the chest. Other causes include spontaneous, pathologic, or iatrogenic. Here we present a case of acquired pulmonary hernia which is recurrent.

Case presentation: A 57 year old male with a history of hypertension, COPD, tobacco/substance abuse, presented with chest pain, cough, and hemoptysis. Three months prior, he had fallen off a 4 ft wall landing on his left side. He continued to have left chest wall pain, hemoptysis, and a sensation of protrusion in his chest when coughing prompting an ER visit. CT demonstrated extensive subcutaneous emphysema of the left lateral chest wall extending into the neck with pneumomediastinum and herniation of the left lower lobe laterally outside the chest wall. Subsequently, he underwent left thoracotomy with left lower lobe resection and repair of hernia.
After discharge the patient had increasing pain, progressive of shortness of breath, and increasing distention on his left chest wall with redness. Chest CT showed 13.6 x 3.2 cm fluid collection external to the left lateral ribs, possibly communicating with the pleural space. He underwent a second thoracotomy, which revealed disrupted

wires/sutures and recurrence of pulmonary hernia. He required reapproximation of his ribs, closure of muscles and fascia, and second repair of pulmonary hernia. Following the second repair, he has subsequently been doing well without recurrence.

Discussion: Risk factors include obesity, obstructive lung disease (elevated intrathoracic pressure) and conditions associated with poor healing. Of these, our patient had COPD only. Based on location, a pneumocele can either be cervical, intercostal or diaphragmatic. Most commonly occuring in the anterior inferior intercostal spaces as these have the least muscular reinforcement. Given our patient suffered a fall on the left side, he had a less common lateral intercostal hernia. Typical symptoms include cough, hemoptysis, and chest pain all of which he presented with. Most pulmonary hernias are asymptomatic and can be treated with observation. Cases with continued chest pain, increasing size, strangulation are indications for surgical repair.

Conclusion: Our patient had significant complications, subcutaneous emphysema and pneumomediastinum, associated with his large pulmonary hernia due to a defect in the pleura either during or after the trauma from continued coughing. During literature review we did not find cases where a pulmonary hernia was recurrent nor associated with such significant complications.

Learning Objectives:

- Have pulmonary hernai as one of the differentials for chest pain and cough.
- Know when surgical correction is required.
- To have in mind that one time fix isn't a permanent fix and that pulmonary hernias can recur.

An Atypical Presentation of HSV-2 Meningoencephalitis Complicated by Concurrent STIs in an Adolescent Female

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Encephalitis is a rare, but serious condition causing neurologic dysfunction due to inflammation of the brain parenchyma. There is a wide variety of infectious causes, one in particular is herpes simplex virus (HSV). The pathophysiology is due to direct invasion of the neurons in the CNS leading to cytotoxicity. In adolescents, encephalitis can present with fever, psychiatric changes, emotional lability, movement disorder, ataxia, seizures, lethargy, coma, or localized neurological changes. Our case is that of an adolescent female who presented with headaches and personality changes, and was found to have a diagnosis consistent with encephalitis.

Case Presentation: We present a case of a 16 year old female, with a history of MDD and distant history of seizures at 10 years old, no longer on medications, who presented with a 2 days of 7/10 throbbing, intermittent, migratory, right sided headaches. Upon arrival her headaches progressed to sharp, 10/10 pain on temporal/parietal right head, fever of 101F, and tachycardia of 107. Patient also stated she had phonophobia, but denied meningismus, numbness, nausea, vomiting or any other symptoms. Basic labs were drawn which showed no signs of infection. CT Brain without contrast was completed and showed no intracranial abnormality.

Given headache and history, neurology was consulted. On exam, the patient was neurologically appropriate. MRI brain without contrast was also within normal limits. She was diagnosed with occipital neuralgia and was started

on gabapentin. However, the patient continued with fevers and only had mild alleviation of pain. So we broadened our differential to include infectious causes as well. Physical exam was significant for tenderness to palpation on the right maxillary sinus and right photophobia.

The patient admitted that she was diagnosed with chlamydia, but was noncompliant with the treatment, so we consulted infectious disease who ordered a STD panel. GC/CT NAAT had resulted positive for continued chlamydia infection. We started the patient on ceftriaxone and doxycycline. RPR testing resulted positive of 1:16, with positive FTA Abs. At this time, headaches continued, and given her active syphilis infection, we were now concerned for neurosyphilis. ID recommended a lumbar puncture for CSF VDRL testing. HIV Ag/Ab testing resulted negative. Given new findings, ceftriaxone was discontinued. Gabapentin was continued for the treatment for herpetic neuralgia.

CSF VDRL was negative and the patient was started on PenG for latent syphilis infection. However, the meningoencephalitis panel confirmed HSV-2 encephalitis. She was started on IV acyclovir, and continued with hospital stay for IV acyclovir due to concerns for treatment compliance. She completed doxycycline, acyclovir, and bicillin treatments. Headaches resolved completely. Repeat LP was negative for HSV-2 encephalitis and VDRL again; repeat MRI was within normal limits. She was discharged home on further completion of treatment.

Diagnosis/Management/Outcome: This case illustrates the diagnosis and management of an uncommon presentation of HSV-2 encephalitis in an older pediatric patient. Many children with HSV encephalitis have long-term neurologic impairment, particularly those with delayed initiation of acyclovir. Diagnosis criteria includes having mental status changes, plus 3 of the following: fever, seizures, new focal neurologic deficits, CSF pleocytosis, or neuroimaging/EEG consistent with encephalitis. Although EEG and MRI were negative, we erred on the side of caution based on her unrelenting headaches, emotional lability, and personality changes. Due to having a poor history because of her social situation, we could not rule out a pathological cause for these findings, and chose to treat with a 21-day course of acyclovir. The patient did return to the hospital due to her social situation, and compared to her previous admission, there was a significant difference in her symptoms versus prior to being treated.

Learning Objectives:

- Stress the importance on taking a full and complete social history on adolescent patients.
- Understand the causes and symptoms of meningitis and encephalitis in the pediatric population.

A Rare Case of Reversible Cerebral Vasoconstriction Syndrome in a Patient with Systemic Sclerosis

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Reversible cerebral vasoconstriction syndrome (RCVS) is a rare disease and increasingly recognized. This syndrome is represented by recurrent severe thunderclap headache, with or without neurological symptoms, the typical brain image test will show reversible diffuse segmental vasoconstriction of the cerebral arteries. There

are some case reports of RCVS related to SLE and immunosuppressant therapy. But to our knowledge, there is very limited report of RCVS in systemic sclerosis patients. We report a case of RCVS in a systemic sclerosis patient with typical radiological change and good response to the treatment.

Case Presentation: A 44-year-old female, present in the hospital due to body aches, decreased appetite, Raynaud phenomenon, fingertip pain and ulcerations, facial and back rash, skin tightness, and skin depigmentation. Positive with anti-Scl-70 and ANA antibody. The patient was diagnosed with systemic sclerosis and was treated with steroids, mycophenolate mofetil, and hydroxychloroquine. During the treatment, the patient developed a severe thunderclap headache with left lower extremity weakness. The Head CTA showed multifocal long segment stenosis ranging from mild to moderate in severity involving the M2 segments of the right MCA. The differential diagnosis including migraine-related to scleroderma, vasculitis, and RCVS.

Final/Working Diagnosis: The brain angiogram showed diffused mild and modest smooth stenoses in the cerebral arteries, the stenoses responded to intra-arterial calcium channel blocker and consistent with findings of reversible cerebral vasoconstriction syndrome.

Management/Outcome/and or Follow-up: Consider patient ‘s headache and lower extremity weakness is due to RCVS. Gave patient nimodipine 60mg QD, patient’s headache resolved, left lower extremity weakness improving. The patient was discharged with nimodipine, follow-up outpatient. Until now, the patient’s headache is under controlled, no recurrent.

Learning Objectives:

- With a typical thunderclap headache patient, it is necessary to consider RCVS as a differential diagnosis from systemic sclerosis-related migraine and vasculitis.
- The clinical presentation of RCVS is recurrent sudden, severe thunderclap headaches. The patient can be with or without focal neurologic deficits. The diagnosis of RCVS is based on the recurrent thunderclap headache and typical brain imaging findings which is reversible multifocal segmental narrowing of the cerebral arteries.

A Rare Cause of Secondary Hypertension in a Young Female

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Introduction: Secondary hypertension accounts for 30% of hypertension diagnoses in patients aged 18-40 years old. Typically initial differential for suspected secondary hypertension includes renal artery stenosis, thyroid dysfunction, hyperaldosteronism, cushing syndrome, and obstructive sleep apnea. Androgen and Renin- secreting tumors are a rare cause of HTN

Case Presentation: A young female diagnosed with hypertension at18 years of age was started on a clonidine patch by her PCP. At 21years she presented with right lower abdominal pain. She was on oral birth control and had a HTN family history. Exam showed obesity, hirsutism and acanthosis nigricans. Imaging revealed a left ovarian neoplasm. Total testosterone and estrogen were markedly elevated at 638 ng/dL and 4168 pg/mL

respectively. Her blood pressure (BP) was found to be 177/101mmHg. She underwent laparoscopic removal of the left adnexa; pathollogy was consistent with ovarian steroid cell tumor.
At 8 weeks postoperatively visit her BP was 136/85mmHg. Her clonidine patch was discontinued and hydrochlorothiazide was started. Her BP fluctuated between 135-170 systolic over the next 5 weeks. Approximately 4 months postop her BP was 127/76. Total testosterone and estrogen then were normal. Hydrochlorothiazide was stopped. Repeat BP checks thereafter were within normal limits.

Final/Working Diagnosis: Secondary Hypertension due to ovarian steroid cell tumor was confirmed with pathology.

Management/Follow-up: Throughout the early course of her disease, her hypertension was managed as primary hypertension.

The present case shows an abnormal, indolent presentation of a rare ovarian cancer. Ovarian steroid cell tumors often present with hirsutism, abdominal pain, distension, and menstrual irregularities, not commonly hypertension. Our patient returned to clinic in 5 weeks where blood pressure had normalized consistent with secondary hypertension. Hypertension resistant to initial treatment with antihypertensives in the presence of signs of hyperandrogenism can prompt testing of estrogen and testosterone levels for earlier diagnosis of this rare disease.

Learning Objectives:

- Describe an uncommon presentation of hypertension (HTN) in a young woman
- Discuss the workup of early onset of hypertension
- Discuss the clinical manifestations of ovarian steroid cell tumor

Cerebral Venous Thrombosis in a Patient with Adenovirus

Disclosure: The authors did not report any financial relationships or conflicts of interest
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A 20-year-old African American male with history of obesity presented to the ED with a gradual onset, constant left temporal headache that started three days earlier while at work. The headache was described as pounding in nature and was associated with blurry vision, nausea and one episode of non-bloody emesis. He tried ibuprofen 400 mg BID with minimal relief. He denied fever, chills, vision loss, cough, dyspnea, chest pain, abdominal pain, joint pain or swelling, changes in bowel or bladder habits, weakness, sensory deficits, speech problems or confusion. He denied recent vaccination including the COVID vaccine. He denied recent illnesses, travel or trauma. In the ED, BP = 150/98 mm Hg, pulse = 84 bpm and BMI = 41.69 kg/m2. Neurologic exam was normal. Fundoscopic eye exam was not performed. CMP was within normal limits. No imaging was ordered. He was treated with IV Ketorolac, Metoclopramide, Diphenhydramine, and Dexamethasone. The headache resolved and the patient was discharged home with outpatient neurology follow up in stable condition. His headache returned 48 hours later and gradually worsened in intensity throughout the day. He returned to the ED for further

evaluation. Significant labs included: WBC = 13.60 and respiratory PCR was positive for Adenovirus. CT of the head showed increased density in the left transverse sinus. CT venogram and MRI brain confirmed a dural venous sinus thrombosis in the left transverse and sigmoid sinuses. He had a negative hypercoagulable workup. There was no family history of hypercoagulability or malignancy. He was started on a heparin drip and transitioned to coumadin with outpatient follow up. Given the patient's negative hypercoagulable workup and absence of significant family history or inherited risk factors, we believe the patient had an acquired Adenovirus-induced cerebral vein thrombosis, activating platelets and inducing platelet-leukocyte aggregate formation.

Learning Objectives:

- Identify viral infection as a risk factor for cerebral venous thrombosis in patients without other predisposing risk factors.
- Recognize the importance of urgent neuroimaging in the setting of worsening headache.
- Recognize the importance of a comprehensive physical exam given the highly variable clinical presentation of cerebral venous thrombosis.

Severe Hypokalemia Presenting As Guillian-Barre Syndrome In A Middle-Aged Caucasian Male

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Introduction: Acute neurological paralysis is a common cause of neurological emergencies seen in the emergency room in the United States with Guillian-Barre syndrome (GBS) by far the most common cause. GBS presents as an acute or chronic ascending muscle weakness which is flaccid in nature with areflexia and hypotonia. Other differentials include Periodic hypokalemia paralysis from hypothyroidism or hyperthyroidism or hypomagnesimea. Severe hypokalemia can also present as an acute neurological paralysis with life threatening neurological manifestations like GBS leading to a dilemma of diagnosis for Physicians in the acute setting.

Case Presentation: This is a case of a 41 year-old male who was transferred from a neighboring hospital following a 3-day history of worsening ascending like paralysis with potential respiratory compromise. A CT of the head without contrast was negative but his lab work showed K 1.2 mmol/L with other labs normal. He was given IV KCL but was unstable warranting immediate transfer with concerns for GBS. His wife stated that the patient has had recurrent episodes of nausea, vomiting and diarrhea for over 3 weeks after being diagnosed with COVID-19 pneumonia.

Diagnosis and Treatment: He was admitted to the ICU intubated for airway protection with GBS and a differential of Acute Hypokalemic Paralysis (AHP) with IVIG and aggressive potassium replacement initiated. The patient regained full strength within 24hours with potassium replacement and GBS ruled out at that point. He was further worked up to establish the cause of his severe hypokalemia.

Discussion: This case attempts to further highlight the importance of offering holistic care to all our patients based on evidence-based medicine. The patient response to treatment was more in keeping with AHP than with GBS. GBS resolution tends to take week to months compared to AHP which occurs mostly in days.

Learning Objectives:

- Manage Acute hypokalemic paralysis with aggressive IV potassium with resolutin of symptoms within hours to days
- Identify the cause of hypokalemia in such patients and treat which requires extensive workup to treat the cause
- A good list of differentials with a proper history and examination will always have a place in evidence based medicine and holistic patient care

Rare Presentation of Acute Hepatitis A, Acute Hepatitis B with Chronic Hepatitis C Causing Acute Liver Failure

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: Viral Hepatitis is one of the most common causes of acute liver failure, and any Viral Hepatitis from A-E can be the cause except Hepatitis C that has a more chronic course. In this instance however our patient had co-existing Acute Hepatitis A and Acute Hepatitis B /Reactivation of Hepatitis B with Chronic Hepatitis

Case presentation: A 48 y/o Caucasian man with background alcoholic liver cirrhosis and opioid dependence disorder presented with generalized abdominal pain, and jaundice of 3 days,associated with dark colored urine. PMH was significant for covid –19 pneumonia 7 weeks prior to presentation for which he had a short course of steroids. Patient had a past history of IV drug abuse but denied recent usage

On presentation vitals were stable On Examination, He was alert, oriented in time, place and person with generalized jaundice but no stigmata of chronic liver disease. Abdomen was vaguely distended but with no focal signs

Labs significant for AST/ALT 1720/1086 with a total bilirubin of 17.4, INR was 1.4. Serology positive for anti HAV IgM, HbSAg , Anti HBC IgM, HBeAntigen ,anti HCV antibody, HCV RNA. Hepatitis D however was negative

Abdominal Ultrasound showed trace ascites. CT abdomen showed cirrhosis with hepatosplenomegaly

Patient was admitted for GI review and had supportive treatment, following which he progressively worsened and developed acute liver failure with sudden altered mental status requiring sedation and INR of 1.6, he received lactulose and Rifaximin and was subsequently discharged.

Discussion: There have been multiple reports of Co-existing Hepatitis B and C in immunosuppressed individuals, IV drug abusers. However, we are presenting this individual who had Acute Hepatitis A, Acute Hepatitis B or possible reactivation of Hepatitis B with Chronic Hepatitis C with a background of alcohol liver cirrhosis resulting in Acute liver failure.

Multiple studies have shown increased risk of acute live failure with co-infection, or even superinfection without background liver disease, making it even an increased risk of Acute liver failure in this patient with multiple viral hepatitidis with background cirrhosis.

Given the difficulty with delineating whether the hepatitis B infection was acute or a reactivation of latent Hepatitis B with the remote use of a short course of steroids during his prior Covid-19 infection, it is unclear whether the use of oral Hep b antiviral medication would have been of any benefit.

This multiple co-infection scenario with Hepatitis A, B and C is quite rare and portends a grave prognosis

Learning Objectives:

- Diagnose acute Hepatitis B as well as reactivation of latent Hepatitis B
- Identify worse prognosis and outcomes in individuals with multiple hepatitis

Covid Antigen Crossreactivity and False Positives in Septic Shock

Disclosure: The authors did not report any financial relationships or conflicts of interest
Click for Supplemental Video

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Inpatient and emergent screening for COVID -19 is evolving and includes rapid antigen and PCR testing. However concerns that cross-reactivity of the COVID antigen test with other innate proteins raises doubt over the utility and reliability of this screening test.

We present a 52 year old male with a background of rheumatoid arthritis, seizure disorder, chronic nicotine dependence and peptic ulcer disease who was transferred with septic shock for ICU admission. He describes a two day history of pain in both upper limbs starting on the left and then moving to his right arm. He denied any trauma, any sick contacts, any infective symptoms barring a one day history of nasal congestion. He had not been vaccinated for the COVID-19 virus. He lives alone, is an active smoker who admits to occasional use of marijuana.

On examination he had prominent pain over the left elbow with swelling seen over both wrist joints as well as bilateral plantar wounds. He had overlapping toes with bilateral lung infiltrates and multiple arthritic changes seen on plain radiograph. His chest CT also suggested subpleural emphysema which could be related to underlying arthritis. On admission he had two positive antigen tests but was RNA PCR negative. Subsequently an isothermal PCR which was also negative. He received two days of systemic steroid and tocilizumab for COVID. He was found to have septic arthritis of multiple joints and was taken for drainage of these joints along with debridement of the foot. Multiple sites grew Streptococcus C with MRSA detected in the foot wound. He continues with antibiotic therapy but has had no respiratory compromise.

Those who suffer with autoimmune disorders exhibit increased frequency of false positive COVID-19 antigen testing. Careful screening of this patient populations should be encouraged.

Learning Objectives:

- Appreciate that the COVID antigen screen can have cross-reactivity especially in septic patients which can confound management
- Consider the role and interpretation of COVID PCR testing in those with suspected falsely positive COVID antigen tests
- Understand the positive predictive value, sensitivity and specificity of Covid antigen and PCR testing

Disseminated Histoplasmosis associated Hemophagocytic Lymphohistiocytosis (HLH) in an Immunosuppressed Patient

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: HLH is a life-threatening rare disorder which is triggered by infection and alteration of immune-homeostasis in adults. Here we report a case of HLH occurring as complication of disseminated histoplasmosis in a patient with sarcoidosis treated with Adalimumab and Methotrexate.

Case Presentation: A 62-year-old woman with h/o hypertension, diabetes-mellitus, chorioretinitis, recurrent uveitis secondary to sarcoidosis on Adalimumab, Methotrexate presented to ED with encephalopathy. On admission, patient's Labs were remarkable for sodium 130, AST 208, ALT 65, Ammonia 43, Albumin 2.2, WBC 4.7 with bandemia, HGB 10.6, and platelets 88K, CRP 207.8, ESR 62. CT head, chest x-ray, urinalysis, were unrevealing. CT abdomen showed splenomegaly, portal-lymphadenopathy. Treatment for multifactorial encephalopathy was initiated with IV fluids, Piperacillin/Tazobactam, Vancomycin. On 3rd-day patient had fever of 102F with pancytopenia. WBC decreased from 4.2-to-2.4, HGB 10.6-to-9.7, Platelets 88k-to-48k, D-dimer>5000, Fibrinogen 167, ferritin>1500, Triglyceride 218. Hepatitis-panel, HIV-panel, Blood cultures, Peripheral-smear, flow-cytometry, ANA, Rheumatoid-factor, influenza, COVID-19 were negative. Infectious Disease recommends antibiotic-changes from Piperacillin/Tazobactam to Cefepime due to neutropenia. Oncologist recommended a bone marrow biopsy for further evaluation of pancytopenia. On 5th-day urine histoplasmosis-Ag was positive.

Diagnosis: The patient was determined to meet 5 out of 8 criteria for HLH syndrome initially: 1)Fever, 2)Splenomegaly, 3)Cytopenia>2 cell-lines, 4)Hypertriglyceridemia or Hypofibrinogenemia(<150), 5)Hyperferritinemia(>500).

Management: Treatment with Itraconazole, IV Methylprednisolone 1gm/daily for 3-days was started on recommendation of rheumatologist. Treatment led to improve patient's mentation. Patient became afebrile and was transferred to tertiary-center for further treatment. Bone-marrow biopsy identified hemophagocytosis and yeast forms consistent with Histoplasma morphology. It also indicated 98% H-score on calculation confirming the diagnosis of disseminated histoplasmosis and HLH. Patient was treated with IV-liposomal Amphotericin-B for 4-weeks followed by oral Itraconazole.

Learning Objectives:

- Histoplasmosis associated HLH in adults is a rare but serious condition with poor prognosis. HLH diagnosis is made when 5 out of 8 diagnostic criteria are met:
    - Fever (peak temperature of > 38.5° C for > 7 days)
    - Splenomegaly (spleen palpable > 3 cm below costal margin)
    - Cytopenia involving > 2 cell lines (hemoglobin < 9 g/dL [90 g/L], absolute neutrophil count < 100/mcL [0.10 × 109/L], platelets < 100,000/mcL [100 × 109/L])
    - Hypertriglyceridemia (fasting triglycerides > 177 mg/dL [2.0 mmol/L] or > 3 standard deviations [SD] more than normal value for age) or hypofibrinogenemia (fibrinogen < 150 mg/dL [1.5 g/L] or > 3 SD less than normal value for age)
    - Hemophagocytosis (in biopsy samples of bone marrow, spleen, or lymph nodes)
    - Low or absent natural killer cell activity
    - Serum ferritin > 500 ng/mL (> 1123.5 pmol/Lng/mL)
    - Elevated soluble interleukin-2 (CD25) levels (>2400 U/mL or very high for age)

- Delay in diagnosis may adversely affect outcomes according to case studies worldwide. The treatment of HLH is most effective when underlying disease can be promptly treated and controlled. In this case early anti-fungal therapy with Liposomal Amphotericin B proved successful. Physician should better prepare for early diagnosis of HLH and start early treatment which can change patient's outcome especially immune compromised patient who is living in southwest Virginia where risk of Disseminated Histoplasmosis is low.

A Rare Case of Cutibacterium Prosthetic Valve Endocarditis

Disclosure: The authors did not report any financial relationships or conflicts of interest
Click for Supplemental Video

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Abstract

Background: Infective endocarditis is mainly caused by staphylococci and streptococci, but in the absence of positive blood cultures other less common bacterial bugs such as cutibacterium must be considered.

Methods: A 57 year old male with a past medical history of bovine aortic valve replacement and thoracic repair in 2016, HFpEF, HTN presented for worsening shortness of breath, fever, chills, and an unexplained twenty pound weight loss for the month prior to admission. Original TTE done on admission did not show any vegetations. Subsequent TEE performed later in the hospital course showed a "large, mobile vegetation on the aortic valve prosthesis that extended to the ascending aorta. Blood cultures were negative for common organisms of endocarditis and serology for bartonella/brucella/chlamydia species were also negative. 16s rRNA PCR performed was positive for DNA from cutibacterium.

Findings: About 80% of cases of infective endocarditis are from streptococci and staphylococci. Given that the patient had met Dukes criterion for infective endocarditis yet original blood cultures did not grow the common organism's other bugs were considered. Among the tests ordered was the 16s rRNA PCR which came back positive for cutibacterium. This type of bacterium which typically causes late-onset prosthetic valve infections has mainly been associated with aortic valves. In the most recent case series looking at cutibacterium endocarditis, it was

found to have a male predominance, thought to be due to men having more sebaceous glands and hair follicles than women.

Conclusions: This case report entails a rare type of infective endocarditis, which is a difficult one to diagnose. Given that the symptoms of Cutibacterium endocarditis are subtle due to the low virulence and slow growth our case highlights the utilization of the 16s rRNA PCR test especially in male patients with recent aortic prosthetic valve surgery in the past 4-5 years.

Case Presentation

Introduction: Infective endocarditis is a life-threatening bacterial infection that causes inflammation in the endocardium layer of the heart. It can affect both native and prosthetic heart valves. The most common bacterial bugs are S.aureus, coagulase-negative staph, streptococci, HACEK, candida species, and gram negative bacilli. The type of bacteria that infects the valve in hospital-acquired infective endocarditis is related to time after the valve was replaced and how it was replaced (TAVR or surgically replaced), with enterococcus more common in a TAVR. At least two sets of blood cultures should be positive with microorganisms common to endocarditis from different sites prior to the start of antibiotic therapy. In the setting of negative blood cultures with high suspicion for endocarditis, other organisms such as Bartonella and C.burnetti should be considered. In this case report, we will specifically look at cutibacterium. Typically, this is a gram-positive coccobacillus, which constitutes a part of the normal skin flora and mucosal surfaces. Although this bacterium is mainly associated with acne, there has been case reports showing that it is also associated with other pathologies, including osteomyelitis, endophthalmitis, and endocarditis. Our case explores the confirmatory diagnosis of this rare type of bacterial endocarditis, which is a difficult one that includes TEE, multiple blood cultures, and advanced PCR testing.

Case Report: We present the case of a 57-year-old male with a past medical history of bovine aortic valve replacement and thoracic aorta repair in 2016, HFpEF, diverticulosis, and HTN, who presented to the emergency room for hypotension and epigastric abdomen pain. The patient's main complaints were that he had been feeling nauseous and experiencing worsening shortness of breath for a month prior to admission. He also endorsed fever and chills that lasted 1 to 2 hours per day, unexplained twenty-pound weight loss, double vision, and lightheadedness. On physical exam, the patient was noted to have a new murmur best heard in the 2nd right intercostal space and poor dentition, but was otherwise unremarkable. Patient was found to have a BP of 105/58 with a WBC count of 19. Blood cultures were drawn. EKG was unremarkable. A TTE was done and showed normal parameters of heart function with mild mitral valve thickening and a normal appearing bovine aortic valve prosthesis. Due to his abdomen pain, GI was consulted and an abdomen MRI was ordered, which showed a new infarct in the spleen and kidneys. Subsequent MRI of the brain was negative. Following these new findings on imaging, the patient then underwent a TEE three days after his TTE, which showed a "large, mobile vegetation on the aortic valve prosthesis that extended into the ascending aorta." Patient was transferred to a different hospital to undergo a sternotomy and replacement of the aortic valve. During the next several weeks, the patient's original blood cultures and the ones drawn after transfer continued to be negative. The vegetation was also negative after testing for gram stain/culture, fungal and acid-fast organisms. The patient's blood was also sent out for serology and was negative for bartonella, brucella, chlamydia species, and C. Burnetti. One of the last tests ordered was a 16s rRNA PCR from the vegetation, which had been ordered one month after the patient originally presented to the hospital. The PCR results found DNA from cutibacterium (formerly known propionibacterium acnes).

Final/Working Diagnosis: In order to make the definitive diagnosis of infective endocarditis, the patient must meet either 2 major clinical criteria, 1 major and any 3 minor, or 5 minor clinical criteria outlined by the Duke criterion. The major criteria include: positive blood cultures from two separate sites for typical microorganisms of endocarditis, echocardiogram support, and new valvular regurgitation. The minor criteria include: predisposing heart condition or intravenous drug use, fever >38 C, vascular phenomena, immunologic phenomena, and positive blood cultures not meeting major criterion. In our case report, the patient had high suspicion for infective

endocarditis given the new murmur noted on physical examination and the patient's pre-existing heart condition requiring an aortic bovine valve replacement. Typically, the first diagnostic test that patients with suspicion for infective endocarditis undergo in the hospital setting is a TTE, although TEE is the imaging modality of choice as it has greater sensitivity. A TEE allows the valve to be more accurately assessed for fistula, abscess, or leaflet perforation. In the case of diagnosing cutibacterium endocarditis, additional confirmatory tests are necessary.

In general, cutibacterium prosthetic valve endocarditis affects 1-6% of patients with a cardiac valve prosthesis. Cutibacterium may cause infections of endovascular devices such as prosthetic valves, pacemakers, and defibrillators. Infection can be divided into local infection (pocket infection) and device-related bloodstream infections, including device-related endocarditis. Endocarditis caused by cutibacterium has been associated with both native and prosthetic valves but more often develops on valve prostheses, most commonly the aortic valve. Symptoms of endocarditis are often subtle due to the low virulence and slow growth of C. acnes. The mortality rate is 15 to 27 percent due to valvular and perivalvular destruction associated with delayed diagnosis of infection.

When looking at one case series of 15 cases of Cutibacterium endocarditis, 13 patients had a prosthetic valve. The mean onset of infection was four years following surgery as was similar in our case report.

Late-onset prosthetic valve infections due to Cutibacterium may be difficult to diagnose, as clinical manifestations may be limited to valve dysfunction with few symptoms suggestive of infection. Central nervous system emboli, congestive heart failure, cardiac abscess, and valve dehiscence may complicate such infections. Furthermore, histological examination of excised paravalvular tissues in such cases may demonstrate minimal evidence of acute inflammation. In our case report and many other prior cases reports the utilization of the 16S ribosomal RNA testing on tissue samples aided in the eventual diagnosis.

When looking at demographics of cutibacterium it has been shown to have a male predominance with 100% of cases reported in males in the most recent case series conducted to date. Although no definitive link has been found, it is thought that males have a higher predilection to cutibacterium endocarditis due to men having more sebaceous glands and hair follicles than women. In our case report, it was hypothesized that our patient had this bacterium introduced to their bloodstream 5 years ago during their aortic valve replacement from skin flora.

Management/Outcome: A recent clinical study done on fifty-one patients in Sweden who tested positive for Cutibacterium endocarditis showed promising results of the two definitive treatments for this condition. All patients in this study were given antibiotics. Nineteen of the fifty-one patients were treated conservatively solely with antibiotics. Of the nineteen treated solely with antibiotics, sixteen were declared cured by eradication of the microorganism, while three had relapses. The most frequently used combination of antibiotics in this study population was a beta-lactam and an aminoglycoside for a mean of forty-two days. The most frequently used beta-lactam in this study was benzyl-penicillin. The other definitive treatment of this rare type of endocarditis was cardiac surgery in combination with antibiotics. Of the fifty-one patients in this study, 63% of them underwent this treatment modality. The median time to surgery was five days after commencing antibiotic treatment. This treatment modality appeared to be superior to the use of antibiotics solely with a cure rate of 97%.

The mainstay of treatment of the patient presented in our case was the use of antibiotics. The patient received treatment with a beta-lactam (benzyl-penicillin) in combination with an aminoglycoside for a total of forty days with complete resolution of symptoms.

Learning Objectives:

- Recognition of less common microorganisms that cause endocarditis.
- Utilization of the 16s rRNA PCR test or the use of prolonged incubation of blood cultures for up to 14 days especially in the setting of male patients who had undergone prosthetic valve replacement surgery to aid in the diagnosis of Cutibacterium endocarditis.

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Category: Mental Health

Acute Psychosis Secondary to Tertiary Lyme

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Lyme disease is a multi-systemic disease caused by the spirochete Borrelia burgdorferi and other borrelia species, and if left untreated it has been associated with neuropsychiatric manifestations. The pathogenesis of Lyme Disease is related to B. burgdorferi surface glycolipids and flagella antibodies that appear to elicit anti-neuronal antibodies. When these proteins disseminate from the periphery, they cause inflammation of the brain, leading to neurodegenerative changes. (Bransfield, 2018) We report a unique case of a 24 year-old male presenting with acute psychosis. Several months ago, the patient was having grand mal seizures and black outs, leading to a medication change to Tegretol. After his medication change, the patient exhibited bizarre behavior stating he was going to kill his mother and was brought to the ED. When evaluated, he repeatedly stated, “I am innocent” and appeared paranoid. He had no past psychiatric history or family history of mental health conditions. Mental status exam showed mood instability, disorganized thought process, and bizarre behavior. After a thorough investigation of their past medical history, it was discovered he had a past medical history of Lyme disease, Babesiosis, Bartonella, and Q fever. Medical history suggests that this went undiagnosed for years and knowing this new information led the team to suspect a possible progression to a tertiary state of Lyme disease. Patient was admitted to the inpatient unit for 6 days and placed on dual antipsychotic treatment. He was successfully discharged with improvement in symptoms and advised to follow up at an outpatient facility where his antipsychotics would be tapered down. This report highlights the importance in considering infectious causes of psychosis and being cognizant of the long-term complications that these infections can inflict over time.

Learning Objectives:

- Elicit a more thorough history and consider infectious of psychiatric conditions

Role of B12 and its Metabolites in Depression and Suicidality: A Review

Disclosure: The authors did not report any financial relationships or conflicts of interest
Click for Supplemental Video

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Background/Knowledge Gap: Supplementation for vitamin deficiencies is an increasingly relevant consideration in major depressive disorder (MDD) treatment. While associations between MDD and B12 have been established, less is known about the specific criteria of depression (e.g., suicidality, anhedonia) in which vitamin B12 may play a role, which could aid in optimization of depression treatment.

Methods/Design: A literature search was conducted through querying the PubMed database for associations between depression and B12, folate, or homocysteine levels with the following criteria: ((depression) AND (B12)) OR ((depression) AND (folate)) OR ((depression) AND (homocysteine)). A more focused search was then carried out by focusing on suicidality, a specific depressive symptom, with the following criteria: ((suicide) AND (B12)) OR ((suicide) AND (folate)) OR ((suicide) AND (homocysteine)). Two independent reviewers determined eligibility of articles in each search.

Results/Findings: PubMed query with search criteria for associations between B12 and depression yielded 1415 total results. Results from relevant studies in this search generally supported an association between depression and B12, folate, or homocysteine levels, but no clear consensus on the roles of these metabolites in depression. Search criteria with suicidality yielded 80 total results, with only three studies evaluating the association between suicidality and B12 or its metabolites. Together, these studies suggested an association between suicidal ideation and low B12, folic acid, and fatty acid levels; an ambiguous association between high homocysteine levels and suicidal ideation; and an association between geriatric depression and low folate/B12 & high homocysteine levels, with commentary on higher levels of suicidal ideation in the depressed elderly population.

Conclusions/Implications: This review highlights the necessity of more focused research into the roles of metabolites such as B12, folate, and homocysteine in depression and, more specifically, suicidality. Elucidating an association between B12 metabolite levels and suicidality could reveal another tool for suicidal patients, with supplementation potentially providing an adjunct to antidepressants, improving symptoms, and/or reducing risk of future suicide attempts.

Learning Objectives:

- Describe nutritional deficiencies that have been identified in patients with depression
- Discuss the contribution of low folate and B12 levels on the severity of depressive symptoms

Category: Public Health & Environmental Medicine

Radical Treatment for Blastomycosis Following Failed Liposomal Amphotericin

Disclosure: The authors did not report any financial relationships or conflicts of interest
Click for Supplemental Video

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Introduction: Pulmonary blastomycosis is a respiratory disease that is caused by the fungus Blastomyces, most commonly through inhalation of the fungal spores. Infected individuals typically show symptoms 3 weeks to 3 months after inhalation of these spores. About 50% of the patients with pulmonary blastomycosis are asymptomatic. Individuals with severe blastomycosis are initially treated with intravenous antifungal therapy. Amphotericin B is the drug of choice for moderate to severe blastomycosis with long-term itraconazole maintenance therapy.

Case Presentation: We present the case of an immunocompetent young male who was diagnosed with chronic pulmonary Blastomyces dermatitidis and had poor clinical response to 10 days of liposomal Amphotericin B (L-AMB). Due to persistent hypoxia and hypoxemia patient was endotracheally intubated and extracorporeal membrane oxygenation (ECMO) was initiated. We decided to discontinue L-AmB, initiate continuous infusion of amphotericin B deoxycholate (AmB-d), and start a short course of corticosteroids which led to significant clinical improvement. He was taken off ECMO on day 9 and extubated on day 12 of AmB-d continuous infusion.

Final Outcome and Follow-up: Following decannulation from ECMO and extubation patient ultimately was transitioned from continuous infusion of amphotericin B deoxycholic to itraconazole. Patient has since been maintained on itraconazole as an outpatient and has had significant improvement in his imaging findings since discharge. Remained stable on room air.

Learning Objectives:

- This case demonstrates the importance of considering AmB-d continuous infusions in patients with severe blastomycosis who may have poor response to L-AmB in addition to the use of EMCO therapy.

Category: Quality Health Care, Patient Safety & Best Practices

Presumed Stroke Recrudescence Delays Diagnosis of Statin-Induced Myonecrosis

Disclosure: The authors did not report any financial relationships or conflicts of interest

Click for Supplemental Video

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Introduction: Statins are used for prevention of cardiovascular disease, and work by lowering serum cholesterol levels. These medications are generally well tolerated, but 0.1 percent of patient develop severe myonecrosis leading to rhabdomyolysis, which is the most severe form of statin-associated muscle symptoms (SAMS). Here, we present a case of a patient whose presentation was not recognized as SAMS, due to previous stroke, leading to a delay in proper management.

Case: A 56 year old female with past medical history of stroke two and a half years prior to admission. At that time, patient had presented with right sided ptosis and left sided weakness. She was started on aspirin 81 mg, and atorvastatin 80 mg, and discharged to a rehabilitation facility. Her left sided residual weakness returned nearly to baseline, and she was able to exercise regularly. However, two and a half years after the stroke, patient began experiencing increased fatigue that progressed to left leg weakness; this was initially presumed to be stroke recrudescence. Statin dose was decreased, but weakness progressed to include the right thigh and distal upper

extremities, spreading proximally. She tested negative for MG and ALS. Her CK was found to be 9,014, after which atorvastatin was discontinued, and she was admitted for IV hydration. For the next month, her CK ranged from 7,000-10,000, and she underwent muscle biopsy showing active myopathy. Testing was positive for ANA and HMGCR antibody, confirming SAMS; thus, she was started on a steroid taper and methotrexate.

Discussion: The general recommendation for suspected SAMS is to calculate a SAMS clinical index, which determines likelihood that muscle symptoms are due to statin use. In patients on statins with unexplained myalgias, it is crucial to completely stop the medication for at least two to four weeks even if a more likely diagnosis exists.

Learning Objectives:

- Statins must be discontinued for a trial period in any patient who develops muscle pain or weakness
- Clinicians should use the Statin Myalgia Clinical Index for timely recognition of statin induced myalgias, avoiding progression to rhabdomyolysis
- Maintain high clinical index of suspicion when using statins for secondary prevention, as myalgias can present as stroke recrudescence

Accuracy of Prostate Imaging Reporting and Data System Scores Among Varying Radiologists: A Retrospective Study

Disclosure: The authors did not report any financial relationships or conflicts of interest

Click for Supplemental Video

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Background/Knowledge Gap: Multiparametric magnetic resonance imaging (mpMRI) helps detect prostate cancer. Radiologists reading prostate mpMRI use the Prostate Imaging Reporting And Data System (PI-RADS) to estimate risk of malignancy. Though used by large expert centers and small individual medical centers alike, PI-RADS accuracy varies between radiologists, necessitating internal validation. We evaluated PI-RADS score accuracy between our large institution and external, private radiologists.

Methods/Design: Data was analyzed from an Institutional Review Board approved, prospectively maintained database of 96 patients who had undergone prostate biopsies using fusion technology from December 2018 to September 2020. Demographic, radiologic, and biopsy data were collected and reviewed. Statistics were performed using commercial software.

Results/Findings: Results from our institutional radiologists and private radiologists were compared. Across 96 patients total, our institution found 89 lesions and external radiologists found 81 lesions. No statistically significant differences in patient demographics were seen between groups. Patients had an average prostate-

specific antigen (PSA) of 8.23 ng/ml, PSA density of 0.187 ng/ml2, and MRI volume of 57.6 ml. The clinically significant cancer (grade group ≥2) detection rate was 15.79% for PI-RADS 3, 20.0% for PI-RADS 4, and 44.44% for PI-RADS 5 at our institution. The rate was 10.0% for PI-RADS 3, 16.67% for PI-RADS 4, and 33.33% for PI-RADS 5 for private radiologists. When comparing cancer detection rates per PI-RADS score between groups, no statistically significant differences were seen.

Conclusions/Implications: The PI-RADS scoring system is often subjective to individual radiologists. Even among patients with high PI-RADS scores, our large expert institution found relatively low clinically significant cancer rates. Private radiologists showed comparable PI-RADS readings. Though the potential benefit of PI-RADS scoring appears great, further teamwork between urologists and radiologists is needed to increase PI-RADS score accuracy.

Learning Objectives:

- Describe the diagnostic algorithm for detecting prostate cancer, including digital rectal exams, prostate-specific antigen levels, prostate biopsies, and multiparametric magnetic resonance imaging/PI-RADS scores.
- Discuss the accuracy and prognostic benefits of PI-RADS scores.

Improving Transition of Care from Pediatric to Adult Endocrinology for Adolescents with Diabetes

Disclosure: The authors did not report any financial relationships or conflicts of interest

Click for Supplemental Video

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Adolescence is a challenging time in a child’s life, and can be even more stressful for those with a chronic medical condition, such as diabetes. Diabetics have been shown to have worsening glycemic control as they enter adulthood. Contributing factors include increasing insulin resistance, insurance difficulties, escalation of risk-taking behaviors, and delay in transitioning from pediatric care to adult care for their diabetes. Data suggests that having a formalized process and beginning transition preparation in early adolescence leads to better transition outcomes. Our aim was to create a transition of care program for our patients with diabetes. The initial focus was to begin discussion of transition of care with patients and families in early adolescence. Further improvements have included assessing readiness to transition, designing a curriculum centered around adolescent-specific issues and how they relate to diabetes control, and forming connections with adult endocrinologists in the area to establish a seamless transition process. The effectiveness of the program will be evaluated by comparing patient and caregiver satisfaction before and after our clinic’s formal transition process is implemented. We hope that once this process is created, we will be able to share our experience with other divisions and primary care practices in our institution to improve transition to adult care for all patients.

Learning Objectives:

- Explain the challenges adolescents with Type 1 Diabetes face in transitioning from pediatric to adult care
- Describe the features of our transition program.

Diagnostic Utility of Abdominal Radiographies in the Pediatric Emergency Department

Disclosure: The authors did not report any financial relationships or conflicts of interest

Click for Supplemental Video

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Background: Abdominal radiographies (AR) are a common part of the radiologic evaluation in the pediatric emergency department (ED). AR have a low efficacy in making a definitive diagnosis, leading to overuse, increased resource utilization and length of stay in the pediatric ED. The objective of this study is to evaluate the utilization of the AR by measuring its diagnostic utility in predicting intra-abdominal pathology in the ED.

Methods: We conducted a retrospective, cross-sectional study of patients who visited a pediatric ED between January 1st, 2017 and December 31st, 2019. We included patients 0-18 years old with an abdominal radiography. The diagnostic testing accuracy of the AR was evaluated by analyzing the sensitivity, specificity, predictive values and likelihood ratio (LR). Comparisons among groups were calculated through Chi-square, or Fisher's Exact, as appropriate.

Results: A preliminary analysis of 310 (7.2%) visits were evaluated out of 4,288 identified cases. The top 3 chief complaints were abdominal pain (56.8%), vomiting (9%) and constipation (8%). An abnormal AR was found in 37% of cases. The prevalence of abnormal AR per chief complaint was 32%, 38% and 56%, respectively. There were 10% clinically significant diagnoses. The AR diagnostic testing accuracy showed 61% sensitivity, 65% specificity, 17% positive predictive value (PPV), 94% negative predictive value (NPV) and LR 8.2 (p=0.005).

Conclusions: The top three chief complaints that received an AR were abdominal pain, vomiting, and constipation. Although the prevalence of an abnormal AR those cases was moderate, its clinical significance is low. This study shows a low prevalence of intra-abdominal pathologic processes that can be identified by an AR. Despite having a good NPV, the data suggests that an AR is not a useful diagnostic tool in the pediatric ED due to its limited ability to rule in or rule out clinically significant diagnoses.

Learning Objectives:

- Describe the prevalence of abdominal radiography in the pediatric emergency department.
- Examine the appropriate use of abdominal radiography and identify overuse.

Staff Perceptions: Restraint Bed vs Chair, A QI Project for the Management of Behavioral Emergencies in the Psychiatric Inpatient Setting

Disclosure: The authors did not report any financial relationships or conflicts of interest

Click for Supplemental Video

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Background: Although reduction and potentially elimination of use of restraints in the management of psychiatric patients is ideal, it is important to also consider ways to improve the safety, effectiveness, and psychological sequelae of physical restraints given their continued necessity in certain situations. We compared data from use of the 4-point bed restraint (June 2018-June 2019) to use of the chair restraint (August 2019-August 2020) to determine what changes, if any, the new form of restraint brought about in the psychiatric unit. Curiously, we found that the number of events increased dramatically, from 10 during the year of 4-point restraints to 53 during the year when the chair was used instead. However, the average time spent in restraints decreased from 71.7 minutes in the bed to 47.1 minutes in the chair. The purpose of this Quality Improvement project was to explore these trends.

Methods: We surveyed staff who had been involved with behavioral emergencies, evaluating their experiences with restraint types as well as their perceptions of ease of use, efficacy, utility, patient safety, and staff safety.

Results: Staff perceive that the use of the chair on our adolescent ward is useful, safe, and preferable to use of bed restraints. Experience with the chair restraint is correlated with a more favorable view. Staff expressed mixed (but overall positive) feelings over the potential for chair use in adult populations.

Conclusions: Results suggest that variables such as safety, humaneness, ease of communication, and usefulness may be at play. Success using the chair on the adolescent unit with favorable perceptions by those who have experience with it suggest that a trial of the restraint chair in the adult population would be seen as useful and might increase staff perception of its utility. Mitigation strategies may help decrease number of restraint events in the future.

Learning Objectives:

- Discuss benefits and drawbacks of restraint practices for behavioral emergencies on the inpatient psychiatric unit
- Identify routes for improved outcomes

Improving Behavioral Health Diagnosis, Treatment, and Follow-up in a General Pediatric Clinic

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Background: Anxiety disorders are the most common behavioral issue in Pediatrics and often occur along with other behavioral illnesses including depression and ADHD. Not recognizing and treating these concerns can lead to long-term consequences that will negatively affect the lives of patients. Studies show 4 out of 5 children with behavioral/mental health issues do not receive the help they need. The goal of this project was to improve diagnosis, treatment, and management of behavioral health disorders in the General Pediatrics Clinic setting by

October 2020 by improving resident comfort level with management, improving behavioral health follow-up, improving use of follow-up assessment tools, and improving referral to counseling.

Methods: Data collected from 24 months of visits with patients who have ADHD, anxiety, or depression through chart review with set questions from the Behavioral Health in Pediatrics section of TNAAP. Residents were given lectures regarding behavioral health concerns and given a pre- and post-learning survey that assessed their comfort level with diagnosing, treating, referring, and following up with patients who have ADHD, anxiety, and depression. A handout and workflow with templates in EMR were also created to facilitate resident comfort.

Results: Results were difficult to interpret due to the effect of COVID-19 pandemic on patient follow-up but did show an increase in follow-up with 33% increase in Routine Anxiety/ Depression follow-up, 36% increase in acute ADHD follow-up and 8% increase in Routine ADHD follow-up. Resident comfort level also improved.

Conclusions: While follow-up did improve, there is a need to increase use of screening tools, referrals to behavioral health services, and resident comfort level with management. To ensure continued improvement we added reminders to EMR templates to complete evaluation tools and inquire about behavioral health follow-up. We will also continue to educate residents with the goal of continued improvement in this area.

Learning Objectives:

- Discuss the most common behavioral health concern in children and commonly co-occurring illnesses.
- Describe appropriate follow-up for behavioral health concerns based on American Academy of Pediatrics guidelines.
- Implement a new strategy for diagnosis and management of behavioral health concerns in children.

Category: Surgery & Surgical Specialties

Anti-psychotic Use in TBI Management: A Descriptive Analysis

Category: Surgery & Surgery Subspecialties
Disclosure: The authors did not report any financial relationships or conflicts of interest
Click for Supplemental Video

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Background: While Traumatic Brain Injury (TBI) is a significant cause of morbidity and mortality, optimizing medical management remains in question. Recent data supports the use of anti-psychotics in the ICU for patients with TBI. Currently, there is a lack of a consistent standard in regard to the use of anti-psychotics in the

management of patients with TBI. This study is a descriptive analysis of the use of anti-psychotics in the management of patients with TBI in a TICU of a Level 1 trauma center in an urban setting.

Methods: This study consisted of a retrospective chart review of 1,256 patients with penetrating or blunt TBI from January 1, 2016 – June 30, 2018, admitted to a TICU at an urban Level 1 trauma center. Data was gathered on the dose of antipsychotic along with the total amount that each patient received. ISS and ICU LOS were also evaluated. Analysis of ISS, drug dosing, and ICU LOS was performed with ANOVA.

Results: A total of 1,256 patients were admitted to the TICU for TBI, with 161 (12.8%) of patients receiving anti-psychotic medication. Seventy-four patients received Haloperidol, 90 patients received Quetiapine, and 34 patients received Olanzapine. Mean ISS for anti-psychotic treatment was 18.6 +/- 9.6 and without was 15.9 +/- 10.3 (p=0.002). Mean mortality for patients with anti-psychotic treatment was 6.2% and without anti-psychotic was 14.8% (p=0.003).

Conclusion: Secondary insult prevention with medical interventions for patients with TBIs has not been fully described. Although this study shows a small minority of patients treated with anti-psychotics, it demonstrates a decreased mortality with use in management. Future studies are needed to clarify guidelines and the role of anti-psychotic medication in secondary insult prevention to optimize patient outcomes after admission to the TICU.

Learning Objectives:

- Examine and consider the use of antipsychotics in treatment of patients with traumatic brain injury in the ICU.
- Describe the role that antipsychotics play in preventing secondary brain injury following a primary traumatic brain injury.

A Surgical Approach to Persistent Orofacial Swelling: A Rare Case of Melkersson-Rosenthal Syndrome

Disclosure: The authors did not report any financial relationships or conflicts of interest

Click for Supplemental Video

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Introduction: This is a case of a patient who presented with a years-long history of upper lip swelling, which had previously been diagnosed as orofacial granulomatosis.

Case Presentation: A 71-year-old man with coronary artery disease and lagophthalmos of the left eye presented with a five-year history of progressive upper lip enlargement. Three years ago, he was diagnosed at an outside hospital with orofacial granulomatosis by punch biopsy. He later underwent liposuction of the abdomen and fat grafting to the lower lip in an attempt to restore symmetry to the mouth.

On presentation to our Plastic Surgery clinic, physical examination revealed dramatic enlargement of the upper lip with prominence of the vermillion border. Additionally, he was noted to have a fissured tongue. With these two features and his history of recurrent facial palsy in the setting of lagophthalmos, his presentation fit the clinical criteria of Melkersson-Rosenthal syndrome.

Final Diagnosis: The final diagnosis was Melkersson-Rosenthal syndrome, a rare neuro-mucocutaneous syndrome consisting of a clinical triad of orofacial swelling, relapsing facial palsy, and lingua plicata. All three of these features were seen in this patient.

Management/Outcome: Melkersson-Rosenthal syndrome often presents in two phases: an initial inflammatory phase, during which medical management is indicated, and a subsequent noninflammatory phase, at which time surgical intervention can be considered. Of note, this patient had previously been treated with intralesional corticosteroid injections and TNF-alpha inhibitors. Unfortunately, his lip enlargement continued despite medical management.

Surgical debulking of the upper lip was performed via the Conway method, in which a mucosal incision was made 1 cm dorsal to the vermillion border with resection of the affected mucosa and partial excision of the orbicularis oris. Two weeks postoperatively, the patient demonstrated significant reduction in upper lip volume as well as minimized vermillion show. Oral continence and labial sensation were preserved.

Learning Objectives:

- Recognize the characteristic findings of Melkersson-Rosenthal Syndrome as well as identify the need for surgical intervention in patients with orofacial swelling which has progressed to fibrosing lymphedema
- Implement a proper treatment strategy based on the two phases of the disease, with medical management indicated for the initial inflammatory phase, and surgical treatment indicated during the subsequent stable phase of the disease

An Adenoneuroendocrine Collision Tumor of the Pancreas: A Case Report

Disclosure: The authors did not report any financial relationships or conflicts of interest

Click for Supplemental Video

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Introduction: A collision tumor is a neoplastic mass made up of two or more distinct cell populations that maintain distinct borders. Specifically, a mixed adenoneuroendocrine carcinoma (MANEC) is where a tumor has at least 30% adenocarcinoma component and at least 30% neuroendocrine carcinoma component.1

Pancreatic adenocarcinoma (PDAC) is rare but one of the most common malignant pancreatic tumors, whereas neuroendocrine pancreatic tumors are extremely rare at 1-2%.2 The incidence of the two as a combined neoplasm ranges only from 0.06-0.20%.2

Case presentation: We present a 57-year-old female with past medical history of lung cancer, COPD, and familial neurofibromatosis who presented with two months of nausea, vomiting, and epigastric abdominal pain. Imaging and endoscopic evaluation revealed extrinsic compression on the third portion of her duodenum. Fine needle aspiration (FNA) biopsies were obtained and were concerning for malignancy. On examination, her blood pressure was 179/84 mmHg, heart rate was 68 bpm, respiratory rate was 18, oxygen saturation was 100%, and temperature was 98.7°F. There were numerous neurofibromas noted mainly on the back and trunk and a few café au lait spots. The abdomen was soft but mildly tender to palpation. The rest of the examination was unremarkable. Initial labs revealed a CO2 of 36 mmol/L (range 22-31 mmol/L), an anion gap of 4 mEq/L (range 8-16 mEq/L), a BUN of 4 mg/dL (range 10-25 mg/dL), a creatinine of 0.60 mg/dL (0.70 – 1.40 mg/dL), a phosphorus

level of 2.3 (range 2.6 – 4.9 mg/dL), and an ALT of 41 U/L (range <35 U/L). CA19-9 and CEA were both negative. All other lab values were within normal limits.

A CT chest abdomen & pelvis (CT CAP) was performed and showed a 4.2 x 2.8 cm focus of duodenal thickening and soft tissue prominence, concerning for duodenal neoplasm. The stomach appeared fluid-filled and dilated, suggesting a component of outlet obstruction. A 2.4 x 2.2 cm heterogeneously enhancing soft tissue nodule arising from the inferior aspect of the third portion of the duodenum was noted that may represent direct neoplastic extension versus an abnormal lymph node. Several enhancing nodular lesions involving the fourth portion of the duodenum and jejunum measuring up to 1.4 cm were also noted. A 3.7 x 2.8 cm right adrenal mass with pre-contrast attention of less than 10 was seen, consistent with an adrenal adenoma.
After ruling out a pheochromocytoma, the patient underwent an exploratory laparotomy, right adrenalectomy, pancreaticoduodenectomy, mesenteric nodal dissection, and portal nodal dissection. On final pathology, she was found to have a 4.7 cm pT3bN2M0R1 peri-ampullary combined poorly differentiated carcinoma and a well-differentiated grade 1 glandular neuroendocrine tumor (NET) with lymphovascular and perineural invasion. Three tumor deposits of poorly differentiated carcinoma involving the periduodenal/peripancreatic soft tissue were identified. The carcinoma and NET components stained positive for chromogranin, CK7, and CDX2. Low-grade pancreatic intraepithelial neoplasia (PanIN-1) was also noted. One mesenteric lymph node was found to be involved by metastatic combined poorly differentiated carcinoma and well-differentiated grade 1 NET. In addition, 7 foci (<1.7 cm) of gastrointestinal stromal tumors (GISTs) were found in the duodenum with a final pathologic stage of mpT1N1M0R1 and a mitotic rate of <1 mitosis per 5 mm2. The GIST stained positive for KIT (CD117) and CD34.

She tolerated the procedure and did well in the immediate post-operative period, apart from a grade A pancreatic fistula. The patient was then seen by oncology and was started on Gemcitabine and Capecitabine. Unfortunately, she developed metastatic disease at 8 months post operatively and was placed on hospice.

Final/working diagnosis: We present a rare case of an adenoneuroendocrine pancreatic collision tumor with incidental GIST in a patient with NF-1. The exact pathologic mechanism of collision tumors is unknown, but there are four main theories in the literature.3 One is neoplastic heterogenicity, where two different neoplastic cells occur in the same area by chance. Second is cancerization theory, in which areas that have recurrent damage or high rate of turnover will have increased chance of developing separate neoplasms. Third is the interaction theory, which suggests that one neoplasm produces changes that induce an environment conducive to a second independent neoplasm. Fourth is that there is neoplastic heterogenicity during the formation of a neoplastic cell that results in dedifferentiation.3

Imaging may reveal two separate components, heterogeneity, or abnormal accumulation in fluorodeoxyglucose-positron emission tomography (PET),9 but alone may not be sufficient to diagnose these tumors. Biopsies also cannot sample the entirety of the tumor.4 Thus, it is crucial to keep this differential in mind. Their presence significantly alters the biology of the tumor, and treatment is dependent on proper diagnosis. In the literature, collision tumors are most commonly found in the crania, lung, gastroesophageal junction, liver, rectum, bladder, and uterus, with the vast majority (96.2%) of tumors consisting of only two distinct components.5 MANECs are very rare, with only 0.23 cases per 1,000,000 individuals reported in 2000, and 1.16 cases per 1,000,000 individuals reported in 2016.6

Furthermore, collision tumors are not easy to morphologically distinguish from composite tumors, in which two types of tumors are in close proximity with actual histologic merging of the different tumor cells.7 In more recent studies, immunohistochemistry has been a method utilized to help distinguish between the two tumors,7 but the diagnosis is usually not obtained until after surgical resection.

Some studies recommend treating the more aggressive element, and thus the chemotherapeutic and radiation regimens are typically followed for PDAC in a collision tumor consisting of PDAC and a less aggressive tumor. However, due to a small number of reported cases, clinical behavior or MANECs of the pancreas is still unclear and a standardized treatment protocol has not been established.

Management/Outcome/and or follow up: We report a rare case of a pancreatic collision tumor consisting of both pancreatic adenoneuroendocrine carcinoma and incidental GIST. Collision tumors and specifically MANECs of the pancreas are extremely rare and clinical behavior is unclear, and thus no standardized treatment exists. It is important to keep this differential in mind as preoperative diagnostics do not reliably identify these tumors, and treatment as well as prognosis may vary dependent on the tumor characteristics.

Learning Objectives:

- Differentiate between composite and collision tumors
- Discuss the four different theories for pathologic mechanism of collision tumors
- Diagnose, treat, and evaluate for collision tumors within their differential diagnoses

Preliminary Analysis of Computed Tomography versus Physical Exam in the Diagnosis of Peri-Anal Abscesses

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Background: Anal gland obstruction causes 90% of peri-anal abscesses, with only 10% attributed to other causes. The incidence of peri-anal abscesses is unknown, due to single-institution publications and variation in the setting that treatment is performed. A history and physical exam are sufficient for diagnosis of peri-anal abscess. We seek to examine if a CT scan changes management in those who present to the emergency department as a single institution.

Methods: This is a retrospective study with preliminary analysis of 20 random patients of a larger cohort diagnosed with a peri-anal abscess. Outcomes include length of stay, CT performed, time from patient presentation to when CT was performed, and if the CT scan was completed prior to surgical consult. A univariate analysis, and Student's T-test, and chi-square test were performed using Social Sciences (SPSS) version 21.0 (SPSS Inc, Chicago, IL). Data reported as n (%) and median (IQR).

Results: Chart review of 20 random patients demonstrated ten diagnosed in the ED and ten patients diagnosed during hospital admission. We found no statistically significant differences in age 43 years (30-50) vs 41 years (41-46), (p=0.94), gender with 90% being male (p=0.26), ethnicity include a majority of 70% Latino (p=0.17), CT scan being performed 16 of 20 (0.26), time elapsed from patient presentation to CT scan ordered include 12 hours (3-

20), 2 hours (1-3), p=0.087, and if the CT scan was ordered before the surgical consult include a 9 out of 20 (0.653).

Conclusion: CT scan prior to a surgical evaluation in the diagnosis of a peri-anal abscess is not a responsible practice. Cost, resources, and radiation exposure must be considered. Many patients who received CT imaging still required a surgical consult. More research determining the indication of a CT scan in the diagnosis of peri-anal abscess is warranted.

Learning Objectives:

- Describe how perianal abscesses are diagnosed

A Case of Central Alveolar Hypoventilation Secondary to Traumatic Brain Injury that Improved After Treatment with Ondansetron

Disclosure: The authors did not report any financial relationships or conflicts of interest

Click for Supplemental Video

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Introduction: Approximately 1.5 million Americans sustain a traumatic brain injury (TBI) every year. TBIs comprise a large portion of surgical critical care patients, who often require mechanical ventilation. Central alveolar hypoventilation (CAH), a serious complication caused by disruption of neuromodulatory respiratory brainstem control and neural signal initiation and integration, may lead to difficulty weaning patients from ventilators and subsequent prolonged ventilation. Ondansetron, a selective 5-HT3 receptor antagonist, has been shown in mouse studies to prevent apnea by blocking inhibitory afferent signals from the vagus nerve to the ventral respiratory group. Here, we describe a patient with TBI who developed CAH and ultimately improved after treatment with Ondansetron.

Case presentation: A 26-year-old female with a past medical history of motor vehicle accident six months prior resulting in TBI and seizures, presented to our trauma bay following a subsequent motor vehicle accident involving a semi-truck. In the trauma bay, the patient exhibited agonal breathing with a GCS of 8. She was intubated for airway protection and underwent 3 surgeries to manage injuries sustained. During the recuperative phase, the patient developed ventilator dyssynchrony and difficulty weaning off mechanical ventilation.

Final/working diagnosis: The patient was diagnosed with CAH secondary to TBI and subsequent prolonged ventilator course and difficulty weaning from mechanical ventilation.

Management/Outcome/Follow-up: On hospital day 13, the patient was started on 4 mg of Ondansetron intravenously every 6 hours for ventilator dyssynchrony. After 3 days of treatment with Ondansetron, the patient was weaned from the ventilator and transitioned to Aerotrach without respiratory distress. Ondansetron was discontinued on discharge, and on follow-up 120 days after discharge, the patient no longer required

tracheostomy or any other form of ventilatory support. Our case shows the promise of Ondansetron in preventing a prolonged ventilatory course in CAH caused by TBI. Further research is required to assess the benefit of treatment with Ondansetron in such cases.

Learning Objectives:

- Define central alveolar hypoventilation and its pathophysiology
- Describe a possible mechanism by which Ondansetron improves central respiratory control

An Online Investigation of Lay Resources Available to Female Medical Students Interested in Orthopaedic Surgery

Disclosure: The authors did not report any financial relationships or conflicts of interest

Click for Supplemental Video

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Background: There is currently limited data on where female medical students obtain information on male-dominated surgical specialties, including orthopaedics. Women currently comprise 14% of orthopaedic residents and 7% of practicing orthopaedic surgeons. Online resources may shape students' perceptions of specialty-specific culture. This study assessed the content and type of online resources related to women in orthopaedics currently available to female medical students.

Methods: An online search was conducted through Google and Yahoo between January-March 2019. Sources were included if they were on the first three pages of each database and excluded if they were an advertisement, repeated result, or scientific journal article. Authorship, content, and resource type were all evaluated.

Results: 34 unique websites on Google and Yahoo related to women in orthopaedics were identified. Resources included blogs (8, 23.5%), forums (4, 11.7%), orthopaedic society articles (3, 8.8%), orthopaedic group websites (2, 5.9%), medical school websites (10, 29.4%), news articles (8, 23.5%), outreach programs (1, 2.9%), and a dissertation (1, 2.9%). Five core themes were identified: representation and mentorship, lifestyle, physical strength, stereotypical orthopaedic culture, and gender bias. Nearly all resources (32, 94.1%) discussed female representation and mentorship.

Conclusion: Methods to increase female representation, lifestyle, and strength were discussed by the majority of resources identified in this study, similar to many key themes identified in the scientific literature. In an effort to increase diversity, orthopaedic residency programs, practices, and societies should consider expanding their online information related to women, especially regarding female representation and mentorship.

Learning Objectives:

- Understand what online lay resources are available to female medical students interested in male-dominated specialties.
- Characterize lay resources related to women in orthopaedics that are currently online and available to female medical students.

Pediatric Acetabulum Fracture in a 14 Year Old Male Following a Football Related Injury: A Case Report

Disclosure: The authors did not report any financial relationships or conflicts of interest
Click for Supplemental Video

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Introduction: Pediatric acetabular fractures constitute only about 1%-15% of pelvic fractures in children. The mechanism of these fractures is usually derived from a force transmitted through the femoral head with a specific leg and pelvis position; acetabular fractures are a result of high energy trauma whereas triradiate cartilage trauma is due to direct injury. They are often associated with hip dislocations and are more often transverse than longitudinal involving both columns. Historically these fractures have been treated non-operatively however, many think the role of surgical treatment is expanding. The main goal in treatment is to achieve absolute anatomical reduction with a congruent joint.

Case Presentation: A 14 year old male with no past medical history presented as a transfer from another medical facility after being diagnosed with left acetabular fracture. Patient describes the pain as a 10/10 and was unable to walk or stand. A pelvic X-ray and CT scan showed a left acetabular fracture that involved the anterior and posterior column with mild to moderate displacement and nondisplaced fracture of the left inferior pubic ramus.

Final Diagnosis: Pediatric Acetabular Fracture

Management/Outcome: During surgery a Kocher-Langenbech approach was used. The posterior column was exposed in a subperiosteal plane and a transphyseal fracture was identified. Reduction of the fracture site was achieved and definitive fixation was achieved with the use of a contoured Stryker 6 hole 3.5mm Stryker acetabular plate placed on the posterior column with 5 associated 3.5mm cortical screws. Post operative xrays showed anatomic alignment with inner fragmentary compression.

Learning Objectives:

- Discuss the benefits of operative vs non-operative management of pediatric acetabular fractures.
- Demonstrate a surgical approach to treating pediatric acetabular fractures.

Category: Women's & Children's Health

Choosing Mastectomy vs. Lumpectomy-with-Radiation: Experiences of Breast Cancer Survivors

Disclosure: The authors did not report any financial relationships or conflicts of interest
Click for Supplemental Video

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Background: Annually about 280,000 women are diagnosed with breast cancer (BC). Treatment options depend on age, comorbidities, tumor stage, grade, size, and other factors. Often, patients must decide between two surgical treatment options: mastectomy or lumpectomy-with-radiation. Since these treatments offer similar survival outcomes, the choice ultimately depends on the patient. However, most rely on inputs from doctor, family, friends, personal research, and other actions. We believe decision-making processes for future patients could be aided if experiences of prior BC survivors were known. This study's aim was to provide such information.

Methods: Feedback from prior BC survivors was obtained using a 20-question questionnaire distributed online to multiple BC support groups. It focused on issues relevant to choosing between the two surgical options including, post-surgical complications, breast reconstruction, chronic pain, BC reoccurrence, cosmetics, and surgery-choice satisfaction.

Results: Respondents (N=1205) had median age 49-years and BMI-26.5 Kg/m2 with 740 mastectomy patients (MP)and 465 lumpectomy-with-radiation patients (LP). Breast-reconstruction was 36.2% for MP and 13.5% for LP. Almost all (99.8%) LP had radiation side-effects; skin irritation and thickening and chest wall tenderness the most common. Among MP, 94.3% had ≥1 complication; loss-or-changes in nipple or breast sensation, uneven breasts, and breast swelling most common. Percentages of MP experiencing post-surgical pain ≥6 months (64.2%) was less than for LP (79.8%, $p<0.00001$), with 35.4% MP and 46.0% LP still in pain ($p=0.0002$). For 51.5% MP and 63.0% LP, cosmetic outcomes were satisfied or very satisfied while 16.1% MP and 7.5% LP were dissatisfied or very dissatisfied. Satisfaction of surgical treatment-choice was 84.7% for MP and 79.8% for LP.

Conclusion: There were significant differences between MP and LP responses. LP were more satisfied with cosmetic outcomes but reported skin thickening as a common radiation side-effect. Contrastingly, MP had less pain frequency. The composite data can aid future decision-choices.

Learning Objectives:

- Discuss breast cancer surgical treatment and its impact on the women undergoing those procedures
- Compare and contrast the difference between mastectomy vs. lumpectomy-with-radiation based on experiences of female breast cancer survivors
- Provide breast cancer patients with information to help them make a more informed and individualized choice on breast cancer surgery

The Collaborative of Pediatric American Indian Trainees (CoPAInT): Building a National Network for Trainees Interested in Native American Child Health

Disclosure: The authors did not report any financial relationships or conflicts of interest

Click for Supplemental Video

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Aims: CoPAInT exists to promote medical trainee engagement in advocacy and policy work centered on the health of American Indian/Alaska Native (AI/AN) children. This organization is the first of its kind designed specifically to meet the needs of medical students, residents, and fellows in pediatrics. Within pediatrics, AI/AN trainees and allies who are passionate about AI/AN child health lack a formal organization to connect and collaborate. CoPAInT has the potential to educate and provide mentorship opportunities to these trainees

Organizational History: CoPAInT was conceived in late 2019. The first collection of members formed in Winter 2020. A small meeting of the original membership convened in Spring 2020, with formal recruitment efforts beginning in June 2020. The first general membership meeting was in August 2020.

Current Membership: Currently, CoPAInT is composed of more than 100 members from across the United States, ranging from high school students to attending subspecialists. The group has hosted three quarterly meetings with guest speaks from across the country. The robust mailing list has shared more than 30 opportunities for trainees to collaborate, learn and connect with leaders in the field.

Current Projects: Organizational leaders are currently developing a mentorship program to connect members with attendings in areas of interest. In addition, coordinating mentorship opportunities for members with high school and college students. Additional aims include a needs assessment to determine areas of improvement in medical education, recruitment, and retention. These are all alongside efforts to improve recruitment and opportunities available for members.

Future Directions: As CoPAInT grows, we aspire to have broader national representation in diverse locations across the country. We aim to establish collaborative partnerships with other trainee groups that share our advocacy goals and mission. In addition, we look to generate scholarly works by our members and organization and promote advocacy efforts addressing pediatric health needs at the local and national level. We are also working to expand our online presence through website, and social media platforms.

Learning Objectives:

- CoPAInT exists to promote medical trainee engagement in advocacy and policy work centered on the health of American Indian/Alaska Native (AI/AN) children.
- Currently, CoPAInT is composed of more than 100 members from across the United States, ranging from high school students to attending subspecialists.
- As CoPAInT grows, we aspire to have broader national representation in diverse locations across the country.

An Atypical Presentation of Meigs Syndrome with Elevated CA 125 Levels

Disclosure: The authors did not report any financial relationships or conflicts of interest
Click for Supplemental Video

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Introduction: Meigs syndrome is characterized by the triad of an ovarian fibroma, ascites, and pleural effusion. Although not commonly seen with an elevated CA125 levels, there are reported cases of Meigs syndrome with elevated CA125 that essentially normalizes with the tumor removal. An elevated CA 125 in the presence of an ovarian mass and ascites usually indicates an ovarian malignancy with concerns for a poor prognosis. However, final diagnosis of cancer needs to be confirmed with tissue biopsy. We present a 58-year-old female with an atypical presentation of Meigs syndrome (no pleural effusion) associated with an elevated CA 125. Interestingly, the ascites resolved and CA 125 normalized after removal of the ovarian tumor.

Case Presentation: A 58-year-old female with past medical history of hypertension, hyperlipidemia, and GERD presented to the emergency room with lower abdominal pain and low grade fever for 1 week. Pain was more localized to the right lower quadrant and associated with nausea. Vitals revealed a temperature of 100.3F, heart rate of 123/minute, blood pressure of 134/65 mmHg, oxygen saturation of 97%, and respiratory rate of 20/minute. Exam revealed tachycardia and a mildly distended abdomen with right lower abdomen tenderness without rebound or rigidity. A CT of the abdomen and pelvis showed a large pelvic mass (18.5 X 14 cm) with fluid in the right and left pericolic gutters and around the liver without any pleural effusion. These findings were confirmed on a pelvic ultrasound. Labs revealed a CA 125 of 914 (normal 0-35), a white count of 22,000 (normal 4,000-11,000), normal lactic acid (0.7), normal hemoglobin and hematocrit, normal urine analysis, normal renal and liver functions, and hyponatremia (127).

Final/Working Diagnosis: A diagnosis of a possible ovarian carcinoma with torsion or necrosis was made and patient was referred for exploratory laparotomy and surgery.

Management/Outcome: Patient underwent total abdominal hysterectomy with bilateral salphingo-oopherectomy for an ovarian tumor with torsion. Pathology of the ovarian tumor revealed an ovarian fibroma with no evidence of malignancy. Post operatively patient had a decrease of CA 125 to 242 as anticipated. A follow up CA 125 in 3 weeks was normal (13).

Learning Objectives:

- Understand the diagnosis of Meigs Syndrome
- Discuss the cause of Ascites in Meigs Syndrome
- Identify the causes of elevated CA125

A MAP3K7 Molecular Variant Presents a Diagnostic Dilemma Due to Phenotypic Heterogeneity

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Introduction: We present an infant with cardiomyopathy and skeletal dysplasia found to have a MAP3K7 likely pathogenic variant. MAP3K7 can cause two disorders -- Frontometaphyseal Dysplasia 2 (FMD2) due to gain-of-function and Cardiospondylocarpofacial syndrome (CSCFS) due to loss-of-function. Both are rare conditions with a

prevalence of less than 1/1,000,000 and have skeletal, cardiac, and facial features with subtle differences. FMD2 features include joint contractures, coarse facial features, and tracheal stenosis. Meanwhile, patients with CSCFS may display growth restriction, bone fusion, and cardiac defects. Because this patient is too young to clinically display features of either, close surveillance is essential to monitor for associated complications.

Case Description: A now 1-year-old male was born at 37 weeks via cesarean section to 35-year-old G3P1102. He was admitted to the NICU for intermittent tachypnea, and no cardiac abnormalities were noted. At 5 weeks he was re-admitted after difficulty feeding and breathing. An echocardiogram revealed cardiomyopathy. Objectively, he had disproportionate limbs with mesomelia, wide-spaced eyes, downslanting palpebral fissures, a long face, micrognathia, low-set ears, and hypospadias, raising concern for an underlying genetic etiology.

Working Diagnosis: Rapid genome sequencing obtained through an NHGRI-supported study (SouthSeq) revealed MAP3K7 c.143G>A,p.Gly48Glu – a de novo heterozygous likely pathogenic missense variant.

Management: Both FMD2 and CSCFS are rare, and the continual study of such are necessary to gain further classifications of the syndromes and early diagnosis. While valvular defects are described in both FMD2 and CSCFS, cardiomyopathy has not been reported in either. At this time, it is important to monitor for complications for both of these syndromes such as hearing loss, vertebral bone fusion, and tracheal stenosis, as it is difficult to determine which condition the patient has. Early intervention may prove to be essential in the management of this patient's development.

Learning Objectives:

- Describe a de novo MAP3K7 heterozygous likely pathogenic missense variant.
- Examine diagnostic dilemmas when encountering rare genetic variants.

Disseminated Cat Scratch Disease in an Immunocompetent Child – A Rare Case Presentation

Disclosure: The authors did not report any financial relationships or conflicts of interest

Click for Supplemental Video

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Cat Scratch Disease generally causes a relatively mild, self-limiting illness in immunocompetent patients, including children. Here we present a unique case of a healthy child who developed a rare form of disseminated Cat Scratch Disease (CSD).

A previously healthy 3-year-old female presented to the Emergency Department (ED) multiple times for evaluation of fever, irritability, abdominal pain and decreased oral intake. During the initial presentation of prolonged fever and superficial thumb cellulitis, the patient was hospitalized and appendicitis, MIS-C, osteomyelitis were ruled out, with urine and blood cultures being negative. Subsequent infectious work-up due to persistent fever revealed positive mycoplasma titers and she was started on a five-day course of Azithromycin as outpatient. Two days after discharge, she returned to the ED for similar symptoms. At this time, her inflammatory markers were elevated, and an abdominal ultrasound showed multiple splenic, and then liver lesions suggestive

of small abscesses. She was admitted and started on Azithromycin and Rifampin for concerns of systemic mycoplasma infection. Additional infectious serology panels were obtained throughout her admission. Due to continued daily fevers, antibiotic coverage was broadened until Bartonella IgG titers resulted as strongly positive (1:2560), making hepatosplenic cat scratch disease as the likely etiology, given the remote history of the child playing with kittens. Patient was discharged home on Cefdinir and Azithromycin after being afebrile for more than a week and significant clinical improvement. In the outpatient setting, she received serial abdominal ultrasounds showing resolution of her liver and splenic abscesses.

Most cases of CSD in immunocompetent children result in a self-limiting febrile illness and lymphadenitis and do not require antibiotic therapy, however, this healthy child with no underlying immune deficiency developed disseminated form of this disease in the form of hepato-splenic abscesses and systemic bartonellosis.

Learning Objectives:

- Discuss the differential diagnoses for hepatosplenic lesions in the pediatric population
- Describe the treatment of a child with disseminated Cat Scratch Disease

Fetal Cardiac Defects Associated with SSRI Usage in Pregnant Women

Disclosure: The authors did not report any financial relationships or conflicts of interest
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Approximately one-fifth of women of childbearing age experience depressive symptoms. Many of them are prescribed selective serotonin reuptake inhibitors (SSRIs) as medical treatment. Various regulations come with drug usage to ensure the safety of both mother and fetus. The purpose of this study is to review the adverse effects of SSRIs on pregnant women and whether the use of this drug class can cause fetal cardiac abnormalities.

Upon collecting data from Google Scholar and PubMed, the following literature data was compiled. The noted SSRI's adverse effect were fetal cardiac abnormalities such as atrial septal defects and right ventricular outflow tract obstruction defects. A high prevalence of these cardiac defects was noted in women who use SSRIs such as paroxetine and fluoxetine. Paroxetine is hypothesized to cross the maternal placental barrier and enter the amniotic fluid. Another study also found that paroxetine specifically decreased the number of fetal heart cells, indicating that abnormal serotonin levels may alter fetal heart development. This literature review aims to focus on summarizing various SSRIs and how they contribute to cardiac fetal defects. The main goals will be to investigate underlying physiology, pharmacokinetics further and comparing SSRIs to see which are more effective and have minimal side effects.

A better understanding of the underlying roles of the SSRIs mechanism of action in fetal cardiac development will aid in further studies generating better therapy for pregnant women with conditions such as anxiety and depression. Future studies can focus on why specific drugs lead to fetal cardiac defects and if such effects are manifested while using them during particular trimesters.

Learning Objectives:

- This research literature review examines current data on fetal cardiac defects found with pregnant women using SSRIs. A better understanding of the underlying roles of the SSRIs mechanism of action in fetal cardiac development will aid in implementing improved therapy for pregnant women with conditions such as anxiety and depression. Future studies can focus on why specific drugs lead to fetal cardiac defects, if such effects manifest when using SSRIs during all trimesters, impact of mother's condition as a cofounder, and how OBGYN's and psychiatrists work together to provide potential better treatment options for pregnant women with anxiety or depression.