

New York



New York Chapter
American College of Physicians

Annual Scientific Meeting

Poster Presentations

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125 East Main Street
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New York



New York Chapter
American College of Physicians

Annual Scientific Meeting

Medical Student Clinical Vignette

Poster Presentations

Medical Student Clinical Vignette

Colton Davis

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"NOT ONE, BUT TWO" : A CASE OF BILATERAL INTERNAL JUGULAR VEIN THROMBOSIS

Introduction

Internal jugular vein thrombosis is a rare presentation with the potential for drastic consequences. Bilateral internal jugular vein (IJV) thrombosis is an even more uncommon presentation with little current literature. Regardless of the location, the pathogenesis behind all venous thromboses follows Virchow's triad: stasis of blood flow, endothelial injury, and hypercoagulability. We present a case of a 76-year-old male with bilateral jugular vein thrombosis.

Case presentation

A 76-year-old male with a past medical history of a prior hemorrhagic cerebrovascular accident with residual right sided weakness, hypertension, neurogenic bladder status post suprapubic catheter, and end stage renal disease presented to the emergency department after an outpatient ultrasound revealed bilateral IJV thromboses. Approximately a month before presentation, the patient noticed a 10 minute episode of transient blurry vision for which his ophthalmologist recommended a carotid ultrasound. The carotid ultrasound revealed bilateral non-occlusive thrombosis in bilateral IJV with no significant stenosis in the carotids, prompting his arrival to the ED.

Upon presentation the patient was asymptomatic. Initial labs showed hyperkalemia of 6.2 and a hemoglobin of 10.9 and an MCV of 105. Initial coagulation studies were unremarkable. The physical exam revealed residual 4/5 weakness in both right extremities and distended superficial neck veins.

CT venogram of chest revealed a thrombus in the proximal aspect of the right IJV without evidence of a left thrombus. An inpatient ultrasound showed a thrombus within bilateral IJVs and one in the right subclavian vein. There was no obvious infectious source that could be localized.

The patient was started and maintained on a heparin drip and was transitioned to Apixaban. Hypercoagulable workup revealed reduction in protein C at 64% (normal range 70-140%). Other workup could not be completed due to the recent thrombosis and heparin initiation. Of note, the patient had a colonoscopy 3 months prior to presentation that was unremarkable. Upon discharge the patient was advised to follow up with a hematologist to complete hypercoagulable workup and complete age-appropriate malignancy screening.

Discussion

Upper extremity deep vein thromboses only account for 4-10% of all venous thromboses with isolation to the IJV being even more uncommon. The most common causes of unilateral IJV thrombosis include malignancy, central vein catheter complications and oropharyngeal infections (Lemierre syndrome). Bilateral IJV thrombosis may be indicative of malignancy. Genetic coagulation abnormalities including Factor V Leiden and antiphospholipid syndrome can also play a role in the development of IJV thrombosis.

Conclusion

Bilateral jugular vein thromboses is a rare entity that presented in our patient with transient vision loss. Patients presenting with bilateral IJV thromboses without evident infectious cause should be evaluated for malignancy as well as genetic coagulation abnormalities. Being a rare entity, there is also unclear guidelines as to duration of anticoagulation.

Medical Student Clinical Vignette

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Acute Serotonin Syndrome Following Methylene Blue Usage in Vasculitis Treatment: A Rare Case.

INTRODUCTION

The present case discusses an unusual presentation of serotonin syndrome in a patient treated with off-label methylene blue for autoimmune vasculitis.

CASE PRESENTATION

A 38-year-old female presented to the emergency department with profuse vomiting, fever, chills, lightheadedness, dizziness, and the inability to tolerate oral intake. She had been in her usual state of health until two hours after returning from a doctor's appointment where she received methylene blue intravenously. Past history included hypothyroidism, postural orthostatic tachycardia syndrome, c-ANCA vasculitis, migraine, and anxiety. Social history included marijuana/prior tobacco use. Medications included amitriptyline, hydrocortisone, levothyroxine, liothyronine, midodrine, potassium chloride, compounded semaglutide, tizanidine, NADH-ascorbic acid bicarbonate, turmeric, sumatriptan as needed. Sumatriptan was not taken within three weeks of infusion. Patient was started on monthly methylene blue infusions by an environmental medicine specialist with the goal of treating the patient's vasculitis symptoms, which included fatigue and arthralgias. This was her 5th infusion.

Within two hours of infusion the patient developed four episodes of large volume non-bloody emesis prompting ED visit where she was found to have a temperature of 40.3 C, tachycardia and hypotension (82/44 mmHg). On examination, the patient was awake and alert, no skin rash, mucous membranes were dry, lungs were clear, abdomen was soft, non-tender, and there was no lymphadenopathy. No infusion site erythema, no swelling or tenderness of joints.

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INVESTIGATIONS

Cell count, serum chemistries, lactate, amylase and lipase were normal. Urine and blood cultures, rapid COVID and influenza tests were all negative. Chest X-ray and abdominal CT were unremarkable. Erythrocyte sedimentation rate (ESR) was elevated at 40 mm/hr. In the absence of antibiotic treatment, with vigorous intravenous hydration and withholding of serotonergic medications, the patient's condition rapidly improved overnight. At discharge the patient was hesitant to discontinue methylene blue treatments given the relief she was experiencing for her arthralgias. She was advised to avoid using amitriptyline and sumatriptan on days preceding infusion and to discuss the benefits and risks of continuing infusions with her doctor.

DISCUSSION

We report a case of severe serotonin syndrome secondary to methylene blue infusion. While methylene blue may be used in the treatment of certain conditions and is a dye for diagnostic procedures, its use has expanded to non-approved conditions. Here we report a potentially life-threatening case where intravenous methylene blue infusion led to a serious reaction that included hypotension and an acute inflammatory response in the absence of infection. The only remarkable lab finding included an elevated ESR. This finding is consistent with previous studies that have reported a correlation between degree of ESR elevation and severity of serotonin syndrome. We caution providers regarding use of intravenous methylene blue and reinforce the need to take thorough medication histories and consider potential drug interactions.

Medical Student Clinical Vignette

Nathan Lasher

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ATYPICAL ANAPHYLAXIS: EXERCISE OR SHRIMP?

Anaphylaxis is a condition associated with an allergic response to a substance that patients learn to avoid. A rare subtype is Exercise Induced Anaphylaxis (EIA), where strenuous physical activity causes anaphylaxis. Rarer still is Food-Dependent, Exercise-Induced Anaphylaxis (FDEIA).

An 18-year-old female consumed shrimp scampi and shortly thereafter went outside and had a vigorous snowball fight lasting 30-40 minutes. She then went inside where she noticed hives on her limbs and torso as well as her throat beginning to constrict. Emergency services were called and upon their arrival she collapsed and was pre-syncopal with resting tachycardia. She was treated with diphenhydramine and high flow oxygen due to declining saturations and taken to the emergency room. There, she received intravenous steroids and additional diphenhydramine and was discharged home on a one-week prednisone taper. Extensive allergy testing showed no positive reactions, and she began eating shrimp again without incident until approximately 9 months later. The patient consumed Shrimp Pad Thai and participated in a vigorous dance recital, subsequently developing identical anaphylactoid symptoms as she had before.

FDEIA was suggested as a cause of her repeated anaphylaxis. FDEIA involves anaphylaxis triggered by exercise after consumption of a specific food. Usually, the food is consumed, and symptoms appear within 30 minutes of physical activity. Neither the allergen nor physical activity alone induces reactions in this patient or documented cases. Estimates indicate EIA has a lifetime prevalence of about 0.05%, and of those people affected only 30% have the food-dependent subtype with the majority being a wheat related allergy. Data is lacking regarding the pathophysiology of this disorder. Current theories suggest that during exercise, tissue transglutaminase is conjugated to food allergens and later to IgE, leading to the anaphylactoid response. Other sources suggest alterations in blood flow distributions, such as increased gastrointestinal absorption of the allergen due to increased permeability. The temporality of symptoms and association with a variety of allergens make this a unique presentation and difficult diagnosis to make. Patients with FDEIA may be unaware of their triggers, especially when allergens are encountered a significant amount of time before symptom onset. Subsequent allergy testing is often inconclusive, potentially causing harm due to unidentified triggering allergens and future anaphylactic events. Current therapy revolves around symptomatic relief of anaphylaxis. No standardized recommendations exist for primary prevention, but suggestions put forward consist of avoiding any exertional activities up to six hours after allergen intake, which can hinder the lives of FDEIA affected individuals. Further research should focus on identifying the pathophysiology behind the disorder as well as developing preventative treatments aimed at improving patient's lives.

Medical Student Clinical Vignette

Tiffany Liu

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Native Aortic Valve Endocarditis Caused by *Rothia Mucilaginosa* Initially Confused as *Neisseria Sicca*

Introduction

Rothia mucilaginosa is a gram-positive coccus colonizing the oropharyngeal flora that only recently became recognized as an opportunistic pathogen in humans. As a causative agent for endocarditis, *R. mucilaginosa* predominantly affects people with pre-existing valvular disease or intravenous drug use. We present a case involving neither risk factor but instead suspected poor oral hygiene.

Case Description

A 54-year-old veteran with hemochromatosis, diabetes, hypertension presented with seven days of fever, intermittent cough, and headache. He was afebrile, and physical examination revealed a new systolic murmur. Laboratory analysis and computed tomography of the brain, chest, abdomen, and pelvis were unremarkable. Blood cultures were positive for *Neisseria sicca*, and transesophageal echocardiogram revealed a mobile mass on the left coronary cusp of the aortic valve, suggesting *N. sicca* endocarditis. The patient was started on cefazolin and gentamicin. He reported daily smokeless tobacco use as his only possible risk factor for such infection. After infectious disease (ID) consultation, he was discharged with ceftriaxone via peripheral inserted central catheter.

One day later, he developed fever and fatigue. He presented to another facility, where his temperature was 39.2°C and he had chest X-ray showing atypical pneumonia. He developed bilateral lower extremity stiffness and pain. Because 90% of endocarditis cases are associated with septic emboli formation, magnetic resonance imaging (MRI) of the brain was obtained and revealed a small intraparenchymal hemorrhage and two embolic infarcts. Computed tomography angiography of the head and neck done several days later showed new small hemorrhagic infarction. The patient never had any focal deficits. He was evaluated by cardiothoracic surgery and neurosurgery who deferred surgical interventions at that time. Also during this time, the outside facility had received the initial blood isolates and re-identified the causative organism as *Rothia mucilaginosa*. The patient continued ceftriaxone as per ID and eventually recovered to baseline.

Discussion

Rothia mucilaginosa, an organism difficult to identify, causing native valve endocarditis has been documented in only 10 cases. Underlying valvular disease, intravenous drug use, and recent dental work are known to increase susceptibility to developing endocarditis, especially in immunocompromised patients. No such predispositions were present in our immunocompetent patient. Dental portal of entry from daily smokeless tobacco use is his most likely precipitating factor for infection. Smokeless tobacco users have a more diverse oral bacterial community associated with poor oral health than non-users. Occasionally, infective endocarditis can have subacute onset of symptoms and progress to septic emboli formation, as seen in our patient. He lacked the major classic manifestations of endocarditis except a new systolic murmur, making initial diagnosis challenging.

Conclusion

Non-traditional risk factors associated with endocarditis, especially poor oral hygiene and smokeless tobacco use, should raise clinical suspicion for uncommon sources of infection such as *Rothia mucilaginosa*.

Medical Student Clinical Vignette

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A RARE AND POTENTIALLY FATAL ARRHYTHMIA IN A YOUNG PATIENT WITH PALPITATIONS

Wolff-Parkinson-White (WPW) is a heart condition characterized by conduction via an accessory pathway exhibiting delta waves, episodes of tachycardia and a shortened PR interval bypassing the atrioventricular (AV) node. WPW was described first in 1930 by Louis Wolff, Sir John Parkinson and Paul Dudley White. WPW is a rare condition, affecting only 1 to 3 people out of 1000. In patients presenting with malignant arrhythmias, correct ECG interpretation, while difficult, is critical in preventing fatal outcomes. This is especially emphasized in patients with simultaneous malignant arrhythmias.

20-year-old male patient with past medical history only of attention deficit disorder and depression presented to an urgent care center with palpitations. EMS was activated after ECG showed arrhythmia; cardioversion, IV metoprolol and 150 mg of IV amiodarone were unsuccessful in restoring sinus rhythm. ECG upon ED arrival revealed tachycardia at 200 BPM, R-R interval irregularity, no discrete P wave morphology, and QRS complexes with varying morphology. After IV procainamide load and continuous infusion, sinus rhythm was restored with delta waves. Echocardiogram performed revealed normal biventricular systolic function, atria and valves. Varying QRS durations were caused by fusion beats of ventricular depolarization through conduction down both the AV node and accessory pathways. EP study confirmed activation of a left posterior accessory pathway with rapid bidirectional conduction, successfully treated with ablation. The patient was confirmed to have atrial fibrillation with pre-excitation "WPW.

While WPW itself is rare, simultaneous atrial fibrillation with a pre-excitation affects a much smaller percentage, 0.0008% to 0.0023% of the total population, constituting 10-34% of WPW patients. Risk of development of malignant arrhythmias has been noted as 7.8% without prior ablation, resulting in presyncope/syncope, hemodynamic collapse and cardiac arrest according to Pappone, et. al. Additionally, it was noted that patients with malignant arrhythmias were at higher risk for atrioventricular reentrant tachycardia triggering sustained pre-excited atrial fibrillation. WPW patients with paroxysmal atrial fibrillation and WPW have been shown in a study by Fukanatani, et. al, to lead to possible ventricular fibrillation and sudden death. Healthcare teams must be able to interpret the ECG to ensure rapid and proper treatment. Without proper interpretation, patients may die. In a study by Kozluk, et.al, only 1.4% of emergency medicine providers were able to recognize atrial fibrillation with WPW. It concluded that "members of emergency medical teams have limited skills for recognizing WPW with rapid AF". Therefore, education on this condition can provide opportunity for providers to use proper treatment with more rapid and accurate diagnosis, especially avoidance of contraindicated medications that can exacerbate ventricular fibrillation.

Medical Student Clinical Vignette

Shibhani Rajanna

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HEPATIC CALCINOSIS: A COMPLICATION OF THYROID STORM

Introduction:

Thyroid storm is an acute exacerbation of hyperthyroidism, presenting as a clinical syndrome of multiorgan dysfunction. Liver involvement in hyperthyroidism is seen in 55-60% of patients and can vary from mild liver function test abnormalities to severe central hepatic ischemia. Here, we describe a case of severe hepatic calcinosis following fulminant liver failure in a patient with Thyroid storm, which to the best of our knowledge has not been previously reported.

Case presentation:

27-year-old male, with history of Graves[™] disease and non-compliance with his medications presented with complaints of abdominal pain and diarrhea for 3 days. Physical examination revealed encephalopathy. Heart rate was 140/min, and he was found to have Atrial fibrillation. His TSH was undetectable, free T4 was > 7.7 ng/dl and free T3 was 14.2 pg/mL. Total bilirubin (4 mg/dl), AST (6587 IU/L), ALT (4221 IU/L) were elevated. Other labs: serum creatinine (1.36 mg/dl), serum calcium (8.1mg/dL) and PTH (40 pg/mL). Echocardiogram showed systolic left ventricular EF of 20%. He was hemodynamically unstable and in respiratory distress leading to intubation and mechanical ventilation. He was diagnosed with Thyroid storm complicated by fulminant liver failure, cardiogenic shock and acute renal failure requiring hemodialysis. Over two months, he remained dialysis and ventilator dependent via tracheostomy. Hospital stay was also complicated by peritonitis due to candida albicans and was on antimicrobials. He gradually developed a hemoperitoneum following a therapeutic paracentesis done days prior. Patient had a significant drop in hemoglobin and hypotension requiring fluid boluses and blood products. Imaging of his abdomen demonstrated severe hepatic calcinosis and ascites. Hemoperitoneum was confirmed on CT with no obvious bleeding source. Due to very poor prognosis, the family decided to pursue comfort measures.

Discussion:

Hepatic calcinosis is a rare complication of liver injury and to the best of our knowledge has not been previously reported in thyroid storm. Ischemic hepatic injury is a well-established consequence of shock. Hepatic centrilobular necrosis almost always occurs with cardiogenic shock longer than 24 hr which was present in this patient. Dystrophic calcification in injured hepatic tissue is speculated to be due to increased plasma membrane permeability in injured hepatocytes causing an intracellular influx of calcium and subsequent intracellular calcification. This process is further accentuated by coexistent abnormalities in calcium-phosphorus metabolism secondary to this patient[™]'s kidney injury and uremic state. We also hypothesize that hemoperitoneum in this patient could be associated with portal hypertension in the setting of hepatic calcinosis. Clinicians should be aware of this hepatic complication of thyroid storm that is associated with poor prognosis. This case also highlights the importance of medication adherence and the life-threatening complications of untreated Graves[™] disease.

Medical Student Clinical Vignette

Tushar Ralhan, BSc

She Huffed, She Puffed and Her CT Blew Us Away

Emphysema is a chronic obstructive pulmonary disease characterized by chronic inflammation secondary to a noxious stimulus, such as smoking, leading to emphysematous destruction of the lung parenchyma causing enlargement of alveolar walls with air-filled spaces, also known as "bullae." While smoking is the major risk factor for the development of emphysema, it is essential to expand the differential diagnoses, particularly in young patients with no smoking history.

Here we present a 42-year-old woman who attended the emergency department with progressively worsening fatigue, cough, and shortness of breath for one week. She denied fevers, chest pain and denied tobacco use. The patient immigrated from Sierra Leone twelve years prior but was otherwise healthy. The patient endorsed significant environmental and occupational exposures, including employment as a nursing assistant in a skilled nursing facility and exposure to second-hand smoke within her apartment complex over the past five years.

On presentation, the patient was in mild respiratory distress, although saturating at 98% on room air. Physical exam was only significant for diffuse rales and rhonchi bilaterally. Labs, sputum cultures and imaging, were ordered, and the patient was placed on 3L of oxygen. CT scan demonstrated prominence of both pulmonary arteries, bullous emphysematous changes bilaterally and several opacities within the lungs bilaterally. Otherwise, labs were significant for leukocytosis of 18.8, and blood gas demonstrated chronic respiratory acidosis. The patient was admitted and started on antibiotics, steroids, and nebulizer treatments. Sputum cultures later demonstrated *Pseudomonas aeruginosa* and *Candida albicans*, and she was subsequently discharged home with a course of levofloxacin and doxycycline, in addition to home oxygen.

Overall, the majority of cases of bullous emphysema are linked to tobacco smoking; however, other underlying etiologies must be considered, including alpha-1 antitrypsin deficiency (A1ATD), infections and environmental/occupational exposure, given the right clinical context. A1ATD patients classically present with respiratory symptoms and hepatic dysfunction manifesting as jaundice and/or cirrhosis, particularly at a young age. Diagnostic imaging typically reveals panacinar emphysema concentrated in the lower lobes. Common occupational exposures include coal dust, silica dust and asbestos fibers, each with unique clinical presentations and imaging findings. As such, obtaining a detailed family, occupational and environmental exposure history in patients where the etiology of chronic lung disease is unclear is important.

In conclusion, it is widely known that smoking is the primary risk factor for COPD; however, when younger patients present with chronic lung disease, regardless of smoking history, it is important to consider hereditary, environmental, and occupational exposures as the inciting cause. Early recognition of these etiologies can help limit complications and progression of the disease, enabling early therapeutic intervention, which can improve quality of life and further decrease disease burden and mortality.

Medical Student Clinical Vignette

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Cerebellar Dysfunction in a patient living with HIV with Progressive Multifocal Leukoencephalopathy

Introduction:

Progressive Multifocal Leukoencephalopathy (PML) is a rare demyelinating CNS disease caused by the John Cunningham virus (JCV) in immunocompromised patients. PML surged during the HIV epidemic, primarily impacting patients with CD4 counts below 200. The incidence of HIV-associated PML declined with the development of HAART, but PML is now increasing in incidence due to the advent of new immunomodulatory therapies.

Evaluation of immunocompromised patients with neurological deficits necessitates consideration of PML. Distinguishing PML from other opportunistic infections (toxoplasmosis, EBV, HSV, cryptococcus, neurosyphilis, and tuberculosis) includes MRI, serology, CSF testing. Positive PCR testing of CSF fluid for JCV with classic white matter enhancement on MRI is a definitive diagnosis of PML; however, standard PCR testing of CSF fluid has a low sensitivity (58% [95% CI, 34 to 79%]). In suspected cases of PML, the best management is the initiation of HAART.

PML may emerge due to immune reconstitution inflammatory syndrome and JCV can also cause JCV granule cell neuronopathy, characterized by cerebellar degeneration without white matter lesions.

Case Description:

The patient is a 37-year-old male with a history of HIV, who was not adherent to HAART for over two months. They presented to the ED with right-sided neurologic deficits and mild dysarthria. Brain MRI showed a confluent signal abnormality in the white matter of the cerebellum involving the right cerebellar hemisphere and middle cerebellar peduncle concerning for PML (Figure 1). The patient refused confirmatory lumbar puncture (LP), CD4 count, and HIV viral load, and ultimately left against medical advice (AMA).

The patient returned 32 days later with worsening symptoms. On physical exam, the patient was alert and oriented to situation, but had severe dysarthria and unsteady gait. The patient showed marked ataxia, requiring assistance to go from supine to sitting, and poor balance. While sitting, he leaned left and had difficulty holding his head straight without neck support. Speech evaluation revealed severe oropharyngeal dysphagia, including spillage, residual collection, and silent aspiration across consistencies with ineffective clearance by reflexive coughing. Speech pathology recommended long-term enteral nutrition and speech therapy.

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The patient restarted HAART with a CD4 count of 328. Serum cryptococcal antigen was negative. Syphilis serology was reactive, with an RPR titer of 1:2, and documented prior treatment. The patient continued to refuse confirmatory LP and ultimately left AMA with new family support.

Discussion:

This rare case involves cerebellar dysfunction in a patient with HIV, likely due to PML with cerebellar lesions. Despite lacking PCR confirmation of JCV, the white matter lesions, history of HIV, severe dysarthria, and ataxia suggest cerebellar dysfunction secondary to PML lesions. Despite a CD4 count above the usual infection threshold, the patient's prognosis is likely poor, emphasizing the need for ongoing HAART, physical, and speech therapy.

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Medical Student Research

Poster Presentations

Amauri Gomez, MS

Blerim Cukovic, MS; Kianna Von Maydell; and Dr. Sabina Hirshfield, PhD.

Effectiveness of eHealth in Facilitating PrEP Uptake and Adherence for the Prevention of HIV: A Systematic Review**Introduction:**

The medical community recognizes the significance of pre-exposure prophylaxis (PrEP) in HIV prevention, particularly among populations that face health disparities and limited access to care. Men who have sex with men (MSM), transgender women, and other high-risk ethnic groups have been disproportionately affected by HIV transmission. Globally, socioeconomic challenges have hindered PrEP utilization among these populations, heightening the urgency to find practical solutions. Traditional sexual health education in clinics has shown limited effectiveness in reducing HIV infections among these groups. This study has the potential to be the first meta-analysis looking at eHealth interventions, investigating their role in enhancing PrEP uptake and adherence and strategically bridging gaps to increase accessibility to PrEP and contribute to the reduction of HIV transmission rates.

Methods:

We conducted a comprehensive literature review to explore eHealth-based educational interventions targeting PrEP utilization and sexually diverse communities. The review covered literature published between January 2015 and July 2023. Searches were executed across five databases—PubMed, OVID/Medline, Embase, Cochrane Library, and Scopus—utilizing the terms "eHealth," "telemedicine," "pre-exposure prophylaxis," and "mHealth." This search strategy identified 1156 articles. Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, three independent reviewers engaged in a stringent selection process, ultimately selecting 18 articles for the comprehensive review. These articles were assessed for their efficacy of eHealth interventions in enhancing PrEP uptake and adherence. Notably, 15 clinical trials initially identified were excluded from the final review due to the unavailability of reported results.

Results:

Preliminary findings of the systematic review unveiled an enhancement in access, uptake, and adherence to PrEP facilitated by eHealth interventions across sexually diverse communities. Notably, eHealth interventions encompassing mobile applications, web-based platforms, and telehealth solutions contributed to heightened PrEP uptake rates. Disruption in completing the trials for 15 initially identified clinical studies was potentially impacted by external factors like the U.S. COVID-19 pandemic. Furthermore, these interventions revealed secondary outcomes, including reduced stigma associated with PrEP usage, increased sexual health knowledge, and heightened awareness of PrEP availability.

Conclusion:

eHealth interventions offer a promising approach to enhance PrEP utilization among populations facing barriers to healthcare access. By gaining deeper insights into how these populations engage with digital health tools, strategies can be tailored to their specific needs. This systematic review helps to shape the role and potential for eHealth enhancing PrEP adoption and adherence. Additionally, these interventions have shown potential in reducing PrEP-related stigma and increasing awareness of its benefits. Leveraging eHealth's potential can become a valuable asset in the battle against HIV, particularly in communities with limited access.

Medical Student Research

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THE EFFECTIVENESS OF AN IN-SITU MIRROR SIMULATION PROGRAM IN CARDIOPULMONARY ARREST LEADERSHIP TRAINING

Purpose: High stakes, low frequency events such as cardiac arrest (CA) pose a challenge in medical training. Current simulation-based training in graduate medical education (GME), using a contrived clinical environment and scenario, fails to engage the adult learner's internal motivations. We designed a program involving in-situ simulations that mirror a current patient for the covering internal medicine team in the medical intensive care unit (MICU), seeking to identify resident skill deficits and to quantify the simulation's impact on resident confidence levels in managing CA.

Methods: An actual vacant MICU room was used to set up the simulated event. A patient at risk of decompensation was identified and both their condition and room equipment were mirrored. The senior resident (PGY3) managing the patient completed a pre-survey assessing their confidence in managing a CA event. The senior resident, without warning, was informed of the patient's identity and called to the simulated patient's room. Their performance was observed by the research team including a certified advanced cardiac life support (ACLS) instructor. After the event, the ACLS instructor debriefed the team and completed a checklist to adjudicate technical and non-technical skills performed. The senior resident completed an identical post-survey confidence assessment which additionally contained a course evaluation.

Results: 15 in-situ mirror simulations were conducted. Participant confidence increased for all prompted technical and non-technical skills, with some increases being statistically significant. Graded checklists yielded a technical grade of 70.5%, a non-technical grade of 65.6% and an overall grade of 68%. Participants struggled with assigning roles during the event, including failing to assign a record keeper and team members for obtaining access and administering medications. A correlation analysis showed worse overall performance was correlated with higher perceived benefit of the simulation, and that technical performance was significantly and negatively correlated with pre-simulation confidence in following ACLS protocol ($p=.04$). 100% of the participants found the activity educational. Participants rated their level of interest as an average of 4.06 out of 5.

Conclusions: In-situ mirror simulation is a novel, feasible, and well-received educational intervention for improving the quality of a team's cardiopulmonary resuscitation response. Participation led to increased confidence in all categories for resident learners. Tracking resident performance with the skills checklist tool can be used to identify individual and global skill set deficits among residents. Additionally, participants who were more confident in following ACLS protocol before the simulation actually performed worse when graded on the technical aspects of managing a CA. Future directions for improving our understanding of in-situ mirror simulation include comparing resident performance during in-situ simulation to real CA events, assessing CA outcomes in mirrored patients who experienced an actual CA, and investigating how different simulation features independently modify the fidelity of the simulation.

Madonna Moza

Stacy Blain

Efficacy of Liposomal Drug NP-ALT in Comparison to Market Drugs in Treatment Resistant Cancer Lines

Current drugs on the market that target the G1-S phase transition proteins CDK4/6, are becoming less effective as the rates of resistance increase, most commonly due to compensatory activation of CDK2. Therefore, we introduce a drug that is able to inhibit both CDK4/6 and CDK2 through its actions on the modulator protein p27. Once Brk phosphorylates p27 on Y88, p27-bound-CDK4 becomes active and p27-bound-CDK2 becomes inactive. A second phosphorylation on T187 marks p27 for degradation, and leaves unbound-CDK2 active.

The innovative drug, Brk-SH3 peptide (ALT), blocks p27 phosphorylation on Y88, thereby inhibiting the activation of CDK2 and CDK4. ALT, a variant of Brk, contains the SH3 domain necessary to bind p27 and prevent its phosphorylation by other kinases. This is conjugated to a liposome, to make NP-ALT, for better delivery into cells. In addition, the liposome-peptide composition exhibits less stability in normal mammary cells, protecting them from the drug's cytotoxicity.

Earlier research has already shown NP-ALT to effectively induce tumor senescence and regression in xenograft models. Nonetheless, NP-ALT is designed to rectify the activation of CDK2 that allows for resistance to CDK4/6 inhibitors. We investigated these claims by comparing the effects of NP-ALT vs other CDK inhibitors on several resistant cell lines.

We selected several breast and ovarian cancer cell lines with known resistance to various CDK inhibitors. Breast lines included MCF7, PD22 (MCF7 cells resistant to Palbociclib), MCF7-CDK6 (overexpresses CDK6), MCF7-FAT1 (knockout FAT1) and CAMA-1. Ovarian cancer cell lines were OVCAR3 and SKOV3. Serial dilutions of NP-ALT, Palbociclib (CDK 4/6 inhibitor), Fadracilib (CDK 2/9 inhibitor) and PF-06873600 (CDK 2/4/6 inhibitor) were prepared based on their specific therapeutic windows.

Cells were plated on 96-well plates, grown for 48 hours, then treated with either NP-ALT or a different drug twice, once every 24 hours. The following day, cell death was analyzed via a cell viability assay (MTT). Each 96-well plate contained a control column to measure baseline cell activity. The experiment for each cell line was repeated for a minimum of 3 technical replicates over a six months period.

Results show that NP-ALT kills breast and ovarian cancer cells, whereas Palbociclib, Fadracilib and PF-06873600 showed no difference in cell viability from controls. Of note, cell death rates increased with rising concentrations of NP-ALT. Through this experiment, we demonstrate that NP-ALT can effectively eliminate CDK inhibitor-resistant cancer cells by targeting the compensatory CDK2 pathway.

More remarkably, NP-ALT outperformed the targeted CDK2/9 inhibitor (Fadracilib) and triple CDK2/4/6 inhibitor (PF-06873600), indicating that p27 inhibition goes beyond CDK blockade. This effect, coupled with its reduced toxicity in normal cells, due to its liposome-peptide formulation, distinguish NP-ALT from most other chemotherapies.

Medical Student Research

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HIGH VALUE PREVENTATIVE HEALTH, OPPORTUNISTIC CANCER SCREENING IN OBSERVATION UNITS

The purpose of this study was to explore the possibility of opportunistic cancer screening for patients admitted to observation units. Observation units commonly serve as an intermediate stage between the emergency department and inpatient hospitalization where patients of appropriate acuity are managed, however many observation units exist serving diverse patient populations ranging from peripartum or post-op surgical. Patients in observation units typically have lower-acuity health concerns and have an average length of stay of 24 hours. Notably, these populations are often managed by hospitalist or emergency medicine providers.

Patients admitted to an observation unit of a large hospital who meet the screening age of the United States Preventive Services Task Force (USPSTF) guidelines for breast, cervical, colorectal, and lung cancer were approached to participate in a short survey about demographics, cancer screening history and barriers to healthcare access. Participants were also surveyed for their receptiveness to cancer screening during hospital admission. Survey data was then analyzed using simple statistical methods.

A total of 16 participants were included in this study. Of the 7 participants eligible for breast cancer screening, only one was found to be not up-to-date with USPSTF screening guidelines. Of the 6 participants eligible for cervical cancer screening, only one was found to be not up-to-date. Of the 14 participants eligible for colon cancer screening, 6 were considered not up-to-date. All 4 participants eligible for lung cancer screening were found to be not up-to-date. All participants were currently under the care of a PCP. Subjects agreed that staying up to date with cancer screening was a priority with an average of 4.0 (1 = strongly disagree; 5 = strongly agree). Additionally, participants expressed agreement to cancer screening during hospitalization if available, with an average of 3.8 (1 = strongly disagree; 5 = strongly agree).

This study demonstrated that patients admitted to hospital observation units would be open to and benefit from hospital-based cancer screening. A significant number of participants were found to be not up-to-date for colon and lung cancer screening. Interestingly, all participants reported having a PCP, demonstrating that opportunistic screening outside of the primary care setting could bridge the gap in screening eligible populations. Opportunistic cancer screening and other preventive public health interventions such as smoking cessation and HIV/AIDs testing have been successfully implemented during ED wait times. Observation units could similarly serve as a ripe setting for opportunistic cancer screening. Furthermore, cancer screening can be done efficiently and noninvasively with a Fecal Immunochemical Test (FIT) for colorectal cancer or HPV self-swab which could be approved for cervical cancer screening in the near future. Alternatively, if these resources were not available, patient education and referral to community screening resources may provide significant public health benefit.

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Megan Gerber, MD, MPH

YOU'RE FIRED: Factors Associated with Patient-Initiated Primary Care Practitioner Transfers within an Internal Medicine Group

Purpose of Study: Patients commonly ask for a change of primary care practitioner (PCP), however, prior research only evaluates transfer to another medical practice. Patient-requested PCP transfers can create access issues within the practice, cause discontinuity in care, and may not improve the patient's care experience. This quality improvement study evaluated reasons for transfer requests and sought to identify possible intervention points to improve patient and provider experience.

Methods: We examined 191 patient charts from a medium-sized academic internal medicine practice where patients can file a written transfer request with pre-set check boxes for request reasons over the preceding two years (2021-23). Variables included demographics, zip code, insurance type, PCP type (attending, physician assistant/PA, resident), number of appointments attended with current PCP, and reason for the change. Data was analyzed via descriptive statistics. PCPs were asked open-ended survey questions about their experience with transfers.

Results: The mean age was 55 years, and most requesting transfers were female (64%), White (65%), and publicly insured (65%). The most common requests came from attending physician patients (55%), while only 18.8% came from patients seeing a PA. On average, transfer patients stayed with their PCP for 14.5 months attending an average of 2.9 appointments, yet, 34.5% had only attended one appointment. Reasons cited for transfer included communication differences including lack of explanations regarding medication use and poor bedside manner (29.3%), disagreement with the treatment plan (13.7%), PCP gender preference (11.5%), PCP availability (10.9%), desire for an attending physician instead of a resident (7.9%), and improved continuity of care (5.6%). PCPs expressed that transfers may not address the patient's true source of discontent, and some regretted missing the opportunity to discuss the change with the patient. One PCP replied it is "disheartening as the reason for changing is often related to not being listened to/appointments being too short, or "they missed something," indicative of healthcare in 2023 with the loss of the relationship between patients and their doctors." Others mentioned that patients request transfers to get access to specific prescriptions. Despite these challenges, most agreed that changing PCPs was beneficial for the patient.

Conclusions: This quality improvement study evaluated the reasons for PCP transfer requests within one internal medicine practice revealing patient characteristics and common reasons for change requests. Although this study only evaluated 191 records over two years, it provides valuable insight into improving not only the process of PCP transfer, but suggests that there may be intervention points for reducing patient discontent with established PCPs through better initial assignments or enhanced team communication in-between visits.

Esentur Salamatov, MS4

Ramzi Abbasi, Akshay Varsani, Kayla Martinez, Georges Khattar MD

Double Trouble: Unveiling the Hidden Links between Peripheral Arterial Disease and Carotid Artery Stenosis, A Meta-Analysis

Objective: The aim of this study was to determine the prevalence of carotid artery stenosis (CAS) in patients with peripheral arterial disease (PAD) through a comprehensive meta-analysis.

Methods: A systematic review of the literature was conducted on PubMed/MEDLINE, Embase (4/2023) to identify relevant studies on the prevalence of CAS in PAD patients. Studies that reported prevalence of CAS in PAD patients were manually screened for. Studies that did not use duplex ultrasonography to assess CAS were excluded. Studies using $ABI < 0.9$ for diagnosis of PAD were included. A meta-analysis was performed using a random effects model, taking into account the variability in study design. Pooled prevalence estimates were calculated along with 95% confidence intervals (CIs). The common effects model, which did not account for study variability, was also utilized for comparison. Publication bias was assessed using funnel plot with trim and fill analysis.

Results: The meta-analysis included a total of 26 studies. Under the common effects model, the pooled prevalence of CAS in PAD patients was 0.19 (95% CI: 0.1882, 0.1921). However, when considering study variation using the random effects model, the prevalence increased to 0.2274 (95% CI: 0.1926; 0.2665). The Wald test demonstrated a significantly better model fit using random effect assumption ($p < 0.0001$). Furthermore, the trim and fill analysis, which accounted for publication bias, yielded an adjusted estimate of the proportion of 0.1885 (95% CI: 0.1533, 0.2296).

Discussion: This meta-analysis provides a comprehensive assessment of the prevalence of CAS in patients with PAD. The results indicate a relatively high prevalence of CAS in this population. The presence of publication bias suggests that some studies reporting lower prevalence may be missing from the literature. These findings highlight the importance of considering carotid artery screening in PAD patients to identify and manage concurrent CAS, potentially reducing the risk of stroke and improving patient outcomes. Further research is warranted to explore potential factors contributing to the observed variability and to confirm the estimated prevalence through large-scale, well-designed studies.

Medical Student Research

Casey Sciandra

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The Utility of the Implantable Loop Recorder in Patients with Ehlers-Danlos Syndrome

Ehlers Danlos Syndrome (EDS) is a connective tissue disorder with manifestations of joint hypermobility and skin hyperelasticity. Cardiac complaints among the EDS patient population include palpitations, presyncope, and/or syncope. Additionally, EDS patients who experience palpitations of unknown etiology (especially unrelated to positional changes) may benefit from additional long term telemetry monitoring. In some instances, an implantable loop recorder (ILR) may help further define their arrhythmias over a longer period of time than standard external versions as well as help clarify whether arrhythmias are physiologic or pathologic. The hypothesis is to determine the utility of ILRs in detecting significant arrhythmias within the EDS population. The research protocol was exempt by the NYIT IRB retrospective Long Island Heart Rhythm Center study from January 2019 to March 2023. 67 patients with EDS were included in this retrospective study. Inclusion criteria included EDS patients with either palpitations, presyncope, and/or syncope of unknown etiology. Significant arrhythmias were defined as non-physiologic sinus tachycardia (ST) correlated with symptoms, supraventricular tachycardia (SVT), premature ventricular complexes (PVC), and ventricular tachycardia (VT). ST was only considered significant if it was symptomatic. Data was reported as percentages (%). As for the results, 67 patients with EDS had a mean age of 35 ± 12.2 years and all but 4 were female. 66 of the 67 patients had symptoms of palpitations (89.55%), presyncope, and/or syncope (97.01%). 27 patients received an ILR (40.3%). Of these patients, 59.26% had ST, 25.93% had SVT, 3.7% had PVC, and 3.7% had VT. Of note, approximately half (53.33%) of patients with significant ST had a diagnosis of Postural Orthostatic Tachycardia Syndrome (POTS). In conclusion, EDS patients often suffer from cardiac manifestations such as palpitations, presyncope, and/or syncope. When the etiology of these symptoms is unclear, especially after long term external monitoring, an ILR can help differentiate physiologic from pathologic arrhythmias. In this study, approximately half of the patients had a significant symptomatic arrhythmia, although many of them may have been attributable to POTS. Additionally, many patients with EDS suffer from cardiac manifestations such as palpitations, presyncope, and/or syncope. These symptoms should be correlated to the onset of arrhythmias in future studies. In summary, the ILR can be very useful in patients with EDS and unexplained symptoms despite external telemetry monitoring.

Medical Student Research

Kevin Shan, BA

Daniel Han BA, Matthew Wang, Melissa Chang, Kristen Sportiello, Eliane Grace, John Grable MD

Medical Students are Effective Counselors in a Hospital Tobacco Treatment Program

Purpose: An established hospital smoking cessation program at the University of Rochester Medical Center (URMC) uses staff nurses as bedside counselors coupled with a post-discharge call team composed of nurses, respiratory therapists, and medical students. This work explores whether medical students trained as both the bedside and post-discharge counselors can effectively help hospitalized patients to quit smoking.

Methods: Smoking patients admitted to URMC were referred to medical students. Patients received 2 bedside counseling sessions and were encouraged to start smoking cessation medications. After discharge, patients were referred to the New York State Quitline for 2 treatment calls, after which they received 2 additional treatment calls from a medical student. Smoking outcomes were assessed by calls at 4 weeks, 3 months, and 6 months post discharge. Results were compared to the established smoking cessation program at URMC.

Results: 119 smokers from 1/29/22-8/23/23 were followed out to 6 months. The 7-day point prevalence quit rates for the as-treated group were 54% (34/63), 44% (18/41), and 39% (15/38) at 4 weeks, 3 months, and 6 months, respectively. For the intent-to-treat group the quit rates were 29% (34/119), 15% (18/119), and 13% (15/119). The established program, which enrolled 385 patients, achieved quit rates of 50%, 42%, and 38% in the as-treated group, and quit rates of 23%, 16%, and 14% in the intent-to-treat group. Chi-squared analysis demonstrated no significant differences between the medical student program and the established program at any timepoint in both the as-treated ($p = 0.41, 0.63, 1$) and the intent-to-treat ($p = 0.82, 0.47, 0.57$) groups.

Conclusion: Medical students can achieve promising quit rates for hospitalized smoking patients. The novel use of medical students as both inpatient and outpatient smoking cessation counselors could reduce burden on healthcare providers and preserve a high quality of care for patients.

New York



New York Chapter
American College of Physicians

Annual Scientific Meeting

Resident/Fellow Clinical Vignette

Poster Presentations

Resident/Fellow Clinical Vignette

Navar Almama, MD

Sohaib Alkowni, MD, Edward F. Bischof, MD

HEMOLYSIS: TICKS CAN BE TRICKY

Introduction:

In areas endemic for tick-borne disease, presentation with fever and hemolysis raises suspicion for Babesiosis. Nevertheless, other causes of fever and hemolysis should be considered.

Clinical case:

A 72-year-old female with a remote history of smoldering Waldenstrom Macroglobulinemia (WM) presented to the emergency department complaining of subjective fever, intermittent diarrhea, fatigue, and myalgia for 3 days prior to admission. On examination, the patient appeared lethargic and pale. Vital signs were notable for a fever of 39.3 C, but otherwise unremarkable. Her white blood cell count was within normal limits, but hemoglobin level dropped acutely to 9.9 g/dL from a baseline of 12 four months prior. Additionally, indirect hyperbilirubinemia, mildly elevated AST, and elevated LDH were noted on labs. Babesiosis was the primary differential diagnosis, despite two peripheral blood smears lacking supportive findings. Treatment was pending confirmatory PCR of Babesia. One day after the admission, hemolysis progressed leading to clinical deterioration, which warranted further work-up for hemolytic anemia. Fibrinogen level was normal, and no schistocytes were identified on blood smears, making DIC and thrombotic thrombocytopenic purpura less likely, respectively. IgM level was unchanged, and there was no lymphadenopathy to indicate progression of WM. No serological or radiological evidence of infectious conditions associated with cold agglutinin disease was identified. The direct antiglobulin test (DAT) was positive for IgG and C3, suggesting warm autoimmune hemolytic anemia (AIHA). No offending drug was identified. The patient required supportive red blood cell transfusions and prednisone for warm AIHA of an unclear etiology. Due to the high clinical suspicion of concomitant tick-borne infection, empiric doxycycline treatment was initiated.

Two days after discharge, PCR testing returned positive for *Anaplasma phagocytophilum* and negative for Babesiosis and other tick-borne pathogens.

Discussion:

Fever and hemolysis in late summer months in tick-endemic regions suggest Babesiosis. Multiple negative blood smears and having confirmed warm AIHA might sway clinicians away from tick-borne disease. It is imperative to be cognizant of anchoring bias and be vigilant of premature closure to maintain the diagnostic momentum which might delay appropriate therapy. Our case demonstrates a potential association of infectious pathogens, namely *Anaplasma phagocytophilum*, with warm AIHA by a mechanism yet to be elucidated.

Warm AIHA may be associated with human granulocytotropic anaplasmosis (HGA) and may cause life-threatening complications in the elderly and immunocompromised.

To our knowledge, only one case of HGA-induced AIHA was reported in humans.

Although underreported, the association between HGA and warm AIHA could become crucial knowledge given the rising incidence of HGA in the United States.

Omer Alnajafi**DELAY IN DIAGNOSIS OF ALS WHEN ATTRIBUTED TO OTHER NEUROMUSCULAR DISORDER AND CONFOUNDING COMORBIDITIES**

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Introduction

Amyotrophic Lateral Sclerosis (ALS) is a rare progressive neurodegenerative disease of both the upper and lower motor neurons in the brain and the spinal cord that control voluntary muscles. The disease causes muscle weakness, paralysis, and eventually respiratory failure. ALS is diagnosed through clinical evaluation, electromyography (EMG), and exclusion of potential alternative causes. There is no current known treatment for ALS. Early diagnosis and comprehensive care are for symptomatic management and improving a patient's quality of life.

Case Presentation

A 48-year-old male with a long-standing history of asthma and COPD presented with worsening dyspnea over 24 hours. He had carried a 6-month diagnosis of multifocal motor neuropathy (MMN) with positive anti-GM1 antibodies, unilateral left upper and lower extremity weakness with normal CNS imaging with an EMG purportedly consistent, but not diagnostic, and managed on IVIG every 6 weeks. He noted improvement in left upper and lower extremity weakness, but experienced new difficulty in clearing his throat with cough during the weeks before presenting to the ED with severe dyspnea.

O2 nasal canula, ABG demonstrated PH=7.36/ pCO2 =66/ pO2 =85/ HCO3 =37.3, and was admitted for acute hypoxemic hypercapnic respiratory failure. There was no dysphonia, fasciculation, or dysphagia.

A fluoroscopic sniff test revealed complete left diaphragmatic paralysis. He was transferred to a tertiary center for reconsideration of an initial diagnosis of MMN and EMG. Tests were consistent with ALS rather than MMN.

Our case highlights the challenges in establishing an early diagnosis of ALS, especially with comorbidities such as COPD, asthma, and motor weakness as in our patient's initial attribution to MMN. The presence of anti-GM1 antibodies is consistent with MMN is not diagnostic and specificity is poor in this setting. Our patient's titer was unknown, and the patient wasn't told the titers and couldn't retrieve the numbers.

The literature states that very high titers of anti-GM1 antibodies (>1:6400) have 80% specificity for MMN, but only 20-30% of patients with MMN have titers of 1:1800 and higher. Lower titers (1:400-800) are less specific and can be found with other neuropathies, including ALS.

Our case report demonstrates the challenges of early diagnosis of ALS and appropriate management. Comorbidities may confound the diagnosis and initial neurological presentations may mimic other neurologic diseases.

Resident/Fellow Clinical Vignette

Syed Mujtaba Baqir, MBBS

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Maimonides Medical Center

Unexpected Melena in a Young Patient - Do We Need Screening Guidelines for Another Gastrointestinal Cancer?

Introduction:

Gastric cancer is the third most common contributor to cancer death worldwide, with more than 1 million cases yearly and 5.7% of all cancer diagnoses. Where the incidence of gastric cancer is decreasing in age groups above 40 due to raised awareness of risk factors, it is increasing in younger adults. We present a case of gastric cancer identified in a 28-year-old man.

Case Presentation:

A 28-year-old Asian man with no significant past medical history presented to our hospital after an episode of syncope associated with a two-week history of formed black stool, intermittent fevers, myalgia, and malaise. His family history was significant for his grandfather's gastric cancer and his paternal uncle's colon cancer. The patient was tachycardic on presentation. On examination, he appeared to be pale with decreased skin turgor. Initial investigations revealed normocytic anemia with a hemoglobin of 5.5 g/dL (normal range 13-17g/dL) and a mean corpuscular volume of 87.5 fL (normal range 80-100 fL). CT scan of the abdomen and pelvis was unremarkable for any abdominal pathology. The patient was transfused with two packed red blood cells (PRBC) units. Esophagogastroduodenoscopy (EGD) revealed an approximately 2.5 cm lesion with central clean-based ulceration with heaped-up edematous edges identified along the greater curvature of mid-body region with surrounding erythematous, edematous, and granular mucosa. Endoscopic Ultrasound (EUS) with biopsy demonstrated the same gastric mass and staged it as T2N0. Biopsy results revealed gastric adenocarcinoma, diffuse-type, along with *Helicobacter pylori* (*H.pylori*)-associated gastritis. Immunohistochemical staining was positive for HER-2 and CKIT-negative adenocarcinoma. The patient received 5-Fluorouracil, Leucovorin and Oxaliplatin as neoadjuvant chemotherapy and treatment for *H. Pylori*. Patient then underwent laparoscopic subtotal gastrectomy with D2 dissection and B2 reconstruction. The patient had an uncomplicated hospital course and was discharged to follow-up outpatient with general surgery and oncology.

Discussion:

Most cases of gastric cancer are diagnosed at the metastatic phase of the disease, incurring as low as a 5-year survival rate and hence an abysmal prognosis. This prognostic status is lower in the young population due to a higher percentage of *H. Pylori* infection and hence the predominant histologic type of poorly differentiated signet ring cell cancer "" coupled with lack of known early preventative measures. Gastric cancer screening has been in practice in Japan since 1983; however, clear screening guidelines do not exist for gastric cancer in the United States of America (USA). Given the age of diagnosis in our case associated with melena, anemia, and strong family history, earlier screening guidelines for patients with characteristic risk factors can aid physicians in detecting and initiating treatment early on. This is especially important when surgery and chemoradiotherapy at a younger age confer better outcomes.

Resident/Fellow Clinical Vignette

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HYDRALAZINE-INDUCED ANTINEUTROPHIL CYTOPLASMIC ANTIBODY-ASSOCIATED GLOMERULONEPHRITIS

Background: Hydralazine is a vasodilator used to treat hypertension or heart failure. However, it carries the risk of drug-induced antineutrophil cytoplasmic antibody (ANCA)-associated vasculitis (1).

Objective: To describe a case of glomerulonephritis requiring dialysis in a patient with antineutrophil cytoplasmic antibody vasculitis secondary to hydralazine

Case Report: A 67-year-old woman presented to the Emergency Department with diarrhea for two days. Medical history included obesity and hypertension. Medications included hydrochlorothiazide for 12 years and carvedilol and hydralazine for six years. She did not smoke cigarettes, use illicit drugs, or drink alcohol. On examination, the temperature was 36.8°C, the heart rate was 77 beats per minute, the blood pressure was 170/64 mm Hg, and the oxygen saturation was 97% while she was breathing ambient air. She had no purpura. The hemoglobin level was 5.2 g per deciliter (reference range, 12.0 to 16.0) and the creatinine was 6.3 mg/dL (reference range 0.5-1.5 mg/dL). The liver function tests were normal. Urinalysis showed moderate proteinuria and trace blood. Chest radiograph revealed bilateral airspace opacities with pulmonary venous congestion. The patient was treated with a transfusion of red blood cells. She developed acute hypoxemic respiratory failure requiring bilevel-positive airway pressure. Aztreonam and azithromycin, and then vancomycin was empirically administered but blood and urine cultures did not identify any growth. Ultrasound showed echogenic kidneys and no hydronephrosis.

Transthoracic echocardiogram revealed normal ejection fraction, concentric left ventricular hypertrophy, and severely elevated pulmonary artery pressure. Immune workup showed positive anti-histone and anti-myeloperoxidase antibodies, and a lupus anticoagulant was detected. Complement C3 and C4 were low. Antinuclear, anti-double-stranded DNA, anti-Smith, anti-cardiolipin, beta 2 glycoprotein, Sjogren's, and anti-glomerular basement membrane antibodies were negative. Hydralazine was discontinued. A kidney biopsy revealed focal segmental necrotizing and crescentic glomerulonephritis with mild IgG-dominant deposits. The patient was started on methylprednisolone 1000 mg daily for 3 days and then prednisone but she required hemodialysis. She was weaned off supplemental oxygen requirements and was additionally treated with rituximab 1 g infusion.

Discussion: Hydralazine has been associated with drug-induced lupus or drug-induced ANCA-associated vasculitis. Antihistone antibodies can be seen in idiopathic systemic lupus erythematosus, drug-induced lupus, and drug-induced ANCA-associated vasculitis. Early evaluation with a kidney biopsy was key in this patient's diagnosis and treatment, especially since initial therapy for lupus nephritis and ANCA-associated vasculitis differs. It is possible that her severe anemia and hypoxia were due to alveolar hemorrhage but she did not have a chest computed tomography scan or bronchoscopy. Her respiratory status improved after high-dose pulse glucocorticoids. In one study of 80 kidney biopsies with ANCA-glomerulonephritis preceded by hydralazine, more patients were older than women (2). ANCA-associated glomerulonephritis should be considered in acute kidney injury in older women with long-term use of hydralazine.

Resident/Fellow Clinical Vignette

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A WARM HUG IS ALL THAT IT NEEDS: INVITRO HEMOLYSIS ON COLD EXPOSURE CAUSING PSEUDOHYPERKALEMIA IN COLD AGGLUTININ DISEASE

Cold agglutinin disease (CAD) is a rare autoimmune hemolytic anemia mediated by IgM autoantibodies causing either agglutination at $\approx 37^{\circ}\text{C}$, activation of the classical complement pathway, or both. This case describes how blood exposure to a cold environment can hasten the process of hemolysis, leading to pseudohyperkalemia, and how simple measures taken on blood collection can prevent it.

A 63-year-old man with a history of heart failure and cold autoimmune hemolytic anemia was admitted for symptomatic anemia. As a part of the workup of CAD, a bone marrow biopsy was done which showed low-grade plasmacytic lymphoproliferative disorder, which along with IgM paraprotein, was consistent with Waldenstrom macroglobulinemia. The patient was on IV furosemide for heart failure, with labs scheduled for monitoring his electrolytes. The patient's initial potassium was 6.2 mEq/L (hemolyzed). Labs were repeated with potassium of 5.9 mEq/L (still hemolyzed) and then repeated a third time without a tourniquet or repeated fist clenching, but still showed hemolysis. There was an initial concern about severe in vivo hemolysis, but all hemolysis indicators were stable. Potassium was repeated a fourth time, taking all precautions to avoid pseudohyperkalemia, but this time, the blood was kept warm between the palms and taken to the lab immediately. Potassium was 3.7 mEq/L (non-hemolyzed), confirming in vitro hemolysis from exposure to a cold environment.

Our patient presented in May in New York City when the average temperature was 13-24 $^{\circ}$ Celsius, but air conditioners make hospitals cooler. He did exhibit some in vivo hemolysis, as indicated by his positive yet stable hemolytic markers, but not enough to cause true hyperkalemia. Hemolysis was accelerated when the blood was exposed to a comparatively cold environment, leading to pseudohyperkalemia. Not all patients with CAD will have in vitro hemolysis on blood collection, as several factors determine the degree of hemolysis, like the concentration of the antibody, its thermal amplitude, and the concentration of complement components. The thermal amplitude (the temperature within which cold-reacting antibody can interact with the red cell) is an important determinant of the ability of the antibody to initiate the activation of complement. Investigations done on CAD have been using heated syringes to prevent hemolysis due to cold exposure. Keeping the blood collection tube between hands prevented hemolysis as the blood temperature stayed above its thermal amplitude. Another implication of this phenomenon is for hypothermic surgical procedures like cardiopulmonary bypass, where rapid agglutination and hemolysis can occur on cooling the body below thermal amplitude. This case illustrates the possibility of in vitro hemolysis on cold exposure after blood collection in CAD, which can cause spurious hyperkalemia, leading to unnecessary diagnostic tests and harmful treatments. Such hemolysis can be prevented by keeping the blood specimen warm at all times.

Resident/Fellow Clinical Vignette

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POST-COVID THYROIDITIS

Introduction: Subacute thyroiditis (SAT) is a multi-phase syndrome that can sometimes follow acute viral infection. The exact mechanism remains incompletely understood. Subacute thyroiditis has been previously associated with several mild upper respiratory infections but data on subacute thyroiditis following SARS-COV2 infection is still limited.

Patient presentation: Patient is a 73-year-old male with medical history that includes hypertension and hyperlipidemia who initially presented with irregular palpitations and was noted to be in atrial fibrillation. Thyroid stimulating hormone (TSH) was measured as part of the work-up for his new arrhythmia and was found to be reduced to 0.02 mIU/mL with a reflexive free T4 of 2.91 ng/dL. Patient denied experiencing other symptoms often associated with hyperthyroidism and the thyroid was not tender to palpation on examination. Further questioning revealed that patient had tested positive for SARS-COV-2 six weeks prior to the onset of the atrial fibrillation but suffered only a mild fever that resolved after one day, likely as the patient had been vaccinated and boosted. The Omicron variant was the predominant strain at that time. 24 hour Radioiodine uptake was 0.7% confirming low uptake hyperthyroidism consistent with SAT. Patient was treated with direct-current cardioversion and beta blockers. TSH two months later was found to be 2.9 mIU/mL with resolution of symptoms.

Discussion: This phenomenon of post-COVID 19 subacute thyroiditis is a sequela of SARS-COV-2 infection that should not be neglected. Although often self-limiting, moderate to severe thyrotoxicosis with life-threatening potential can occur as demonstrated.

COVID-19 can now be added to the list of viral infections known to induce SAT which includes coxsackie, mumps, EBV, CMV and flu. There is no known link between seasonal coronavirus infection and SAT although seasonal coronavirus is not often tested for, leading to reporting bias.

The precise mechanisms by which COVID-19 and other viral illnesses induce SAT remain unclear. Several theories have been reported and require further investigation. ACE2 receptors in other tissue cells have been linked to entry of the COVID virus into the organ and have been identified on the surface of thyroid follicular cells. Another link that has been suggested is the immune-mediated release of IL-6 in patients with COVID-19 infection. IL-6 levels have been measured and found to be elevated in patients with post-COVID SAT.

With the increase in scientific interest in the aftereffects of COVID-19 infection, these effects on thyroid function certainly warrant further investigation.

Resident/Fellow Clinical Vignette

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AIDS-associated Kaposi Sarcoma: A rare case of diffuse life threatening visceral Kaposi Sarcoma lesions

No cases of simultaneous AIDS-associated Kaposi Sarcoma (KS) of the vocal cords (VCs), lungs, and breasts have been reported. Only 5 cases of breast KS and 75 cases of VC KS have been described in the literature.

A 34-year-old woman with a past medical history of acquired congenital human immunodeficiency (HIV)-1 infection presented to the ED with shortness of breath, productive cough, fevers of one month duration, and 20-pound weight loss for the past year. The patient underwent a left breast biopsy one week before presentation. The patient stopped taking antiretroviral therapy for the last two years. Her last CD4 count was 21 one week prior to admission.

On admission, she was hypoxic on room air, tachycardic, afebrile, cachexic, and had a muffled voice. KS lesions were present in the soft palate, posterior pharynx, back, legs, and face. The left breast exam had a "peau d'orange" appearance with a diffuse black plaque. Diffuse non-painful lymphadenopathy was palpated in the cervical, axillary, and inguinal regions. Pulmonary auscultation revealed diffuse bilateral rhonchi.

Labs showed hypochromic microcytic anemia, lymphocytopenia, and a CD4 count of 0. CXR revealed bilateral alveolar infiltrates and a left breast with increased density. Chest CT scan showed diffuse lymphadenopathy, left breast fullness, and bilateral pulmonary lesions consistent with KS. Her ejection fraction by ECHO was 30%. The patient was started on O2, high-dose IV pulse steroids, and antiretroviral therapy (AART). Medical records obtained from her previous hospitalization reported the findings of her breast biopsy to be consistent with KS.

The patient developed an inspiratory stridor and was intubated thirteen days after admission. KS-free tissue masses arising from the VCs were found, causing acute airway obstruction.

The patient developed hemoptysis and hypotension. Pressors were started. Bedside bronchoscopy revealed bilateral diffuse alveolar hemorrhage. Two VC masses surrounding the ET tube were removed. Biopsy reported nodular KS of the VCs. BAL workup was pertinent only for iron-laden macrophages.

The patient required a tracheostomy. Hemoptysis from her KS lesions continued. She developed diffuse intravascular coagulation and worsening hypotension. The patient deteriorated despite maximum doses of vasopressors and repetitive transfusions and was transitioned to comfort care.

This case demonstrates the burden of the AIDS epidemic and the life-threatening situations diffuse visceral KS disease can produce. This is the first case reporting simultaneous KS lesions in rare locations such as VCs, lungs, and breasts. Outcomes of diffuse AIDS-related KS with visceral involvement are poor due to life-threatening complications such as acute upper airway obstruction and diffuse alveolar hemorrhage. AART in the setting of HIV infection is essential to prevent AIDS-associated KS incidence, morbidity, and mortality. In early-stage T0 KS, AART can regress lesions in up to 80% of patients and prevent T1 advanced-stage KS.

Resident/Fellow Clinical Vignette

Marco Bermudez, MD

Marco Bermudez, MD, Tabata Hernandez, MD, Hosman Paz, MD, Julian Paniagua, MD, Ilmana Fulger, MD.

Pseudo-thrombotic microangiopathy and pancytopenia secondary to undiagnosed autoimmune disease: A case report

Severe vitamin B12 deficiency rarely causes pseudo-thrombotic microangiopathy (2.5% of cases), pancytopenia (5% of cases), and hemolytic anemia (1.5% of cases) requiring blood transfusions. Undiagnosed pernicious anemia can be easily diagnosed and treated to completely resolve these findings and prevent unnecessary invasive workups and costly treatments.

A 57-year-old female patient with unknown medical history presented to the ED complaining of general weakness, subjective fevers, and cough. She was previously told years ago that she had a "blood problem" with low blood vitamin levels and was prescribed some unknown oral vitamins. She ate meat and vegetables. Vital signs were normal. A physical exam was pertinent for depressed mood and pale conjunctiva. Labs were pertinent for pancytopenia, borderline macrocytic anemia hemoglobin 4.1 g/dl, MCV 98 fl, elevated LDH 4812 IU/L, low haptoglobin with the presence of schistocytes, anisopoikilocytosis, nucleated red blood cells (RBCs), and atypical lymphocytes on peripheral blood smear. Chest x-ray revealed no lung pathology. The patient was treated with three packed RBC transfusions with an appropriate response.

Further workup revealed severe vitamin B12 deficiency with a serum vitamin B12 level of 34 pg/ml. The reticulocyte production index (RPI) was 0.7. Severe vitamin B12 deficiency producing ineffective erythropoiesis, intramedullary hemolysis, and hypoproliferative bone marrow response was suspected, and daily parenteral vitamin B12 injections were started. Antiparietal antibodies and anti-intrinsic factor antibodies were positive. A diagnosis of severe vitamin B12 deficiency causing pancytopenia, pseudo-thrombotic microangiopathy, and hemolytic anemia secondary to pernicious anemia was made. The patient was discharged three days later, with daily vitamin B12 injections for four more days and weekly vitamin B12 injections afterward. Upon a one-month clinic follow-up, the patient reported resolved depressed mood and fatigue. Laboratory workup revealed an improvement in all blood counts, with resolved pancytopenia, normal RPI index, and resolved blood smear findings.

This case highlights infrequent findings of severe vitamin B12 deficiency, which can be misdiagnosed as thrombotic thrombocytopenic purpura (TTP). Schistocytes can be seen in this deficiency secondary to RBC fragility and intramedullary shearing in the absence of platelet microthrombi.

Hyperhomocysteinemia leads to endothelial damage, causing fragmentation of RBCs and increased production of reactive oxygen species due to homocysteine oxidation, leading to fragmentation of RBCs and schistocyte formation. RPI index is low secondary to ineffective erythropoiesis due to insufficient storage of vitamin B12 and ineffective DNA synthesis. In the setting of macrocytic anemia, pancytopenia, and schistocytes, the diagnosis can be quickly confirmed with serum vitamin B12 levels and pernicious anemia antibodies. Up to 38% of cases of pseudo-TTP are misdiagnosed and treated with plasmapheresis. Treatment with vitamin B12 injections can quickly revert these findings within weeks and can prevent unnecessary bone marrow biopsies and plasmapheresis.

Resident/Fellow Clinical Vignette

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Abiotrophia bacterial endocarditis in a previously undiagnosed bicuspid aortic valve

Introduction

Abiotrophia species, previously classified within the nutritional variant streptococcus group, is an uncommon cause of bacterial endocarditis. Endocarditis secondary to Abiotrophia tends to have a higher rate of relapse, complications including embolization, and need for surgery when compared with endocarditis from other more commonly-seen pathogens.

History, Diagnosis, and Management

We present a case of a previously healthy 27 year old man endorsing two months of fever, night sweats, and weight loss. He presented to the hospital after outpatient workup revealed gram positive cocci in two separate blood cultures, which ultimately speciated as Abiotrophia. Further inpatient workup showed a previously-undiagnosed bicuspid aortic valve with paravalvular abscesses and moderate eccentric aortic regurgitation, as well as a left renal infarct. Given evidence of distal emboli as well as valvular dysfunction, he underwent an aortic root and valve replacement approximately one week into his hospitalization without complication, and subsequently completed six weeks of IV penicillin G therapy.

Discussion

A healthy young man with recurrent fevers and no significant medical, surgical, or social risk factors presents with a broad differential, including infectious, autoimmune, and oncologic etiologies. In this case, positive blood cultures helped narrow the investigation to an infectious culprit. History did not reveal any obvious risk factors for subacute bacterial endocarditis (SBE), and there were no classic signs on physical exam, such as splinter hemorrhage, Osler nodes, Janeway lesions, or even a cardiac murmur. As part of his workup for fevers and bacteremia, he underwent transesophageal echocardiography, which showed a congenital bicuspid aortic valve. This was previously unknown to the patient. Bicuspid aortic valves are the most common congenital cardiac defect, occurring in 2% of the population. Our patient's bicuspid aortic valve acted as a nidus for infection and predisposed him to developing endocarditis from an uncommon pathogen, Abiotrophia species. Abiotrophia is the identified cause of approximately 5% of streptococcal endocarditis cases. This organism typically is found in the oral cavity and gastrointestinal tract, and its overwhelming pathogenicity is bacterial endocarditis and bacteremia; it is very rarely found in other infectious processes. Abiotrophia is a fastidious organism and therefore may cause culture-negative endocarditis. Patients with Abiotrophia endocarditis are also at high risk for embolic events. Severe flank pain in our patient prompted CT imaging, which revealed renal infarct. He underwent additional imaging to assess for embolic complications, including diagnostic cerebral angiogram, which did not reveal additional embolic events.

Conclusion

Our case demonstrates the importance of considering subacute bacterial endocarditis in any patient with prolonged fevers, even those without apparent risk factors for the condition. This case also highlights the risk of embolic complications associated with Abiotrophia endocarditis, and the need for prompt imaging and surgical management.

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CARDIAC MASS MIMICKING ANEURYSM AND TAMPONADE : A RARE PRESENTATION OF METASTATIC LUNG CANCER

Introduction:

Cardiac metastasis is a rare but life-threatening complication of non-squamous cell carcinoma of the lung and is typically associated with dyspnea, chest pain/pressure, arrhythmia, heart failure and systemic emboli. We present a case of a metastatic non squamous cell carcinoma of the lung (NSCLC) causing apical cardiac mass that mimicked cardiac aneurysm and cardiac tamponade in the initial presentation.

Case:

A 72-year-old Caucasian male with past medical history of stage I NSCLC, hyperlipidemia, and hypertension; presented to the hospital with 2 weeks of unresolving chest pain, severe shortness of breath and hypotension. Transthoracic echocardiography imaging done in the emergency department showed evidence of pericardial tamponade. CTA thorax done as a part of initial workup showed concerns for ruptured cardiac aneurysm with evidence of cardiac tamponade. The patient was immediately taken to the operative room by the cardiac surgery team. He underwent median sternotomy and was found to have left ventricular (LV) mass with mild pericardial fluid collection. Biopsy of mass with samples from pericardial fluids were taken for further evaluation and pericardial patch placement was done by cardiac surgery team. Biopsy reports showed poorly differentiated metastatic NSCLC from apical mass, and no malignancy from pericardium and from pericardial fluid.

Discussion:

Non-small cell lung cancer (NSCLC) can metastasize to various organs, including the heart. Cardiac metastasis is a rare complication of NSCLC and may present with a wide range of symptoms, including chest pain, dyspnea, palpitations, syncope, and sudden death. Diagnosis is often challenging, as symptoms may be nonspecific, and imaging studies such as echocardiography and CT scans may not always be sufficient to establish a definitive diagnosis. Cardiac metastases should be in differential when encountered cardiac symptoms in patients with history of lung cancer.

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SULFASALAZINE-INDUCED DRESS WITH SKIN, KIDNEY, AND LIVER INVOLVEMENT

Background: Drug reaction with eosinophilia and systemic symptoms (DRESS) is rare and can cause liver and renal failure. Biopsies of involved organs can help to diagnose this potentially life-threatening reaction but are not always necessary before empiric treatment.

Objective: To describe a case of sulfasalazine-induced DRESS with skin, kidney, and liver involvement that responded to prednisone

Case Report: A 68-year-old woman was admitted to this hospital because of a rash and fever. Five weeks before the presentation, she had started sulfasalazine after a rheumatology consultation. She was in her usual state of health until 1 week before this admission, when she developed a pruritic rash that started on her face and spread to her extremities. The patient had been on amlodipine and hydrochlorothiazide for hypertension and rosuvastatin for dyslipidemia. Other medical history includes obesity. She had no surgical history. Family history was unremarkable. She had no known drug allergies.

On evaluation, the peak temperature was 39.2°C. Physical examination revealed a diffuse morbilliform rash. Peak laboratory values during the hospital stay included a white-cell count of 20.8 per microliter (reference range, 4800 to 10,800), an absolute eosinophil count of 1700 per cubic millimetre (reference range, 50 to 250), an alanine aminotransferase (ALT) level of 350 U per litre (reference value <40), an aspartate aminotransferase (AST) level of 468 U per litre (reference value=36), a serum creatinine level of 7.6 mg per deciliter (reference range 0.5 to 1.5). Urinalysis demonstrated trace proteinuria but no hematuria. Her blood culture yielded no organism. Antinuclear and antineutrophil cytoplasmic antibody tests, tests for viral hepatitis, and chest radiograph were normal. Computed tomography of the chest showed borderline bilateral axillary lymphadenopathy measuring up to 1 cm. The Registry of Severe Cutaneous Adverse Reactions (RegiSCAR) score was 6, which indicated a definitive diagnosis of DRESS related to treatment with sulfasalazine. RegiSCAR scores range from 4 to 9; a score of >5 indicates a definitive diagnosis. Treatment with prednisone 60 mg was initiated, and the patient was advised to avoid sulfasalazine. A renal biopsy was contemplated but decided against due to her elevated blood pressure. Eighteen days later, her rash and leukocytosis with eosinophilia abated while kidney and liver function recovered (serum creatinine 1.6, ALT 133, AST 55).

Discussion: This older patient developed a diffuse rash five weeks after she started sulfasalazine. She also had kidney and liver involvement that only began to recover after taking high dose prednisone. Given the risk of mortality associated with DRESS, the lack of biopsies of involved organs should not preclude empiric treatment with oral glucocorticoids if clinical suspicion is high and if infection has been ruled out. Older age and kidney involvement are some of the predictors of mortality in DRESS.

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WHEN THE UNCOMMON TURNS LETHAL: A CASE STUDY OF AEROCOCCUS URINAE INFECTION LEADING TO FATAL ACUTE VALVULAR DYSFUNCTION**Introduction:**

Aerococcus urinae is an uncommon human pathogen primarily causing urinary tract infections but occasionally leading to septicemia and infective endocarditis. Previously, *Aerococcus urinae* infective endocarditis was associated with a less favorable prognosis, with mortality rates reaching as high as 50%. However, recent studies indicate more positive outcomes in patients receiving appropriate treatment. We present a clinical course of a patient who exhibited bacteremia caused by *Aerococcus urinae*, with possible infective endocarditis. This condition subsequently progressed to acute valvular dysfunction, resulting in cardiogenic shock and ultimately culminating in a fatal outcome.

Case presentation:

This case report describes a 63-year-old male with a medical history of hypertension, hyperlipidemia, abdominal aortic aneurysm status post endovascular repair, chronic obstructive pulmonary disease, and alcohol use disorder, who presented to the emergency department with a three-week history of generalized weakness followed by a fever for the last three days. Physical examination revealed scleral icterus, tachycardia, systolic murmur, bibasilar crackles, abdominal distension, and bilateral pitting edema. Laboratory findings showed leukocytosis, macrocytic anemia, metabolic acidosis, elevated brain natriuretic peptide, acute kidney injury, mildly deranged liver enzymes, hyperbilirubinemia, and mild coagulopathy. Computed tomography imaging revealed a cirrhotic liver with sequelae of portal hypertension. The urinalysis was unremarkable. The patient was started on broad-spectrum antibiotics empirically, later tailored to penicillin when blood cultures grew *Aerococcus urinae*. A transthoracic echocardiogram indicated diastolic dysfunction, aortic and mitral regurgitation, and aortic valve leaflet thickening raising concerns for possible infective endocarditis. While awaiting transesophageal echocardiogram, the patient experienced cardiogenic shock from acute valvular dysfunction with extensive regurgitation unresponsive to vasopressors, ultimately leading to cardiac arrest and death despite resuscitative efforts.

Discussion and conclusion:

Aerococcus urinae is a rare gram-positive coccus that is often misdiagnosed as *Staphylococcus*, *Streptococcus*, or *Enterococcus*. While most commonly implicated in urinary tract infections, *Aerococcus urinae* infrequently leads to infective endocarditis due to its capacity for biofilm formation and platelet aggregation. Numerous complications have been reported in cases of *Aerococcus urinae* infective endocarditis, encompassing embolization, valvular dysfunction, stroke, conduction abnormalities, heart failure, and infrequently, valvular ulcer formation, abscess development, pericardial fistula formation, and death. Treatment includes antibiotics and surgical intervention when necessary to prevent these complications.

This case underscores the potential severity of *Aerococcus urinae* infections leading to infective endocarditis and subsequent cardiac complications. Despite the rare nature of this pathogen, its ability to induce acute valvular dysfunction leading to cardiogenic shock and fatal outcomes is evident. This case report adds to the evolving body of knowledge regarding the clinical spectrum and outcomes associated with *Aerococcus urinae* infections, emphasizing the need for prompt intervention to mitigate potential life-threatening consequences.

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WHEN CURE CAUSES CONFUSION: A UNIQUE PRESENTATION OF ATEZOLIZUMAB AND BEVACIZUMAB-ASSOCIATED CEREBRAL TOXICITY

Introduction:

Atezolizumab and bevacizumab have been the first-line therapies for unresectable, locally advanced, and metastatic hepatocellular carcinoma since May 2020. Encephalitis and treatment-induced encephalopathy are exceedingly rare side effects of these drugs. We present here a case of an elderly male with locally advanced unresectable hepatocellular carcinoma who developed treatment-induced encephalitis and leukoencephalopathy after two cycles of combination therapy but had improved cancer status.

Case presentation:

A 74-year-old male with a medical history of hepatitis C cirrhosis post-treatment, benign prostate hyperplasia, hypertension, osteoarthritis, and coronary artery disease, presented two years ago with abdominal pain and weight loss. Abdominal magnetic resonance imaging revealed hepatocellular carcinoma occupying almost the entire right hepatic lobe with macrovascular invasion without evidence of metastatic disease. The initial alpha-fetoprotein level exceeded 2000 nanograms per milliliter. Subsequently, the patient was initiated on a treatment regimen of atezolizumab and bevacizumab. After completing two cycles of this therapy, he was admitted to the hospital due to deteriorating mental status. A magnetic resonance imaging of the brain showed features indicative of treatment-associated encephalopathy. Further, cerebrospinal fluid analysis by lumbar puncture ruled out meningeal carcinomatosis or infection. Consequently, bevacizumab administration was paused during cycle three. Owing to persistent confusion and altered mental status, both atezolizumab and bevacizumab were placed on hold. Notably, the patient's mental status exhibited improvement following the cessation of immunotherapy. The patient was also initiated on a prednisone regimen, initially at 60mg, which was subsequently tapered over a period of three to four months. Within a span of three months after commencing immunotherapy, the patient's alpha-fetoprotein levels normalized, indicating a positive response to the initial immunotherapy. Subsequent computed tomography imaging revealed reduced tumor size and upper abdominal lymphadenopathy, with no new hepatic mass. Presently, the patient receives ongoing care from both the oncology and neurology departments on an outpatient basis.

Discussion and conclusion:

The Food and Drug Administration granted approval to atezolizumab and bevacizumab on May 29, 2020, as a treatment of choice for individuals with unresectable locally advanced or metastatic hepatocellular carcinoma who have not previously received immunotherapy. However, the occurrence of encephalitis and treatment-related leukoencephalopathy due to this combination is rare and has limited documentation in the existing literature. While there are no established guidelines for treatment, these side effects have been managed by discontinuing the drug, using high-dose steroid pulse therapy, administering intravenous immunoglobulin, plasmapheresis, or employing medications such as infliximab or rituximab. Instances of these cerebral toxicities necessitate increased attention from healthcare providers, as they pose significant life-threatening risks. Consequently, the importance of early recognition and timely intervention cannot be overstated. Further research efforts are crucial to refine our understanding of the specific population at a higher risk.

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Assessing Pneumonia Vaccination Rates Among Patient's Diagnosed with COPD

Background: This study serves as an initial assessment of pneumococcal vaccination rates at a resident staffed clinic in Manhattan, NY to assess the need to improve pneumococcal vaccination rates in this community.

In its decade long national health directive, Healthy People 2030, the CDC aims reduction in the rate of hospitalizations for those with pneumococcal pneumonia. To meet this goal, pneumococcal vaccination should be provided to all individuals with COPD, regardless of age. A recent study by the American Family Physician analyzing the COPD population noted that 1 in 21 patients who received pneumococcal vaccination avoided episodes of community acquired pneumonia and 12.5% of those patients avoided an acute COPD exacerbation. An Australian study found in individuals with COPD who received pneumonia vaccination the odds ratio of community acquired pneumonia was 0.59.

Objective: Identify individuals with COPD as an indication for early pneumococcal vaccination, stratifying them into groups (>65 & <65 years old) to assess the percentage of patients who appropriately received vaccination.

Methods: Retrospective chart review of two groups at a resident staffed clinic who are recommended to receive pneumococcal vaccination, individuals less than age 65 with COPD as a risk factor for vaccination and individuals who are 65 years or older.

Results: In individuals less than 65 years old with COPD as an indication for early pneumococcal vaccination 37.5% of the 64 individuals reviewed had received at least one dose of pneumococcal vaccine. In individuals who are greater than 65 years of age 64.9% of the 77 individuals assessed had received at least one dose of pneumococcal vaccine.

Conclusions: The above data shows there is room to improve in the overall pneumococcal vaccination rate within the population of patients diagnosed with COPD within this clinic.

Our data suggests a lack of provider awareness in prescribing individuals <65 years old with COPD the pneumococcal vaccination and patients'™ refusal to accept the vaccine are the sources for guideline noncompliance. To improve vaccination rates in our clinic we propose to engage the patients and their providers with an informative flyer placed in each office room as well as work areas for providing resident physicians. Thus, acting as a conversation piece as well as a teaching point to outline the guidelines for vaccination. Providers will be notified of these flyers, and they may act as a quick checklist for patients who may qualify for increased discussion to be held in relation to vaccination.

We plan to repeat and expand on these methods over 3 months to determine the impact of this intervention. We plan to expand on this data by delving into documentation of discussion for pneumococcal vaccination and identifying other barriers to vaccination.

Charlotte Blumrosen,

Splenic Artery Pseudoaneurysm as a Cause of Massive GI Bleeding

Splenic artery pseudoaneurysm (SAP) is a rare complication of both acute and chronic pancreatitis and is often associated with hemodynamically significant GI bleeding. It should remain in the differential diagnosis for any patient with massive GI bleeding.

A 68-year-old male presented with 3 days of black stools and progressively worsening lightheadedness, dizziness, and near syncope. He denied abdominal pain, nausea, vomiting or hematochezia. Social history was notable for the patient having lived in Zambia and Sicily for 18 years prior to moving back to the United States 3 years prior to presentation. The patient denied any prior NSAID use or alcohol use. We were unable to obtain a full medical history due to the patient previously obtaining all care at an outside hospital system. Per patient report, this included at least one prior episode of acute pancreatitis. The physical exam was notable for tachycardia, pallor, a soft non-distended abdomen without tenderness and audible bowel sounds. Initial laboratory work-up was notable for hemoglobin of 7, hematocrit of 21 and a positive stool Guaiac test. He initially underwent upper endoscopy due to concern for *Helicobacter Pylori* infection from travel to an endemic area. Esophagogastroduodenoscopy (EGD) revealed Los Angeles grade B esophagitis which was thought to contribute to this patient's presentation but did not solely explain the degree of anemia. The decision was then made to undertake preparation for colonoscopy, however during this process, the patient began to experience acute hematochezia and hemodynamic instability requiring several units of packed red blood cells. Urgent computed tomography (CT) of the abdomen revealed a massive (5.7cm x 5.6cm) pseudoaneurysm of the splenic artery with peripheral thrombus formation and concern for fistulization to the stomach. He subsequently underwent proximal/mid-splenic artery coil embolization with interventional radiology with appropriate resolution of hematochezia. The patient was discharged 2 days afterwards with follow-up with general surgery for outpatient splenectomy.

This case illustrates the diagnostic challenge of SAP as a cause of GI bleeding. It can often range in presentation from asymptomatic to significant hemodynamic compromise. In addition to acute and chronic pancreatitis, other common etiologies of SAP include abdominal trauma, post-surgical complications and peptic ulcer disease. Approximately 58% SAP provoked GI bleeding is associated with hemodynamic instability. CT Abdomen with IV contrast remains the preferred imaging modality for diagnosis though abdominal angiography with potential for subsequent transcatheter embolization can establish a definitive diagnosis if suspicion is high.

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Role Of Fibrinolytics In Bioprosthetic Aortic Valve Thrombosis, A Case To Remember

Introduction

Transcatheter aortic valve replacement (TAVR) comprises 12.5% of valve replacements for aortic stenosis (AS). Symptomatic or hemodynamically significant valve thrombosis is rare, occurring in <1% of patients undergoing TAVI. Thromboembolism and fatal hemodynamic compromise are feared complications of bioprosthetic valve thrombosis (BPVT). This is a case of BPVT presenting as new onset heart failure with reduced ejection fraction (HFrEF) treated with tissue plasminogen activator (TPA).

Case

A 76-year-old male with AS post-TAVR, HFrEF, paroxysmal atrial fibrillation, and hypertension presented with worsening dyspnea, chest discomfort, and orthopnea for a week before the presentation. Initial vitals were stable except for tachypnea. Examination showed early systolic murmur in the aortic area, respiratory distress, and lung crackles. Troponin was elevated (172.3 pg/ml), and BNP was 894. ECG didn't show ischemic changes. Vascular congestion was seen on a chest X-ray. Transthoracic echo (TTE) showed severely reduced ejection fraction and severe prosthetic valve stenosis with a mean gradient (MG) of 50mmHg and peak velocity of 4.5 cm/s [Fig 1]. He required intubation due to acute hypoxic hypercapnic respiratory failure secondary to decompensated heart failure. He was in cardiogenic shock requiring pressors briefly. Lasix infusions were started. Respiratory failure improved with furosemide infusion and was extubated one day later. Transesophageal echo (TEE) confirmed a thrombus on the right coronary cusp with a valve area of 0.7 cm² [Fig 2]. He received 25 hours of alteplase infusion followed by heparin infusion. Serial TTEs showed reduced gradients (MG 32 mm Hg, peak velocity 3.3 cm/s) [Fig 3], and improvement in EF to 40-45%. Repeat TEE revealed some improvement in thrombus on the aortic side of the valve and protrusion of the stented portion of the valve into the aorta which was concerning for the valve under expansion. Valve under expansion was confirmed during surgical aortic valve replacement which contributed to the ongoing symptoms. Repeat TTE after 2 months showed normal valve gradients.

Discussion

BPVT is rare (4-7% incidence), and often underestimated due to asymptomatic cases and the need for specific imaging techniques for detection. The presence of atrial fibrillation (AF) may increase the risk of thrombus. Symptoms include dyspnea and an increase in transvalvular gradients. If a patient with a bioprosthetic valve has a thromboembolic event, BPVT should be suspected. TEE is essential for evaluating valve dynamics and 3D TEE can provide further insights if TTE is sub-optimal. Transcatheter Valve in Valve is contraindicated. Surgical valve replacement is recommended; but fibrinolysis is a considerable option for high-risk patients with 1st episode of thrombosis, no left atrial thrombus, and limited surgical expertise. More studies are needed to further evaluate the efficacy of fibrinolysis in BPVT.

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A Rare Case of Fatal Atypical Allopurinol-Induced DRESS Syndrome

Introduction

Drug reaction with eosinophilia and systemic symptoms (DRESS) is a rare, complex and potentially life-threatening condition characterized by skin eruption, hematologic abnormalities, lymphadenopathy, and internal organ involvement. DRESS is increasingly being referred to as drug-induced hypersensitivity syndrome (DIHS) to emphasize that eosinophilia is not always present. Diagnostic criteria have been established by the European Registry of Serious Cutaneous Adverse Reactions (RegiSCAR) group and the Japanese Consensus Group. The mortality rate is between 2 and 10 percent. Older age, severe organ involvement, and multiorgan failure are the main predictors of mortality. Per our literature review, we have found only one reported case of fatal DRESS without eosinophilia.

Case report:

A 55-year-old African American female with a medical history significant for hypertension, gout, and chronic kidney disease presented to the Emergency Department with a 1-month history of generalized itching, weakness, and yellowish discoloration of the sclera. The patient had been newly started on allopurinol for hyperuricemia and developed a rash 4-6 weeks after starting the medication. The rash persisted despite a course of prednisone. Her examination at admission was significant for facial edema, scleral icterus, diffuse exfoliation of the skin, and scattered areas with small vesicles and larger bullae. Ulcers were noted on the tongue with hemorrhagic crusting of the lips. Her admission blood work was notable for hemoglobin 8.9 mg/dL, total bilirubin of 4.5 mg/dL, AST 592 U/L, ALT 1130 U/L, ALP 353 U/L, creatinine 4.3 mg/dL, and INR 1.9. Her platelets, initially $127 \times 10^3/\mu\text{L}$, dropped to $1000/\mu\text{L}$. Her white cell count with differential was within normal limits. Imaging studies, viral panels, and work-up for autoimmune disorders were unrevealing. A diagnosis of atypical DRESS was made since her eosinophilic counts were normal. She was started on prednisone 1mg/kg daily. Skin biopsy revealed some single-cell areas of necrosis and blister but no full-thickness necrosis. She was transferred urgently to the Burns Unit at a higher care center. A multidisciplinary team was involved in her care. Her course was complicated by septic shock, multiorgan failure, culminating in a cardiac arrest, and refractory encephalopathy. Despite extensive interventions, her condition did not improve, and she unfortunately passed away.

Discussion and conclusion:

Early recognition with withdrawal of the precipitating drug, supportive measures, and systemic glucocorticoids are the hallmarks of treatment for DRESS or DIHS. Increasing awareness of the atypical presentation of DRESS is crucial to its early diagnosis. Furthermore, there is a need for in-depth exploration into the skin manifestations of this condition among individuals with diverse skin tones, along with a thorough examination of how racial disparities in dermatological disease education may contribute to delays in diagnosis.

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Prion Disease with Concomitant HHV-6 Infection

Introduction

Prion diseases are a rare group of neurodegenerative disorders estimated to affect 1-2 persons per million. Although there are varying clinical manifestations, the hallmark of this condition is rapidly progressive dementia. We report a case of a 58-year-old man presenting with a 5-month history of worsening dementia who was diagnosed with prion disease based on positive results for t-Tau and 14-3-3 proteins in the cerebrospinal fluid (CSF). CSF was also positive for HHV-6. Determination of whether this finding represents an incidental infection or if HHV-6 has a role in the pathogenesis of prion disease warrants further investigation.

Case Description

A 58-year-old Caucasian man with a medical history of hypertension and dyslipidemia was brought to the hospital by a coworker after it was deemed unsafe for him to continue working as a motor vehicle operator for the highway department due to worsening dementia and gait ataxia. The temporal progression of his cognitive decline was unclear, as the patient was unable to provide an accurate history due to memory impairment. On admission, urine toxicology was obtained which was negative. The patient was initially worked up for a cerebrovascular accident which was negative. Investigations for an infectious etiology, including a urinalysis, chest x-ray, HIV screening, respiratory viral panel, and tick-borne panel were all negative. Additional workup for his encephalopathy included CSF studies and an EEG. CSF studies were remarkable only for a mildly elevated gamma globulin level of 10.8% (ref range 2.8 - 8.5%) and PCR positivity for HHV-6. The EEG was also normal. He was treated with Ganciclovir for two weeks until CSF studies for t-Tau and 14-3-3 proteins returned positive. He was diagnosed with prion disease and Ganciclovir was stopped.

Conclusion

This report highlights an unusual presentation of a rare condition. Though HHV-6 has been implicated in various neurological conditions, including Alzheimer's disease, multiple sclerosis, and temporal lobe epilepsy, questions remain regarding its role in the pathophysiology of prion disease.

Eunhee Choi

Jung-hyun Lee

Whippets (Nitrous Oxide) Addictions can lead to Irreversible Subacute Combined Degeneration.

Whippets, also known as nitrous oxide, have surged in popularity as recreational inhalant substances, often used at parties. The term "whippets" originates from the misuse of whipped-cream aerosol canisters containing gas. This escalating trend of using nitrous oxide recreationally has raised global public health concerns. Prolonged and excessive usage could potentially result in enduring neurological impairment, especially when users neglect adequate vitamin B12 supplementation, essential to counteract B12 deficiency-linked problems.

Illustrating this issue is the case of a 34-year-old male with status post T12-L2 spinal fusion due to a skiing accident, without postsurgical neurological deficit, however, his social history unveiled prolonged and heavy recreational use of nitrous oxide (whippets) spanning several years. This prolonged usage ultimately led to the diagnosis of a subacute combined syndrome five years ago, supported by prior spinal MRI findings, highlighting hyperintensity in the dorsal columns of the cervical and thoracic cord (C5-T10). Notably, the patient was conscientious about his condition and took it upon himself to administer vitamin B12 injections before and after using whippets. Nevertheless, he encountered intensifying weakness and numbness in his lower limbs merely two days after inhalation, prompting an emergency room visit.

His vital signs remained stable, but the physical examination revealed reduced sensation below the T12 level, a positive Romberg sign, and an unsteady gait. Bilateral strength in his lower limbs graded 5/5, and his coordination remained unimpaired. Tests including straight leg raises and the Babinski reflex were normal, and pulses were palpable at a 2+.

Initial lab results were unremarkable even with a vitamin B12 levels exceeding 2000. A thoracic spine MRI showed no abnormal cord signals or enhancements. There was no cord compression, but the MRI did confirm previous surgical interventions, including decompressive laminectomies and fusion.

Treatment was initiated with daily intramuscular vitamin B12 injections, leading to a subjective 30% improvement in weakness over the course of two weeks. Nonetheless, reduced sensation below the T12 level persisted, accompanied by mobility challenges and a persistent feeling of instability, even when using a walker.

To encapsulate, the misuse of recreational nitrous oxide stands as a compelling concern, given its potential for uncontrolled and extended use leading to neurotoxicity. Nitrous oxide interferes with vitamin B12 function by oxidizing its cobalt ion, rendering it ineffective. This disruption impairs proper B12 functionality, curtailing the conversion of homocysteine to methionine and impeding myelin protein methylation. Consequently, demyelination transpires within both the peripheral and central nervous systems, exerting a marked impact on the spinal cord's dorsal columns, manifesting as "subacute combined degeneration." While abstinence from nitrous oxide and appropriate B12 supplementation can potentially reverse neurotoxicity, instances of protracted usage, despite B12 injections, may give rise to challenging-to-reverse neurological symptoms, as underscored in this illustrative case.

Eunhee Choi

Jaha Oh

Vitamin B12 Deficiency Manifesting as Pancytopenia, Lymphadenopathy, and Fever: A Clinical Mimic of Hematologic Malignancies

Pancytopenia is a complex medical condition characterized by decreased levels of red blood cells, white blood cells, and platelets. It can arise from impaired production, peripheral destruction, or a combination of both. The causes of pancytopenia range from reversible factors like infections and medication reactions to irreversible conditions. Vitamin B12 deficiency is a notable reversible cause which can take years to manifest in adults due to stored reserves. However, deficiencies caused by impaired absorption, especially due to the lack of intrinsic factor, can lead to rapid deterioration within 2 to 5 years.

A healthy 39-year-old male with an athletic lifestyle, presented with a range of troubling symptoms such as dizziness, nausea, vomiting, palpitations, and fainting. Preceding these symptoms were weeks of persistent body aches, headaches, weakness, daily fevers, chills, and night sweats. Vital signs were stable. The physical examination revealed conjunctival pallor and lymphadenopathy in the submandibular and superficial cervical regions. Initial blood tests showed normocytic anemia (Hgb 4.9, MCV 80), leukopenia (2.99), thrombocytopenia (142), and elevated liver enzymes (AST 199, ALT 96, and total bilirubin of 2.04). The peripheral smear showed tear-drop cells and hypochromic cells.

Initial impression was hematologic malignancies given clinical findings such as B-symptoms like night sweats, neck lymphadenopathy, and subjective daily fever, along with pancytopenia.

The patient received a bolus of normal saline, followed by a transfusion of two units of packed red blood cells. CT scans of the chest, abdomen, and pelvis showed neither adenopathy nor splenomegaly. However, comprehensive testing, including SPEP, reticulocyte count/fraction, serum folate, and serum vitamin B12, revealed severe vitamin B12 deficiency, with a level of less than 150, with the presence of intrinsic factor antibodies.

Treatment involved intensive in-patient vitamin B12 injections followed by a detailed outpatient regimen. After completing a daily dose of vitamin B12 injections for seven consecutive days, followed by weekly injections for the next four weeks, laboratory results further demonstrated an improvement of pancytopenia, indicating a continued positive response to the vitamin B12 replacement therapy.

Diagnostic challenges emerge in the absence of typical hematologic findings of vitamin B12 deficiency, like macrocyte and hyper-segmented neutrophils. However, careful clinical investigation including nutritional factors should lower the threshold to empirically treat these patients. It is also, crucial to rule out reversible causes such as vitamin B 12 deficiency prior to invasive diagnostic procedure (e.g. bone marrow biopsy).

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A RARE CASE OF NOROVIRUS INDUCED IMMUNE THROMBOCYTOPENIA

Introduction: Immune-mediated Thrombocytopenia (ITP) is an autoimmune process that is primarily characterized by platelet autoantibodies causing increased platelet destruction and impaired production. As a result of thrombocytopenia, sequelae such as purpura and hemorrhagic events are commonly reported. While idiopathic cases are common, secondary ITP can be triggered by various factors including drug-induced, autoimmune, inflammatory, or viral infections. Viruses such as human immunodeficiency virus (HIV), Herpes simplex virus (HSV), and Hepatitis are known common culprits but norovirus-induced ITP in adults remains a rarely reported occurrence.

Case Description: We present the case of a previously healthy 26-year-old male who presented with bilateral lower extremity petechiae and worsening wet purpura of the oral mucosa and lips. He reported an initial episode of low-grade fever and chills two days prior, managed with acetaminophen at home. He denied any recent vaccinations, hiking, or traveling except for a plane ride from the state of Georgia to New York City. On admission his laboratory workup was significant for platelet count less than 1×10^3 /uL, while white blood cell (WBC) count and hemoglobin levels were within normal limits. Peripheral blood smear revealed markedly decreased platelets without schistocytes or clumping, and no abnormal WBCs seen. Viral respiratory PCR panel, HIV, syphilis, hepatitis, HSV 1/2, and COVID-19 swab were obtained and determined to be negative. Our patient experienced an episode of melena during his admission. Stool occult blood testing was positive and further stool testing with gastrointestinal PCR panel (BioFire FilmArray, Salt Lake City, Utah, USA) was positive for Norovirus GI/GII RNA. The patient was treated with a four-day course of dexamethasone 40 mg IV daily and two doses of IVIG 1 gram/kg daily, which resulted in a significant improvement in platelet count to 45×10^3 /uL before he was discharged for further follow-up with his local hematologist.

Discussion: This case is a rare presentation of Norovirus as an etiological factor in presentations of secondary ITP. Our report adds to a growing body of evidence linking immune-mediated platelet disorders and viral infections including common examples such as enterovirus, HIV, Hepatitis B and C, arbovirus, HSV 1/2, Varicella Zoster Virus, Parvovirus, Epstein Barr Virus, Cytomegalovirus, Covid-19 virus, and influenza. Despite the patient's unusual symptoms, the detection of Norovirus, along with the subsequent response to dexamethasone and IVIG, supports the link between this viral infection and immune-mediated thrombocytopenia; Early recognition and promptly initiating appropriate management can lead to successful outcomes in these cases. Further research is needed to elucidate the underlying mechanisms connecting Norovirus and immune-mediated thrombocytopenia.

Resident/Fellow Clinical Vignette

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Atypical presentation of Babesiosis as ACS

Introduction

Babesiosis, is a rare tick-borne disease caused by *Babesia microti* that infect and lyse red blood cells. Other routes of transmission occasionally occur through blood transfusion, organ transplantation or congenitally. Babesiosis has been reported in North and South America, Europe, and Asia.⁵ Most patients experience mild-to-moderate disease, and some are even asymptomatic. When symptoms do occur, they are non-specific symptoms such as, fatigue, weakness, and fever. Severe complications such as acute respiratory distress syndrome (ARDS), renal failure, acute liver failure and hemolytic anemia are more likely to be seen in elderly or immunocompromised patient.²

Case Presentation

Here we present a case of a 74-year-old male with history pertinent for chronic obstructive pulmonary disease, and immune thrombocytopenic purpura who presented to the hospital via EMS after he was found in severe respiratory distress requiring CPAP. Upon arrival, patient was febrile with T max of 103.5F, tachycardic and hypotensive with blood pressure of 95/60mmHg. Lab results were abnormal revealing severe anemia, transaminitis with AST 130 to ALT of 46 with elevated total bilirubin, and elevated lactic acid. He was admitted to intensive care unit for concerns of septic shock and started on empiric antibiotic therapy. However, he was found to have a troponin of 15,000 with ST inversions seen on EKG. Echo showed regional wall motion abnormalities, global hypokinesis with newly reduced ejection fraction of 40%. Cardiology was consulted due to concerns of acute coronary syndrome (ACS) and patient started on heparin drip. Patient underwent cardiac catheterization which did not show significant occlusive vessel disease. Peripheral blood smear showed >20% intracellular RBC parasites, blood parasite exam confirmed *Babesia*. Patient was started on 14-day course of Azithromycin and Atovaquone as well as Doxycycline for concurrent Lyme coverage. Due to increased parasitic burden, RBC exchange transfusion was started. Additionally, patient was noted to have acute kidney injury with oliguria for which he underwent dialysis. Significant clinical improvement seen, and patient was transitioned to medicine floors.

Discussion:

In the United States, more than 2000 cases are reported each year, although the actual number is thought to be much higher.³ As seen in our patient, Babesiosis can be initially overlooked or underrecognized as a primary diagnosis due to the severe myriad complications associated with this disease. Common cardiac complications of babesiosis are congestive heart failure and arrhythmias.⁴ Upon literature review, there was only one case published regarding babesiosis associated myocarditis.¹ We present a case where a patient had an atypical presentation suspicious for ACS and later diagnosed with babesiosis. Although majority of individuals are asymptomatic, minority of patients do experience life-threatening complications and prompt diagnosis and treatment are critical. Babesiosis should be kept on the list of differentials in patients presenting with multi-organ failure.

Resident/Fellow Clinical Vignette

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Thoracic Osteomyelitis with Compressive Myelopathy Presenting as Abdominal Pain

Vertebral Osteomyelitis involves infection of the vertebral body, most commonly presenting with localized back pain. However, presentations can vary, and timely diagnosis and treatment is crucial to avoid neurologic complications.

A 67 year old male presented to the ED for a band-like lower abdominal pain. Medical history included alcohol use disorder and diverticulitis. Surgical history included left hemicolectomy and ventral hernia repair with mesh placement.

Notably, he was recently admitted with similar abdominal pain and was treated for MSSA bacteremia of unknown origin. He had received two weeks of IV Oxacillin and underwent a TEE which ruled out vegetations.

On arrival he was febrile (rectal temperature 38.0 C), tachycardic (140 BPM), tachypneic (26 RR), and hypertensive (170/110 mmHg). Physical examination was grossly unremarkable with a soft abdomen.

Laboratory testing noted leukocytosis (16.84K WBC/uL), thrombocytosis (563K PLT/uL), elevated ESR of 108 mm/Hr (normal <20 mm/Hr), and elevated CRP of 13.6 mg/dL (normal <0.5 mg/dL).

CT of the abdomen identified a T9 endplate fracture with paravertebral edema. Orthopedics was consulted and recommended no intervention.

He was initiated on IV vancomycin, ceftriaxone, and metronidazole therapy and admitted to the general medical floor for sepsis with unclear source.

Initially he improved, with resolving leukocytosis and no new fevers. Endoscopy and TEE were performed and negative for infectious source. A set of blood cultures speciated as MSSA.

However, on the 5th day of admission he developed bilateral lower extremity weakness and urinary retention. Neurologic examination demonstrated decreased strength (2/5), and diminished pain and temperature sensation in the lower extremities bilaterally.

MRI of the thoracic spine identified osteomyelitis and discitis at T8-T9 with extension into the ventral epidural space. He was taken for emergent decompression laminectomy, and later underwent instrumental fusion.

Post-operatively, motor function improved and he was discharged on 6 weeks of IV Oxacillin. Months later, his motor deficits had nearly resolved.

Resident/Fellow Clinical Vignette

As vertebral osteomyelitis commonly presents with back pain, this presentation was unusual. The reported band-like abdominal pain was likely referred from the dermatomes of the T7-T10 vertebrae, corresponding to the lower abdomen.

Spinal imaging is crucial when investigating bacteremia of unclear origin. Vertebral Osteomyelitis has >50% pre-test probability of positive blood culture, and Staph Aureus is speciated in most cases. MRI remains most sensitive, as CT often misses early destructive changes.

ESR and CRP elevation is common, but nonspecific.

Antimicrobial therapy over six to twelve weeks is generally effective. However, neurologic deficits, abscess formation, or recurrent disease all necessitate surgery.

When investigating sepsis with unclear source, clinicians should always consider spinal imaging. Subtle clues such as referred abdominal pain, elevation of ESR and CRP, or *S. Aureus* bacteremia may aid in diagnosis of vertebral osteomyelitis prior to development of neurologic symptoms.

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Cardiac Contractility Modulation (CCM): Could it be the End of Dialysis in Some of Our Patients?

Introduction: CCM is a device-based therapy intended for NYHA class III and IV heart failure patients. It involves delivering non-excitatory electrical impulses to the heart's interventricular septum during the absolute refractory period, enhancing inotropic functions without increasing oxygen consumption. The potential impact of improved cardiac output on various body systems, given heart failure's multisystem nature, is not fully understood. This case study presents a unique scenario where a patient with ischemic cardiomyopathy and deemed End-stage renal disease on regular haemodialysis didn't require dialysis after CCM placement, marking the first reported instance of cardiorenal syndrome improvement in this context.

Summary: The case involves an 80-year-old male with a past medical history of coronary artery disease (CAD) s/p multiple stents, ischemic cardiomyopathy (EF) of 20-25%, end-stage renal disease (ESRD), and had been on hemodialysis since April 2021. Despite various interventions, his condition led to numerous hospital admissions with acute exacerbations, eventually involving palliative care. As a final attempt, he was offered Cardiac Contractility Modulation (CCM) therapy in March 2023.

Following the CCM procedure, the patient reported improved well-being and noticed a notable increase in urine production a few weeks later. Additionally, his creatinine levels decreased to a baseline of 1.64, and he had his last dialysis session on March 20, 2023. Currently, his condition is stable, and he is under the close monitoring of both cardiology and nephrology teams, including regular monthly blood work.

Conclusions: Cardiorenal syndrome is a group of disorders resulting from the pathological interaction between the kidneys and the heart [1]. The interaction between heart and kidney dysfunction can have significant effects. Type 2 cardiorenal syndrome, involving chronic heart failure leading to chronic kidney dysfunction, presents treatment challenges. The case underscores the significance of addressing the root cause of renal issues [2,3]. While the improvements seen are remarkable, the sustainability and reversibility over time remain uncertain. This case highlights a unique instance of chronic kidney disease (CKD) reversal after CCM, suggesting a need for more research into the renal outcomes of such devices.

References:

1. Cortesi C., Ibrahim M., Rivera F.C., Hernandez G.A. Cardiorenal Syndrome, Hemodynamics, and Noninvasive Evaluation. *Clin. Med. Insights Ther.* 2017;9:1179559X17742376. doi: 10.1177/1179559X17742376. - DOI
2. Wang Y., Liang Y., Zhao W.J., Fu G.P., Li Q.Q., Min X.C., Guo Y.F. Circulating miRNA-21 as a diagnostic biomarker in elderly patients with type 2 cardiorenal syndrome. *Sci. Rep.* 2020;10:4894. doi: 10.1038/s41598-020-61836-z. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
3. De Vecchis R., Baldi C. Cardiorenal syndrome type 2: From diagnosis to optimal management. *Ther. Clin. Risk Manag.* 2014;10:949-961. doi: 10.2147/TCRM.S63255. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Resident/Fellow Clinical Vignette

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Untangling Twiddler's Syndrome

Introduction

Cardiac Resynchronization Therapy has been one of the cornerstones in the improvement of symptoms of heart failure patients. Cessation of cardiac synchrony can precipitate heart failure exacerbations. Early recognition of this phenomenon is key in the appropriate management of heart failure patients.

Case Presentation

A 56-year-old female with NYHA Class III heart failure with reduced ejection fraction of 25-30%, severe mitral regurgitation, hypertension, and diabetes mellitus presented to the emergency room for palpitations and increased fatigue for the past couple of days. She was dyspneic after walking 1-2 blocks which is worse than her baseline. She endorsed brief episodes of left-sided pinching chest pain. The patient underwent placement of a cardiac resynchronization therapy defibrillator (CRT-D) 5 months prior to presentation. Her heart failure symptoms improved after the CRT-D implantation but worsened again over the last few weeks. She denied any deliberate manipulation of the pocket. The patient recently spent a long time lifting her left arm during a cardiac MRI. Her vitals on admission showed a heart rate of 104 and a blood pressure of 106/77. Physical examination revealed a mild hepatjugular reflux, 1+ bilateral pitting edema to the mid shin, and bibasilar crackles. Her EKG was suggestive of left ventricular (LV) lead dysfunction. A chest Xray confirmed a change in the position of the generator and dislodgement of the LV lead into the superior vena cava. The patient's heart failure exacerbation was attributed to the loss of biventricular pacing. The patient underwent successful revision of the LV lead with a subpectoral fixation of the generator. The patient was treated for her heart failure exacerbation and had overall improvement in her clinical symptoms.

Discussion

In patients with NYHA class III/IV with an ejection fraction of less than 35%, and evidence of intraventricular conduction delay, CRT-D has been shown to improve ejection fraction, quality of life, decrease heart failure hospitalizations and improve mortality. Twiddler's syndrome refers to the malfunction of a pacemaker due to the deliberate or subconscious spinning of the pacemaker's pulse generator causing lead dislodgement and cessation of ventricular pacing. An RSR pattern in lead I, compared to a QS pattern, is suggestive of a malfunction of the LV lead. In addition, due to the conduction delay, a widened QRS compared to the patient's baseline is also a clue. Lead dislodgement can be confirmed on a chest X-ray. The treatment is subpectoral fixation of the CRT-D and lead revision of the dislodged lead which often causes resolution of the heart failure exacerbation symptoms. Although rare, Twiddler's syndrome should be entertained in patients who are clinically not responding to biventricular pacing.

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Not So Merry Ohmeri: A Rare Case of Kodamae Ohmeri Pneumonia

Objective:

Kodamae ohmeri is a rare emerging invasive fungal infection that most commonly causes fungemia with a mortality rate up to 50%. We present a unique case of K. ohmeri ventilator associated pneumonia in which only one other case has been reported worldwide.

Case presentation

A 64 year old male was admitted with newly diagnosed decompensated liver cirrhosis, hepatic encephalopathy, and ascites. His course was complicated by upper GI bleed due to erosive esophagitis, pulmonary embolism, renal failure, and septic shock requiring intubation, an IVC filter, central line and shiley placement for vasopressor and renal replacement therapy. Despite empiric antimicrobial coverage, his shock remained refractory to treatment. Blood cultures, urinalysis, and ascitic fluid were negative for infection. Fungitell returned positive and initial sputum culture grew Kodamae ohmeri prompting the initiation of micafungin. Despite improvement of the airspace opacities on chest x-ray and decreased oxygen requirements, the repeat sputum culture revealed persistent K. ohmeri along with another fungal pathogen Trichosporon asahii. The patients septic shock progressed requiring multiple vasopressors and leading to several cardiac arrests and ultimately his demise.

Discussion

K. ohmeri is part of the Sacharromycetes family and is primarily prevalent in Asia. Only a total of 12 cases have been identified in America since it was first reported in 1998. Immunocompromised patients including renal and liver insufficiency along with central venous catheters are associated risk factors. A recent systematic review noted that K. ohmeri causes an invasive infection 92.5% of the time and most commonly (74.3%) presents as fungemia. There was only one reported case of K. ohmeri pneumonia. Importantly, it is commonly misidentified initially as Candida species. Although the most efficacious treatment regimen has yet to be determined, the literature suggests Amphotericin B and Echinocandins to be possible effective antifungal agents while fluconazole has been noted to have the highest MIC and in vitro resistance.

Conclusion

Given the high mortality rates reported, practitioners should consider invasive fungal infections, including the new emerging K. ohmeri, in critically ill immunocompromised patients who are clinically deteriorating despite empiric antibiotic coverage.

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The hidden gem - serositis as the only manifestation of IgG4-related disease

Introduction:

Immunoglobulin G4-related disease (IgG4-RD) is a systemic fibroinflammatory disorder characterized by lymphoplasmacytic infiltration of IgG4-positive plasma cells into multiple tissues. Serositis, including pleural and pericardial effusion, is a poorly understood manifestation of IgG4-RD. The infrequency and broad differential make serositis in IgG4-RD a formidable diagnostic challenge.

Case presentation:

A 79-year-old Hispanic female with a past medical history of HTN and T2DM presented to the emergency room with two weeks of dyspnea and decreased exercise tolerance. Vital signs, including O₂ saturation on room air, were normal. Physical exam demonstrated puffy fingers, pedal edema and reduced breath sounds. Laboratory tests were significant for lymphocytopenia without leukocytosis. Chest X-ray showed bilateral pleural effusion (left greater than right). An echocardiogram showed moderate pericardial effusion without tamponade. Cardiology was consulted and recommended clinical observation. A viral panel was negative for common pathogens. Quantiferon was positive. Thoracentesis drained 1.2 liters of exudative, lymphocyte-predominant fluid. Fluid adenosine deaminase, bacterial, acid-fast cultures, and cytology were unrevealing. Treatment for latent tuberculosis with rifampin was initiated and she was discharged with outpatient follow-up.

In the next two months, she had recurrent admissions for worsening pleural effusions and persistent pericardial effusion. Malignancy workup with pan-CT showed only adrenal adenoma. Autoimmune workup showed elevated ANA 1:640, negative ENA/RF/anti-CCP/ANCA/myomarker panel, normal CRP, IgG4 and complement levels. Given unexplained recurrent pleural and pericardial effusion, the patient underwent a pleural biopsy with indwelling pleural catheter placement. Pathology showed sclerosing fibrovascular tissue with dense IgG4+ plasma cells (IgG4/IgG ratio 60%) and multifocal venulitis. No other organ involvement was identified on imaging. The patient was diagnosed with isolated IgG4-RD serositis and started on prednisone. She was followed by rheumatology and pulmonology, and mycophenolate was added as steroid-sparing medication. Her pleural and pericardial effusions gradually improved, and a follow-up PET scan one year after diagnosis showed no ongoing inflammation.

Discussion:

Isolated serositis is an uncommon presentation of IgG4-RD, affecting 5% of cases with thoracic involvement. Our case demonstrates many diagnostic challenges. A comprehensive infectious and malignancy workup is required, especially for tuberculosis and lymphoma, as they commonly present as lymphocyte-predominant exudative effusion. High serum IgG4 levels can help establish the diagnosis, but its absence doesn't completely exclude it, as normal IgG4 levels are found in 50% of patients with clinically active, biopsy-proven IgG4-RD. Concomitantly positive ANA is detected in 15% of patients but is not helpful for diagnosis and does not contribute to the pathogenesis. Therefore, a pleural biopsy should be pursued to provide tissue diagnosis and assist in narrowing the differential.

IgG4-RD is usually steroid-responsive. Corticosteroid treatment should be initiated with close rheumatology/pulmonology follow-up. If serositis fails to improve, steroid-sparing agents are added, but structural damages such as fibrosis from IgG4-RD should be considered.

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From Trauma to Tumor: Primary Pulmonary Meningioma Revealed

Primary pulmonary meningioma (PPM) is a rare type of primary ectopic meningioma, with only about 67 cases reported between 1982 to 2021. Given the dearth of clinical data available, summarising any and all clinical presentations of this unique diagnosis will pave the way for better recognition of this extremely rare tumor.

A 32-year-old male presented to the hospital after a motor vehicle accident resulting in multiple facial bone fractures, displaced right third and fourth lateral rib fractures, right apical pneumothorax, and right lung contusion as identified on initial CT imaging. The patient underwent multiple surgical interventions, including chest tube placement, right upper lobe wedge resection, and mechanical pleurodesis. During his recovery in the SICU, his chest tube continued to have persistent air leak, necessitating a repeat VATS with additional right upper lobe wedge resection. Surgical pathology of the second VATS specimen revealed a 2 mm irregular nodule with morphologic and immunohistochemical features favoring a meningothelial nodule. The immunohistochemical stain was positive for vimentin and epithelial membrane antigen (EMA) and negative for CD56, progesterone receptor, and cytokeratin. CT of the head and the entire spine done as a part of the initial trauma survey did not show any primary brain or spinal meningioma, and a diagnosis of PPM was made. Unlike most cases that are diagnosed incidentally on imaging, the PPM in our case was first noted only on the pathology specimen. Although incidentally, the lesion was found to be excised entirely on the biopsy specimen. Hence, no further surgical intervention was indicated.

When an isolated pulmonary nodule is seen incidentally on imaging or lung biopsy, pulmonary meningioma should be considered as a differential. CNS imaging with CT or MRI is needed to confirm an isolated extracranial presence of PPM as opposed to a metastatic primary CNS meningioma. Some PPM, as in our case, may not be visualized on chest imaging, likely due to their small size or deeper location, and thus may only be detected incidentally on biopsy specimens.

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Synovial Surprises: Exploring Extreme Synovial Fluid WBC Counts in Psoriatic Arthritis

Psoriatic arthritis (PSA) is an inflammatory type of arthritis affecting up to 30% of patients with psoriasis. Synovial fluid analysis is an essential component of investigation in differentiating PSA from other forms of arthritis.

A 50-year-old male with a history of PSA presented to the hospital with three days of worsening diffuse rash. Prior to admission, the patient had stopped his Secukinumab, a biologic IL17 inhibitor, which is immunosuppressive. He started receiving monthly steroid injections abroad and presented after missing a dose on returning to the US. The physical exam showed diffuse erythematous scaly plaques and pustules on the scalp, abdomen, extremities, chest, and back. His presentation was thought to be a psoriatic flare due to the withdrawal of steroids, and he was started on oral cyclosporine and topical triamcinolone. On day three, the patient developed left knee pain and swelling with tenderness, redness, warmth, and restricted range of motion (ROM). The patient also had increasing leukocytosis to 24,000/uL and a fever of 101F. Arthrocentesis was performed twice, with synovial fluid (SF) analysis the first time showing an elevated WBC count of 47,440/uL (with 92.8% PMN), and the second time 185,500/uL (with 90.2% PMN). Both had a negative gram stain, culture, and no crystals were seen. Given the high SF WBC count, fever, leukocytosis, and steroid use, there was a concern for septic arthritis. The patient underwent a joint washout and was started on antibiotics. At this time, cyclosporine was discontinued due to transaminitis and also to avoid further immunosuppression in the setting of possible infection. However, the patient did not show improvement in his symptoms and developed right wrist pain and new erythematous skin plaques. Given no improvement, it was decided to restart Secukinumab, and after this, the patient showed marked improvement in his joint pains and rash. Although his markedly elevated SF WBC count, fever, and leukocytosis were classic for septic arthritis, the patient did not improve with washout surgery and antibiotics. He only improved after restarting immunosuppression, indicating that the underlying etiology was likely PSA.

Although a very high SF WBC count is commonly attributed to septic arthritis, we are not aware of any reported case with this high of a synovial fluid WBC count in PSA. Our case would suggest including acute PSA flare in the differential of patients with known PSA and a swollen joint with markedly elevated WBCs in SF and with fever, although less likely than a septic joint.

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Chasing shadows: Untangling the Mixed Signals of Cardiac Amyloidosis

Background:

Cardiac amyloidosis is an underdiagnosed cause of heart failure. Identification of Transthyretin Amyloid Cardiomyopathy (ATTR-CM) among patients with heart failure is important due to the availability of effective, targeted therapy for ATTR-CM. Multimodality imaging plays a pivotal role in diagnosing cardiac amyloidosis and this case underscores the complexities of diagnosing suspected cardiac amyloidosis, especially when conflicting diagnostic evidence arises.

Case presentation:

An elderly male, with hypertension, diabetes, hyperlipidemia, CKD, NSTEMI, CAD with RCA stent insertion, HFrEF (EF 35-40% with Left Ventricular hypertrophy (LVH) on TTE) c/b significant Non-Sustained Ventricular Tachycardia, wheelchair bound in the setting of peripheral neuropathy was referred to our cardiology clinic, for specialized heart failure management. On presentation he reported fatigue, exertional dyspnea, and intermittent chest discomfort. A cardiac MRI was ordered which revealed a severely dilated left ventricle and moderate concentric LVH, with the thickest segment involving the mid-septum. It also showed a large amount of patchy mid wall late gadolinium enhancement (LGE) predominantly concomitant with the thickest segments of LV along with elevated extracellular volume (ECV) values (38%) suggestive of fibrosis. Given the patchy LGE on CMRI, a PET scan was obtained to look for active inflammation as evidence of sarcoidosis which was negative. The CMRI findings of LVH with a large amount of LGE and fibrosis were potentially suggestive of Hypertrophic Cardiomyopathy or amyloidosis and the patient underwent genetic testing, uncovering two pathogenic variants associated with LVH- TTR and ALPK3. The TTR gene is associated with hereditary TTR amyloidosis (hATTR), while the ALPK3 gene is associated with autosomal dominant and recessive hypertrophic cardiomyopathy. The patient then underwent further evaluation with a PYP scan which yielded an equivocal interpretation for TTR amyloidosis. For a definitive diagnosis, the patient then underwent an endomyocardial biopsy, which revealed hypertrophic myocardium without inflammatory cell infiltrates or granulomas, with negative Congo Red and iron stains. The patient is scheduled for further diagnostic assessments, including a skin biopsy, to ascertain the presence of amyloid neuropathy.

Discussion:

This case highlights the intricacies in evaluating the differential diagnosis of LVH on echocardiogram in a patient with heart failure. The differential includes hypertensive heart disease, infiltrative cardiomyopathy, and hypertrophic cardiomyopathy. While some features, such as positive genetic testing, MRI findings (LVH, significant LGE and fibrosis) and peripheral neuropathy point towards amyloidosis, contradictory findings led to a biopsy for definitive diagnosis. In this interesting case, the patient has hypertrophic cardiomyopathy likely caused by the ALPK3 mutation. His neuropathy may be related to amyloidosis or diabetes. Despite the pathogenic variant in the TTR gene, he ultimately did not have the phenotype of amyloid cardiomyopathy.

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OBESITY PARADOX IN ATRIAL FIBRILLATION: OBESITY IS ASSOCIATED WITH LOWER RISK OF STROKE AND MORTALITY IN PATIENTS WITH ATRIAL FIBRILLATION WHO UNDERGO LAAO

Background:

Obesity is linked to an elevated susceptibility to cardiovascular disease (CVD), notably heart failure (HF) and coronary heart disease (CHD). This connection arises from the release of pro-inflammatory cytokines originating in adipose tissue, which can initiate cardiac dysfunction and foster the development of atherosclerotic plaques. In cases where obesity coexists with HF or CHD, individuals in class I obesity have displayed a more favorable prognosis in contrast to those who are of normal weight or underweight. This intriguing phenomenon, termed the "obesity paradox," has manifested notably among patients dealing with heart failure and coronary artery disease. While obesity has been associated with an increased incidence of atrial fibrillation (AF), its precise implications for the outcomes of Left Atrial Appendage Occlusion (LAAO) procedures are yet to be definitively ascertained.

Method:

A retrospective cohort observational study on 19,177,906 AF patients with LAAO was conducted using data from the Nationwide inpatient sample files between January 2017 and December 2019. Patients were divided into two cohorts with and without a concomitant diagnosis of obesity. Statistical analyses utilized STATA logistic regression models for OR (Odds ratio) and 95% CI estimation ($p < 0.05$).

Results:

Using ICD-10 codes, a total of 19,177,906 patients were identified with the main diagnosis of AF undergoing LAAO. A total of 5,074 patients were obese. Odds ratio for stroke was 0.46 in patients with obesity vs those without it (95% CI: 0.250-- 0.860, $p < 0.05$). The odds of CVA and mortality were also lower at 0.54 and 0.55 respectively in patients with obesity. Among patients who had a stroke/ CVA, the odds were higher in females at 1.6 and 1.4 respectively as compared to males.

Conclusion:

The obesity paradox, which has been observed in various cardiovascular conditions, is also present among patients with AF undergoing LAAO. Remarkably, individuals with obesity and AF seem to exhibit improved survival rates following LAAO when compared to their non-obese counterparts. Research indicates that the higher level of lean mass (LM) often seen in individuals with the typical obesity profile significantly contributes to enhanced cardiorespiratory fitness. These findings hint at the potential efficacy of therapeutic approaches aimed at increasing LM, such as exercise training and dietary interventions. However, to incorporate these strategies into clinical practice, it is imperative to conduct in-depth, long-term studies that assess the impact of these interventions on overall clinical outcomes.

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ACUTE RENAL FAILURE WITH NORMAL CREATININE: WHAT DOES BILIRUBIN HAVE TO DO WITH THAT?

Introduction

Acute renal failure is defined as rapid fall in glomerular filtration rate, usually diagnosed via elevated creatinine levels or oliguria. Both parameters are key in determining this diagnosis.

Case

A 53-year-old woman with a history of alcohol use disorder presented with nausea, vomiting, abdominal pain, and jaundice. Physical examination revealed dry mucous membranes, scleral icterus, and abdominal tenderness. Her labs revealed an elevated total bilirubin of 27 mg/dL, serum creatinine of 0.7 mg/dL, blood urea nitrogen of 7 mg/dL and elevated transaminases. She was diagnosed with acute liver failure. Additionally, the patient reported decreased urine output two days prior to presentation, and was oliguric with a urine output of <150 ml in the first 24 hours of hospitalization. This was non-responsive to hydration therapies. Urine analysis revealed a specific gravity of 1.035, urine sodium >10 mEq/L, granular casts, and renal tubular epithelial cells, keeping with acute tubular necrosis. A clinical diagnosis of bile cast nephropathy was made. Treatment was initiated with hemodialysis. Following two sessions of hemodialysis, her urine output normalized. Interestingly, BUN and creatinine remained normal throughout her hospitalization.

Discussion

The negative interference by bilirubin in the estimation of serum creatinine by both Jaffe[™]s and enzymatic methods used to measure creatinine in most labs is well described in the literature; however, it is often underutilized when interpreting creatinine results. Jaffe[™]s method is based on alkaline picrate. At an alkaline pH, creatinine in the sample reacts with picrate to form a creatinine-picrate complex. Spectrometry is then used to measure the creatinine picrate complex at wavelength of 500 nm which is directly proportional to the concentration of creatinine in the sample. Bilirubin with levels higher than 2.3 mg/dl interferes with this method by being oxidized to biliverdin in alkaline solutions which decrease the absorbance of the creatinine picrate complex and ultimately underestimating the creatinine in the sample. Elevated bilirubin also affects enzymatic methods, particularly the methods based on creatininase; this is due to the competition between bilirubin and the assay[™]s substrate for the H₂O₂ produced during the reaction leading to underestimated creatinine values.

This case demonstrates the importance of assessing both creatinine elevation and urine output in determining the presence or absence of acute renal injury in patients with elevated bilirubin.

Resident/Fellow Clinical Vignette

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A Novel Case of Complete Response to Pembrolizumab as First-Line Treatment in Advance Extranodal Natural Killer T-Cell Lymphoma, Nasal Type

Background: Peripheral T-cell lymphoma is a group of aggressive malignant comprising 15% of non-Hodgkin lymphoma (NHL). Extranodal Natural Killer (NK) T-cell lymphoma, nasal type (ENKTL), is a rare subset of peripheral T-cell lymphoma affecting the nasal cavity, with a median survival of less than two years. ENKTL is commonly associated with extranodal involvement and Epstein-Barr Virus (EBV) infection.

The treatment of ENKTL is based on the stage of the disease using the Ann Arbor Classification and the patient's performance status. Advanced stages of ENKTL are treated with first-line combined modality therapy (chemotherapy and radiation) or combination chemotherapy. These chemotherapy regimens carry a high toxicity profile, and patients with poor performance status or comorbid conditions such as renal impairment limit their use. We present a novel case of advanced ENKTL, unable to receive standard chemotherapy regimens, treated with pembrolizumab as a first-line agent.

Case Presentation: A young African-American male presented for evaluation of recurrent sinusitis after failing prolonged antibiotic therapy. The patient had a biopsied submandibular mass, revealing atypical lymphocytes with NK CD56 marker and EBV-encoded ribonucleic acid (EBER) via in-situ hybridization-confirming ENKTL. A baseline positron emission tomography-computed tomography (PET-CT) scan and bone marrow biopsy confirmed advanced ENKTL (stage IV) by Ann Arbor Classification. Unfortunately, the patient had focal segmental glomerulosclerosis and was hemodialysis-dependent, limiting the use of first-line chemotherapy regimens due to renal toxicity. The patient was treated with pembrolizumab as a first-line agent based on clinical data on its use in relapsed/refractory settings. The patient's treatment course was uncomplicated, and he experienced significant improvement in his nasal symptoms within the first three months of therapy. After four months of treatment, he achieved an undetectable EBV deoxyribonucleic acid (DNA) measured by polymerase chain reaction (PCR). A follow-up PET-CT scan after three treatment cycles showed a complete -metabolic and radiological- response. He maintained an excellent and durable response without evidence of disease progression and undetectable EBV DNA levels.

Discussion/Conclusion: Immune checkpoint inhibitors (ICI) targeting programmed cell death-1 (PD-1) and programmed death-ligand 1 (PD-L1), such as pembrolizumab, have shown promise in treating relapsed or refractory ENKTL. However, there is no published research in the English literature on pembrolizumab's use in ENKTL as a first-line agent. This case adds to current literature suggesting the efficacy of front-line ICI in ENKTL unable to receive standard chemotherapy regimens. Further research is necessary to investigate pembrolizumab as a potential monotherapy in select patients with ENKTL, combined with standard chemotherapy, or as maintenance after induction therapy to achieve better outcomes in this complex clinical scenario.

Resident/Fellow Clinical Vignette

Andrew Hess, MD

Deferred Care During the COVID-19 Pandemic: A Dramatic Consequence

Introduction:

The COVID-19 pandemic caused most healthcare facilities to delay or defer elective surgeries as they allocated workforce and resources to treating significant increases of critically ill patients. This care delay has increased morbidity and mortality of many conditions treated with surgery.

Case

A dramatic example of this delay of care is a 65-year-old male who started with a squamous cell carcinoma (SCC) the size of a nickel on his right forehead that grew to 20cm by 16cm fungating mass covering half his face. He first noticed the growing mass in 2020, and after having a SCC removed 20 years ago, he recognized the need to seek medical care. His doctor initially said to just monitor it. As it grew, he was told excision was an elective surgery and the procedure was deferred multiple times because healthcare facilities were only scheduling urgent and emergency surgeries to help prevent the spread of COVID-19. Frustrated by the delay, he cut it off himself at home with a steak knife. Shortly after it grew back even faster and he was still unable to get it removed. He tried to remove it at home again, but stopped due to excessive bleeding. He felt weak from blood loss and visited his physician. Blood work showed a 5.5 hemoglobin and was sent to the ER. He was resuscitated with transfusion of 4 units of packed red blood cells, the mass was biopsied along with a new growth over his right parotid gland showing they were SCC. Imaging showed it was invading his right orbit and calvarium. After many specialist appointments and an interdisciplinary tumor board discussion, it was decided to treat him with tumor debulking surgery followed by chemo and radiation therapy. The debulking was accomplished with two 13-hour surgeries, resulting in the removal of his right eye and facial nerve. Subsequently, he commenced radiation therapy.

Discussion/Conclusion

There were many people who had unavoidable delays in their essential elective procedures such as valve replacements, cholecystectomies, tumor removal and many others during the pandemic. The qualitative study investigating surgery delays during COVID-19 pandemic showed that patients not only endured physical suffering due to care disruption but also faced emotional stress. In this case, the patient started with a small SCC lesion that would have only left a small scar with removal but became a large tumor that required the removal of his eye when excised. This case critically highlights the health consequences of care postponement amid the COVID-19 pandemic. It emphasizes the need for the medical community to create policies that can effectively minimize healthcare delays during future pandemics.

IRSHAD HUSSAIN, MBBS

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Unveiling the Uncommon: Monckenkeberg Medial Calcific Sclerosis in an ESRD patient Leading to Vision Loss

Introduction:

Monckeberg medial calcific sclerosis (MCS) is a vascular condition characterized by ring-like calcification within the tunica media of small to medium-sized blood vessels, without intimal thickening.

Degeneration of elastic fibers is followed by the deposition of hydroxyapatite crystals in the tunica media [1]. MCS is strongly associated with increased arterial stiffness, leading to higher all-cause and cardiovascular mortality in hemodialysis patients [2]. Occasionally, the temporal artery is affected, mimicking giant cell arteritis (GCA) and causing acute monocular vision loss [3].

Case Presentation:

A 68-year-old male with end-stage renal disease (ESRD) experienced sudden painless left monocular vision loss, without accompanying symptoms such as headache, arthralgia, myalgia, or neurological deficits. Vital signs were stable: BP 149/101 mmHg, HR 78 bpm, afebrile, and oxygen saturation 100% on room air. Laboratory results showed an erythrocyte sedimentation rate of 17 mm/hr, C-reactive protein level of 5.8 mg/dl, and no leukocytosis. CT angiogram ruled out stroke or ophthalmic artery occlusion. Retinal fluorescein angiography revealed good choroidal filling in both eyes, with leakage at the optic nerve in the affected eye, suggestive of anterior ischemic optic neuropathy. Patient was initiated on intravenous methylprednisolone 1g daily for 3 days, followed by oral prednisone. Based on GCA 2022 classification criteria, patient scored +3 points. Anti-nuclear antibody test was positive at a titer of 1:160 with a speckled pattern, while other autoimmune markers were negative. Bilateral temporal artery biopsies (TAB) showed no arteritis but revealed more prominent MCS on the right side. Steroid therapy was gradually tapered, but vision did not recover.

Discussion:

A literature review from 1999 to 2019 identified only 10 publications on MCS, with two mentioning ocular involvement [3]. TAB can yield false-negative results for GCA, with MCS observed in 6% of cases [4]. MCS prevalence is reported to be 27% in ESRD patients with mineral bone disorder [2] and 17% in newly diagnosed individuals with diabetes mellitus [5]. Vascular compromise in MCS leads to reduced arterial flow, thrombosis, and ischemia [1]. In our case, the patient, at high risk for MCS due to ESRD, presented with unilateral vision loss and slightly elevated inflammatory markers, raising concerns for GCA. TAB confirmed the presence of MCS.

Conclusion: Clinical suspicion is crucial, as MCS is often an incidental finding on tissue biopsy. Currently, no specific treatment exists for MCS. However, proactive measures should be implemented to optimize modifiable risk factors and prevent vision loss in the contralateral eye. Despite intensive medical interventions, ocular involvement proved irreversible.

Keywords: Monckeberg medial calcific sclerosis, Giant cell arteritis, Temporal artery biopsy, End-stage renal disease
References: Will be provided on demand.

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UNVEILING AN ATYPICAL PRESENTATION OF FELTY SYNDROME: SUCCESSFUL MANAGEMENT WITH RITUXIMAB THERAPY

Autoimmune neutropenia (AIN) arises from autoantibodies (often IgG) targeting granulocyte-specific antigens, causing heightened myeloid cell destruction. Rheumatoid arthritis (RA) typically doesn't lead to neutropenia; in RA, neutropenia is usually linked to specific causes such as drug toxicity, large granular lymphocyte (LGL) leukemia, or Felty syndrome (FS). Felty syndrome is a rare condition seen in longstanding seropositive RA cases, characterized by neutropenia and hepatosplenomegaly. The appearance of Felty syndrome at initial diagnosis is rare. This case study features an atypical presentation of Felty syndrome that was successfully treated with Rituximab therapy, an approach rarely mentioned in the literature.

A 24-year-old female with a history of migraines and menorrhagia presented with severe polyarthralgias, stiffness in hands, knees, and feet, along with fever, fatigue, and unintentional weight loss. Physical examination showed swollen and tender fingers without dysmorphic features or mouth sores. Initial lab tests displayed leukopenia and severe neutropenia, mild normocytic anemia, and a slightly enlarged spleen. Additional tests revealed positive antinuclear antibody (ANA) and rheumatoid factor, suggesting autoimmune involvement. She was diagnosed with rheumatoid arthritis (RA) and initiated on Prednisone, initially experiencing relief but with persistent neutropenia and fatigue. Despite treatment with Hydroxychloroquine, her neutropenia worsened, leading to uncertainty about the management approach. Bone marrow biopsies in 2020 and 2021 showed a normo-cellular marrow without apparent abnormalities. Due to COVID-related infection concerns, a trial of prednisone successfully normalized her neutrophil count for four months before relapse. She was later started on Rituximab from May 2022, leading to sustained neutrophil count improvement.

The lifetime risk of developing Felty syndrome (FS) for a patient initially diagnosed with rheumatoid arthritis (RA) had been estimated to be approximately 1 percent. These patients are characterized by long-standing (over 10 years) rheumatoid arthritis associated with other extra articular manifestations such as vasculitis or leg ulcers. The presence of severe neutropenia and particularly agranulocytosis before or simultaneously with the onset of arthritis is extremely rare. This case report features a patient presenting with fatigue and joint pain, accompanied by neutropenia in blood work. Although this case doesn't fit the classic triad of Felty syndrome, defined as long-standing rheumatoid arthritis, splenomegaly, and neutropenia, this is the most likely explanation of her clinical constellation of signs and symptoms. In our literature search, we found fewer than 10 case reports of FS with similar presentations. This brings into consideration the redefinition of this entity to increase awareness and recognition among healthcare providers, particularly hematologists. Regarding treatment, the utilization of Rituximab in Felty syndrome is scarcely addressed in the literature. Our patient showed a significant improvement in neutrophil count after treatment with Rituximab was started. Further investigation is necessary to determine the precise role of rituximab in treating Felty's syndrome.

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ATRIAL MYXOMA: PRESENTING AS A LARGE SPLENIC INFARCTION

Splenic infarcts are a rare cause of abdominal pain. Thromboembolism is one of the causes of splenic infarction. Patients with atrial fibrillation, endocarditis and prosthetic heart valves are at the greatest risk of developing embolic occlusion of splenic artery. Other causes include malignancy, exogenous estrogen use, hemoglobinopathies and hypercoagulable states such as sickle cell disease, polycythemia vera, antiphospholipid antibody syndrome, and protein C and S deficiency.

We present a rare case of acute splenic infarction caused by a large cardiac myxoma. A 44-year-old female presented with a one-week history of intermittent progressively worsening epigastric pain associated with nausea and vomiting. The patient did not have any history of smoking, and last used oral contraceptives one year ago. There was no personal or family history of autoimmune diseases or hypercoagulable states. Upon presentation, the patient was afebrile with a heart rate of 79 bpm and a blood pressure of 115 / 74 mmHg. On physical examination, she had mild tenderness to superficial and deep palpation in mid epigastric region. The rest of her examination was unremarkable. Initial laboratory results showed a white cell count of 20.37 K/uL (ULN = 10.5 K/uL) with neutrophil predominance of 82% (ULN = 77%). Other labs including serum pregnancy test, liver enzymes, acute phase reactants, basic metabolic panel, and PTT were normal. CT abdomen and pelvis with IV contrast showed a large splenic infarction. Autoimmune panel including antithrombin III, lupus anticoagulant, factor V Leiden mutation and anticardiolipin antibodies, was negative. Transthoracic echocardiography (TTE) revealed a large, irregular 8.3 cm mobile mass in the superior left atrial cavity, highly suggestive of an atrial myxoma. Our patient successfully underwent myxoma resection via cardiac bypass surgery without complications.

Cardiac myxomas are the most common benign cardiac tumors with an incidence rate of approximately 0.2%. The majority of myxomas originate in the left atrium and are often sporadic. Common complications from systemic embolization of tumor fragments include myocardial infarction, stroke, renal infarction and limb ischemia. Even though it is extremely rare for cardiac myxomas to embolize splenic artery, clinicians should keep this tumor in their list of differentials while evaluating splenic infarction. Once diagnosed, surgical resection of tumor is the preferred treatment to prevent further thromboembolic complications.

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New-onset Seizures: An Unusual Neurologic Manifestation of Rheumatoid Arthritis

Introduction:

Rheumatoid meningitis (RM) is a rare manifestation of Rheumatoid arthritis (RA). Its occurrence is independent of underlying RA disease duration and severity, making its diagnosis challenging. We report a case of a 64-year-old male with a known history of RA who presented with left lower extremity weakness and seizures.

Case presentation:

A 64-year-old male with RA, lung nodules, and a previous ischemic stroke without residual deficits presented to the hospital due to multiple witnessed seizures. These seizures occurred every few minutes and involved left-sided shaking, with intact awareness. The patient denied any other associated symptoms. Further history revealed a prior hospitalization for left-sided weakness, diagnosed as a right thalamic stroke, treated with thrombolytic therapy. Following treatment, one episode of a seizure occurred, necessitating the initiation of Keppra. Subsequent EEG showed no seizure activity, and the patient remained seizure-free until the current admission. The patient had been on methotrexate for his quiescent RA for many years with good compliance. Upon initial assessment, the patient was stable but had recurrent left-sided shaking with preserved awareness. Pronator drift in the left upper extremity and weakness rated 3/5 in the left lower extremity were observed. Seizures were managed with Lorazepam and Levetiracetam. The initial CT head revealed sulcal effacement, raising concern for a leptomenigeal process. EEG showed cortical hyperexcitability with focal seizure activity in the right fronto-cerebral and parasagittal areas.

MRI of the brain revealed pachymeningeal and leptomenigeal enhancement, raising concerns about possible malignancy. The left-sided weakness that appeared initially had resolved within 24 hours, suggesting Todd's paralysis. All infectious and immunological tests for blood and cerebrospinal fluid (CSF) were normal, except for a slightly elevated Rheumatoid factor and anti-cyclic citrullinated peptide (anti-CCP). Whole-body imaging did not reveal any malignancy. A right frontal dural and brain biopsy revealed mixed lymphoplasmacytic inflammation and macrophage aggregates, leading to a diagnosis of RM. The patient was started on prednisone and continued anti-epileptics upon discharge. On his subsequent follow-up visits, he remained seizure-free with the resolution of leptomenigeal enhancement on repeat MRI brain.

Discussion:

As RM is a diagnosis of exclusion, it is crucial to first rule out malignancy and infectious causes. A thorough history and physical examination, brain/spine MRI, CSF analysis, and meningeal biopsy help confirm the diagnosis. Treatment is primarily steroids, using immunosuppressants during the tapering phase. Rarely rituximab alongside steroids has been effective for RM.

Conclusion:

RM is a rare neurological manifestation of RA which can easily be misdiagnosed. Awareness of RM is pertinent for timely recognition and management. Physicians should consider RM when assessing RA patients with recurring TIA-like symptoms, seizures, or unexplained neurological issues, leading to better outcomes and care for this patient population.

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Amoxicillin/clavulanic acid-Induced Ischemic Colitis

Gastrointestinal symptoms as a side effect of antibiotics are common. They can range from nausea, vomiting to abdominal cramps and diarrhea. Compromise to the blood supply of the colon can result in colon ischemia (CI) which can cause mucosal inflammation giving rise of ulceration and hemorrhage. While it can be associated with various drugs, antibiotic induced CI is uncommon. We present a rare case of CI due to amoxicillin/clavulanic acid (ACA) use.

Patient is 70-year-old non-smoking woman with a history of hyperlipidemia and hypothyroidism who presented to the hospital with symptoms of cramping abdominal pain, nausea, vomiting, and bloody diarrhea. Vitals were within normal limits. One week prior to admission, she was diagnosed with sialadenitis and was prescribed ACA by her primary care provider 4 days prior to the presentation. Diarrhea was initially non-bloody. Her labs were pertinent for a WBC of 15,000 uL and CRP 45.4 mg/L. Hemoglobin and creatinine were normal. CT of the abdomen with IV contrast revealed diffuse colonic wall thickening concerning for colitis. Mesenteric vasculature was normal. Stool infectious work up including Clostridium difficile, stool culture and ova/parasite examination was negative. Patient underwent colonoscopy that showed severe erythema with multiple superficial ulcers throughout the colon. Inflammatory bowel disease was in the differentials, but steroids were not started until pathology was confirmed. Symptoms improved without any treatment and histology eventually revealed hemorrhagic ischemic colitis. Since symptoms correlated to the initiation of ACA, and after excluding all known etiologies such as use of blood thinners, non-steroidal anti-inflammatory drugs (NSAIDs), inflammatory bowel disease, infections. It was concluded as an adverse side effect of ACA. Patient followed up in the office in 4 weeks and remained asymptomatic.

While antibiotics are commonly known to increase the risk of Clostridium Difficile, CI is not commonly associated with their use. They can cause diarrhea and hypotension that can in turn lead to CI. Our patient tested negative for Clostridium Difficile and did not have any signs of dehydration or hypotension. Literature review reveals only two cases of ACA induced CI, one related to anaphylaxis and resultant hypotension and the other resulting in pseudomembranous colitis. This case should serve as reminder to clinicians to consider ACA induced CI in their differential diagnosis once other common causes have been ruled out.

Assile Koubeissy, D.O.

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A Case of JAK2V617F-Negative Myeloproliferative Neoplasm in a Young Female Presenting with Extreme Thrombocytosis

Background: Thrombocytosis is a commonly observed condition in clinical practice and can be primary or secondary in etiology. Secondary thrombocytosis typically presents with mild to moderate platelet count elevations and can be seen with iron deficiency, blood loss, infections or medications and in the setting of underlying rheumatologic conditions, malignancy, asplenia, or post-splenectomy. However, extreme thrombocytosis is a rare occurrence. In this report, we present a compelling case of severe thrombocytosis attributed to underlying chronic myelogenous leukemia (CML) further complicated by coexisting iron deficiency. It is essential to emphasize that not all instances of extreme thrombocytosis are indicative of essential thrombocythemia (ET). Hence, maintaining a high level of suspicion for non-ET myeloproliferative neoplasms (MPN[™]s) such as CML, as well as other underlying conditions such as iron deficiency anemia, is crucial for accurate diagnosis and timely management.

Case: A 47-year-old female with a history of anemia associated with prior pregnancy presented with chest pain, headache, and low-grade fever. Labs were significant for microcytic anemia (hemoglobin 7.0 gm/dL with low MCV 61.4 fl), leukocytosis (27,400k/UL with basophilia and elevated myelocyte count noted, along with erythroblasts), and thrombocytosis (platelet count 2515K/UL). Iron studies showed ferritin of 4.9 ng/mL, iron 13 mcg/dL, TIBC 520 mcg/dL, and transferrin 371.5 mg/dL. LDH was elevated at 393 units/L. Aspirin was not initiated due to platelet count above 1500K/UL and unmasking underlying bleeding tendency in a possible acquired von Willebrand deficiency leading to severe hemorrhage. Her hemoglobin dropped to 6.3 gm/dL; she received two units of packed red blood cells (pRBCs) and was started on intravenous iron sucrose. Platelet count initially improved to 1971K/UL. Abdominal US showed marked splenomegaly. She was then started on hydroxyurea, but platelet count remained relatively unaffected after four days of treatment (1,873-1,829K/UL). Bone marrow aspirate and biopsy were obtained, and initial studies were negative for a JAK2V617F point mutation. Hydroxyurea was increased to 1000mg in the morning and 500mg in the evening. The results of her peripheral blood and bone marrow biopsy showed a BCR-ABL1 translocation, which, in addition to her clinical presentation, confirmed a diagnosis of CML.

Conclusion: This case underscores the crucial significance of arriving at an accurate diagnosis, a process that entails molecular testing of both peripheral blood and bone marrow. This step is essential to distinguish between essential thrombocytosis and CML, as it significantly impacts the choice of appropriate treatment. Furthermore, our case highlights the importance of cautious patient selection for aspirin therapy, particularly in cases of extreme thrombocytosis, as this heightened level can lead to an increased risk of bleeding. Careful management and monitoring are paramount to ensure the best possible outcomes for patients with extreme thrombocytosis in the context of CML.

Resident/Fellow Clinical Vignette

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A Case of Coombs-Negative Ceftriaxone-Induced Immune Hemolytic Anemia

Background: Drug-Induced Immune Hemolytic Anemia (DIIHA) is a rare condition in which certain drugs induce the formation of antibodies against red blood cells. The exact mechanism of how these drugs cause this reaction is still unknown. It is usually confirmed with a Coombs test that detects drug-dependent antibodies. DIIHA usually resolves soon after the offending agent is discontinued. Here, we present a patient who developed Coombs-negative DIIHA after receiving Ceftriaxone, but did not improve when Ceftriaxone was stopped. Interestingly enough, symptoms only began subsiding after initiation of Rituximab.

Case: A 79-year-old woman was admitted to the hospital for bilateral leg weakness and was found to have a urinary tract infection, at which time Ceftriaxone was initiated. Seven days from the initiation of Ceftriaxone, she developed severe jaundice and worsening anemia. Primary workup showed no source of bleeding. Initial labs resulted in hemoglobin 6.9 gm/dL, LDH 348 units/L, haptoglobin <20 mg/dL, total bilirubin 1.9 mg/dL, and elevated liver function tests. CT imaging showed no evidence of intraperitoneal or retroperitoneal bleed, mildly enlarged left mid para-aortic lymph nodes, shotty mid retroperitoneal lymph nodes, a heterogeneous liver with mild cirrhosis, and splenomegaly. Coombs test was negative and peripheral smear showed poikilocytosis without schistocytes. NY Blood Center was contacted for more sensitive testing, which resulted in a weakly positive microscopic auto-antibody test. At that time, prednisone 1mg/kg was initiated for possible DIIHA. The hemoglobin improved to 7.9 gm/dL, however the total bilirubin continued to rise. She was transferred to the ICU and received Rituximab for the worsening bilirubin, which peaked 2 weeks after first dose of Ceftriaxone at 38 mg/dL. Two days after receiving the first dose of Rituximab, her bilirubin was reduced to 14.6 mg/dL. She received a total of 4 doses of Rituximab weekly with daily prednisone and her labs one month after discharge completely normalized. Based on these results and further analysis in coordination with our hospital's blood bank, we believe that despite a negative in-house Coombs test, the ceftriaxone initiated a drug-induced autoimmune hemolytic anemia. This is rare in the literature and can possibly be attributed to the formation of IgA, IgG3, or IgM antibodies causing complement hyperactivity and intravascular lysis, which can explain a negative routine Coombs. This event may have then led to an autoimmune hemolytic anemia fueled by complement hyperactivity, as evident with the poikilocytosis seen on the peripheral smears and splenomegaly.

Conclusion: This case illustrates the significance of recognizing the signs of DIIHA despite a negative Coombs test. Recognizing the signs of DIIHA early on and stopping the offending agent is important, but may not be enough for symptom resolution. Initiating appropriate therapy, in this case Rituximab, was shown to be vital in preventing fatal hemolysis.

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WATCH OUT FOR THIS WATCHMAN DEVICE COMPLICATION

Hemorrhagic pericardial effusion is a relatively common complication of Watchman device placement. As Watchman devices become more commonly used for management of embolic risk in patients with atrial fibrillation, it is important for any physician who may care for these patients to be aware of this potentially life-threatening complication.

A 79-year-old male with a past medical history of chronic myelomonocytic leukemia (CMML) with thrombocytopenia and hypertension as well as paroxysmal atrial fibrillation status-post ablation and left atrial appendage occlusion with a Watchman FLX device three days earlier presented with orthopnea, dyspnea on exertion, and low-grade fever. While he was treated for community acquired pneumonia and acute congestive heart failure exacerbation, he developed recurrent atrial fibrillation with rapid ventricular rate. Echocardiogram obtained 5 days post-Watchman device placement showed concentric LVH, normal LVEF without wall motion abnormalities, and a small pericardial effusion without diastolic filling impairment. Cardioversion was attempted but unsuccessful; his antiarrhythmic was changed from propafenone to amiodarone. Eight days after his Watchman device placement, he developed progressive exertional dyspnea and peripheral edema with labs notable for elevated lactate, acute kidney injury, and acute liver injury. An echocardiogram revealed a large pericardial effusion with compromised diastolic filling consistent with tamponade physiology. He underwent urgent pericardiocentesis and drain placement with an output of 900 cc of bloody fluid and immediate hemodynamic resolution. He was discharged from the hospital 4 days later on a 3-month course of colchicine for inflammatory pericarditis, and his oral anticoagulation was stopped.

Left atrial appendage occlusion with a Watchman device has become an increasingly common alternative for reducing embolic stroke risk in patients with non-valvular atrial fibrillation who are at high risk of bleeding from long-term anticoagulation. In both clinical trials and real-world assessments of Watchman device safety, pericardial effusion remains the most common complication, with studies based on large national registries reporting an incidence of 1.24 - 1.4%. In fact, the high rate of serious pericardial effusions at nearly 5% in the initial regulatory trial, PROTECT AF, was one of the key safety points necessitating further studies before Watchman device approval in 2015. The mechanisms for pericardial effusion include trans-septal puncture, manipulation of guide wires and catheters in the left atrial appendage, and deployment of the Watchman device. Our patient had additional risk for pericardial effusion from his medical history of CMML, thrombocytopenia, oral anticoagulation use, and, potentially, concurrent ablation. Our patient's tamponade physiology was likely camouflaged by his rapid atrial fibrillation and robust peripheral vascular response, while use of amiodarone confounded the etiology of his acute liver injury.

As peri-Watchman pericardial effusion is associated with high rates of in-hospital morbidity and mortality, awareness and early detection of this life-threatening complication is crucial for the internist.

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A Case of Anti-PL-7 Antibody Positive Antisynthetase Syndrome

Antisynthetase syndrome is a rare idiopathic inflammatory myopathy characterized by myositis, interstitial lung disease (ILD), arthritis, Raynaud's phenomenon, mechanic's hands, and antibodies against aminoacyl-transfer RNA synthetase, most commonly anti-Jo1 antibody.

A 36-year-old Hispanic female with no known past medical history presented to the emergency department for 1 week history of left calf pain. She was diagnosed with unprovoked left popliteal vein thrombosis and was discharged on rivaroxaban. She returned the following day for dyspnea and chest pain. She had stable vital signs with adequate oxygenation at room air. Lung auscultation revealed clear breath sounds. Bloodwork showed mild leukocytosis and elevated CK, AST, ALT, and LDH. CT pulmonary angiogram (CTPA) was negative for pulmonary embolism but revealed large infiltrates in bilateral lower lung fields with small bilateral pleural effusions. Ground-glass infiltrates on bilateral upper and lower lobes were seen on high resolution chest CT. Infectious workup for pneumonia was negative. Further questioning revealed a history of two first trimester miscarriages, eczematous skin lesions, and bilateral knee pain. Rheumatologic workup was pertinent for elevated ESR and CRP and positive anti-Ro antibody. ANA, anti-dsDNA, anti-Scl-70, anti-RNP, anti-Smith, anti-cardiolipin, B2-glycoprotein, and lupus anticoagulant were negative. She was started on warfarin for possible antiphospholipid syndrome and steroids for ILD. Four months later, she had worsening dyspnea along with fever and proximal muscle weakness in bilateral lower extremities requiring hospital readmission. CTPA showed progression of bilateral upper and lower lobe ground-glass infiltrates. EMG-NCV was normal. Lung biopsy showed interstitial fibrosis and muscle biopsy of the left vastus lateralis revealed necrotizing autoimmune myopathy. Further rheumatologic workup was significant for positive IgM anticardiolipin and anti-PL-7 antibody but negative anti-Jo1 antibody. Based on the finding of ILD, myositis, and positive anti-PL-7 antibody, a diagnosis of antisynthetase syndrome was made. She continued steroid therapy and started mycophenolate. She experienced either significant side effects of the various immunosuppressants or had inadequate control of symptoms. She had tuberculosis while on mycophenolate, myositis flares while on azathioprine, and rhabdomyolysis while on tacrolimus. Her course was further complicated by cardiac myositis, and she received intravenous immunoglobulin and rituximab. She was stable on discharge with plans for further infusion, but she died a few weeks later from respiratory failure.

Diagnosis of antisynthetase syndrome is based on clinical features and presence of aminoacyl-transfer RNA synthetase antibody, and treatment consists of immunosuppressive therapy. The degree of ILD affects the prognosis of antisynthetase syndrome. This case illustrates the complexity of diagnosis, often requiring a multi-disciplinary approach, and the difficulty to control symptoms. Antisynthetase syndrome is a rare entity; it should be considered in patients with ILD.

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Enhancing Treatment Approach for Blastic Plasmacytoid Dendritic Cell Neoplasm: A Case Report of Successful Tagraxufusp-erzs Monoclonal Antibody Therapy

Blastic plasmacytoid dendritic cell neoplasm (BPDCN) is a rare disease accounting for < 1% of all hematologic malignancies. The mainstay of treatment is allogeneic stem cell transplantation (allo-SCT) consolidation; however, one must consider the risk of complications in older patients with co-morbid conditions. We report a case of BPDCN responsive to single-agent Tagraxufusp-erzs, a monoclonal antibody conjugated to diphtheria toxin approved by the Food and Drug Administration (FDA) in 2019.

A 71-year-old female with chronic well-controlled hypertension presented to an outside hospital for chest pain radiating to the back. Differential diagnosis included aortic dissection, but emergency imaging revealed a uterine mass with adenopathy. Lab work showed thrombocytopenia and leukocytosis but no anemia, elevated troponins, or neutropenia. She was discharged without definitive diagnosis or treatment, and an outpatient lymph node biopsy was reported as a "poorly differentiated neoplasm". She then presented to us two weeks later with increasing left-sided back pain and progressive loss of performance status. Repeat laboratory testing revealed leukocytosis of 57% immature cells, anemia, and severe thrombocytopenia. Serial blood work showed critical pancytopenia. Peripheral blood film revealed circulating blast-like cells with large nuclei, blue cytoplasm, and no residual normal white blood cells. Flow cytometry was diagnostic of BPDCN and confirmed by bone marrow biopsy. Induction with single-agent Tagraxufusp-erzs was initiated after pretreatment with albumin to decrease the risk of severe hypoalbuminemia and capillary leak, and additionally with the appropriate VZV, antifungal, and antibacterial prophylaxis. Induction achieved rapid clearance of circulating tumor cells with excellent tolerance, followed by prompt hematopoietic recovery. The patient was followed closely by outpatient Oncology and continued cycle two of Tagraxufusp-erzs. Three weeks post-discharge patient presented from the infusion center complaining of an acute onset peripheral edema and 10lbs weight gain. Due to high suspicion of capillary leak, management consisted of intravenous albumin and aggressive diuresis with improvement in edema. She was then discharged to complete cycle two of Tagraxufusp-erzs therapy and remained well after three cycles of induction. Due to her excellent response patient has been referred for allo-SCT.

BPDCN is a clinically challenging malignancy with an unknown etiology and is sometimes preceded by other hematopoietic cancers. Predominantly affecting males with a median age of 70, this neoplasm typically manifests with skin infiltration, although absent in this case and may have contributed to a delay in diagnosis. Due to its rarity alongside its indolent course, missed diagnoses occur frequently. No standard of care or specifically approved treatment for BPDCN existed before Tagraxufusp-erzs, and response to therapy compared favorably to outcomes previously reported with other chemotherapy treatment regimens with less toxicity. This agent's potential effectiveness and tolerability underscores the importance of promptly identifying BPDCN and potentially providing patients with a tolerable bridge to curative allo-SCT.

Resident/Fellow Clinical Vignette

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CAROLI DISEASE IN AN ELDERLY PATIENT: CASE REPORT

Introduction

Caroli disease is characterized as a congenital malformation of intrahepatic bile ducts associated with an increased incidence of cholangiolithiasis, cholangitis and liver abscess. Recurrent cholangitis symptoms typically manifest in early adulthood. It is a rare autosomal recessive disorder with the prevalence of 1 in a million, with both males and females equally affected [2]. We report a case of an unusually late presentation of a Caroli disease in an elderly.

Case presentation

A 75-year-old Chinese man with a history of hypertension, hyperlipidemia, type 2 diabetes mellitus presented with a sudden onset of fever, confusion, and productive cough for 2 days. At the physical examination, the patient appeared confused, jaundiced, and had abdominal pain in the right upper quadrant (RUQ). Laboratory tests revealed elevated liver function tests (LFTs) such as total bilirubin of 15.3, direct bilirubin of 9.0, AST of 118, ALT of 88, and alkaline phosphatase of 255. An MRCP showed multiple dilatations/cysts in the left intrahepatic ducts, which were consistent with Caroli disease. Patient underwent endoscopic ultrasound (EUS) which showed multiple dilatations/cysts in the intrahepatic ducts in the left hepatic lobe. Patient underwent endoscopic retrograde cholangiopancreatography (ERCP) with cholangioscopy to rule out presence of dominant strictures. The patient was treated conservatively with antibiotics, including Meropenem and Levofloxacin. After the ERCP was performed, general surgery was consulted for left hepatectomy. After two weeks, the patient's overall condition improved, and he was discharged with regular follow-up appointments.

Discussion

Caroli disease is a rare congenital malformation of intrahepatic bile ducts that can remain asymptomatic for the first two decades of a patient's life, but symptoms typically manifest before the age of 30. Clinical manifestations usually consist of acute cholangitis features such as RUQ pain, jaundice, fever, and laboratory tests usually include elevated LFTs and a leukocytosis with neutrophilia. These manifestations are not specific and cannot distinguish it from other causes of cholangitis. Caroli disease can be diagnosed by imaging modalities such as abdominal ultrasonography, CT scan, MRCP and EUS/ERCP. Partial hepatectomy for localized Caroli disease is potentially curative, and liver transplant in individuals with diffuse Caroli disease have also shown excellent results.

Resident/Fellow Clinical Vignette

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Pedaling into the danger zone: A case of rhabdomyolysis after an intense spin class

Rhabdomyolysis is a potentially life-threatening syndrome due to muscle necrosis and release of intracellular muscle components into the bloodstream. Indoor cycling, also referred to as "spinning"™, has gained immense popularity as a group fitness activity, involving stationary cycling to enhance lower body strength and endurance. Recently there has been a notable surge in reported cases linking rhabdomyolysis to spin classes, resulting in complications such as electrolyte abnormalities, compartment syndrome and acute kidney injury.

A previously healthy 28-year-old female presented with severe bilateral thigh pain and darkening of her urine, after introducing spin classes to her exercise routine. She also reported new weakness and numbness over the left thigh. There was no recent trauma, new medications, or use of illicit substances. She works as a personal trainer and engages in high-intensity interval training 3-4 times weekly. On presentation, she was hemodynamically stable with a heart rate of 67 bpm, blood pressure 121/71 mmHg, saturating 99% on room air. She was well appearing but had dry mucous membranes. On lower limb examination, there was bilateral thigh swelling with diffuse tenderness, which was more severe on the left side. Left thigh appeared tenser compared to the right. There was bilateral severe pain on passive knee flexion and plantar dorsiflexion. On neurologic examination, there was decreased sensation to light touch and decreased strength with 4/5 strength on the left lower extremity. Sensation and strength were grossly intact in upper and right lower extremity. Pulses were intact in upper and lower extremity. Other examination findings were unremarkable. Laboratory findings showed leukocytosis of 13,400 with 85% neutrophils. Serum creatine kinase was 482,296 U/L, AST was 816 U/L and ALT was 151 U/L. Serum creatinine was 0.9 mg/dL and urinalysis showed positive blood but no red blood cells on microscopy. Urine drug screen was negative. Due to concerns of impending compartment syndrome, compartment pressures were checked, revealing an absolute compartment pressure of 35 mmHg; however, delta pressure was more than 40 mmHg which was reassuring. Treatment was initiated with aggressive IV fluid resuscitation, and close monitoring in collaboration with the vascular surgical team. CK levels decreased significantly to 47,373 U/L by day 1, and 5474 U/L by day 6. Her symptoms resolved by this time, and she was discharged home.

This case highlights the relationship between spin classes and rhabdomyolysis. "Spin rhabdo"™ is associated with greater severity and higher creatine kinase level than other causes of exertional rhabdomyolysis. This necessitates heightened awareness among physicians and spin class participants of the inherent risk of rhabdomyolysis and the importance of adequate hydration, rest, and gradual escalation of exercise intensity.

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Hypertriglyceridemia, Pancreatitis and DKA- A Dangerous Triad

Diabetic ketoacidosis (DKA) is a frequently encountered complication of diabetes mellitus. DKA manifests as an insulin deficit state and leads to moderate to severe hypertriglyceridemia. Hypertriglyceridemia stands as one of the common causes of pancreatitis, often going unnoticed. The triad of DKA, hypertriglyceridemia, and acute pancreatitis is rarely observed, yet it is associated with high mortality. This combination is often referred to as the 'enigmatic triangle,' given that the exact underlying pathophysiological mechanism remains not fully understood. The question persists whether DKA is the cause or a complication of acute pancreatitis.

A 38-year-old male with a history of uncontrolled diabetes and hyperlipidemia presented to the Emergency Department with abdominal pain for 1 day. Pain was sudden in onset, in the epigastric region, which was sharp, constant, and non-radiating. It was also associated with nausea and vomiting.

At presentation to the ED he was tachypneic with a respiratory rate of 22, tachycardic with a heart rate of 115 bpm, and had a blood pressure of 139/90 mmHg. Pulse oximetry was 99% on room air.

On examination, he was ill appearing and in acute pain. Mucous membranes appeared dry. His abdomen was distended and severely tender in the epigastric region. He had hypoactive bowel sounds. There was no guarding or rebound.

Lab investigations revealed white cell count of 7.9, hemoglobin of 18.5 g/dL, blood glucose level of 458 mg/dL, bicarbonate of 18 mEq/L and anion gap of 18 mEq/L, beta hydroxybutyrate level of 0.65 mmol/L, lactate of 5.9 mmol/L, and creatinine of 1.4, revealing a picture of diabetic ketoacidosis, lactic acidosis, and acute kidney injury. His triglyceride level was > 5500 mg/dL, and lipase was 3218 U/L. Urine analysis revealed glucosuria and ketonuria. A CT scan of the abdomen and pelvis showed severe pancreatic inflammatory changes, with follow up scans showing necrosis and development of peripancreatic fluid collection.

He was admitted to the ICU for management of DKA, severe hypertriglyceridemia and severe pancreatitis. The following day he developed respiratory failure and was intubated. He underwent two sessions of plasmapheresis. His stay was further complicated by acute kidney injury requiring initiation of hemodialysis, distributive shock requiring vasopressors, pancreatic cystogastrostomy, cholecystectomy, placement of a gastrojejunostomy tube, and creation of a diverting transverse loop colostomy to counteract the high-output diarrhea resulting from pancreatic insufficiency.

This case vividly illustrates the severity of the enigmatic triad and underscores the potential gravity of uncontrolled diabetes. Severe hypertriglyceridemia commonly presents with acute pancreatitis, which can result in debilitating consequences if not managed promptly. The triad of DKA, hypertriglyceridemia, and acute pancreatitis has been found to have a worse prognosis in comparison to simple acute pancreatitis. Effectively managing this triad becomes paramount in avoiding potentially devastating outcomes.

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COCAINE-INDUCED VASOSPASM: UNVEILING THE CULPRIT BEHIND SPLENIC INFARCTION

Background: Splenic infarction (SI) is a rare complication resulting from the occlusion of the splenic artery or its branches. The primary causes include cardioemboli, autoimmune diseases, infections, hematologic disorders, and malignancies. Notably, there have been reported cases associating cocaine use with SI in individuals with sickle cell trait, as well as one case report of renal and SI following significant consumption of cannabis and cocaine. We present another case of splenic infarction where the exact cause remains unclear, though it is temporally linked to the patient's cocaine use.

Case presentation:

A 37-year-old male with a medical history significant for diabetes, below-knee amputation, polysubstance abuse, and a remote history of infective endocarditis, presented with a one-week history of left-sided abdominal pain accompanied by pleuritic left-sided chest pain. He was afebrile but tachycardia and his examination was significant for left lower quadrant tenderness. Initial contrast-enhanced abdominal CT yielded inconclusive results. Subsequent magnetic resonance angiography showed splenomegaly with diffusely abnormal signal, consistent with a massive splenic infarct.

Blood work showed leukocytosis with neutrophilia and thrombocytosis, leading to the initiation of intravenous piperacillin-tazobactam and a heparin infusion for suspected thrombosis. However, a subsequent CT angiography demonstrated a patent splenic artery. Negative blood culture results led to the cessation of antibiotic treatment after a seven-day course. Thorough cardiac evaluations via transthoracic and transesophageal echocardiography revealed no evidence of valvular issues or vegetations. Extensive testing for viral and bacterial infectious agents returned negative outcomes. Similarly, screenings for sickle cell disease, rheumatoid factor, autoimmune antibodies were all negative. Investigation into potential myeloproliferative conditions, including JAK2, and BCR-ABL mutations, provided negative results. A multidisciplinary team was involved in the patient's care and the decision was made to stop anticoagulation given the lack of evidence of thrombosis.

Notably, the patient disclosed using cocaine a week before his presentation. Given the absence of an evident causative factor, a temporal association was made between cocaine use and symptom onset. It was thereafter inferred that the cocaine use likely resulted in vasospasm of the splenic artery precipitating an infarction.

Discussion/Conclusion:

SI is a rare manifestation of a wide range of diseases. A recent systematic review found only 446 cases in the past 46 years. SI symptoms are nonspecific, and their frequency varies between studies. The most common predisposing factors are atrial fibrillation and hematologic malignancies. Notably, cannabis has been linked to hypotension, while cocaine use has shown an association with hypertension and arterial vasoconstriction. The management of SI of unknown origin remains controversial with some proposing a prolonged anticoagulation therapy. Further retrospective studies with emphasis on social history and on management outcomes are imperative for comprehensive understanding of such rare pathology with multifarious linked conditions.

Resident/Fellow Clinical Vignette

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"UNVEILING ACUTE CYTOMEGALOVIRUS INFECTION AS A RARE CAUSE OF SPLENIC INFARCTION: A CASE REPORT"

Introduction:

Splenic infarction is a relatively rare clinical entity often associated with various underlying etiologies, ranging from thromboembolic events to hematological disorders and infections. Among these, acute cytomegalovirus (CMV) infection has emerged as an intriguing and occasionally overlooked cause of splenic infarction. While CMV infections are generally well-known for their potential complications in immunocompromised individuals, instances of splenic infarction linked to acute CMV infection in immunocompetent patients have been documented, albeit infrequently.

Case presentation:

This is a case of a 58-year-old female who presented with one week of diarrhea, nausea, dizziness, and subjective fever. In the emergency department, her temperature was 102.5°F, her heart rate was 104 beats per minute, and her blood pressure was 93/53 mmHg. There was mild epigastric tenderness, but the remainder of the physical exam was unremarkable. Her initial blood test was normal. The abdomen and pelvis (AP) CT showed multiple small splenic infarcts and diffuse colonic wall thickening, likely related to infectious colitis. Further work-up, including blood cultures, stool cultures, stool testing for gastrointestinal PCR pathogens, and an echocardiogram, yielded negative results. The hematology team was consulted on the seventh day of hospitalization due to a drop in hemoglobin levels from 13 to 8.9 g/dl, with an elevated LDH of 870 IU/L, a reticulocyte percentage of 6.8%, and a low haptoglobin level of <20 mg/dl. Hemolytic anemia was diagnosed, and tests were performed to rule out possible causes of hemolytic anemia. The vasculitis tests, peripheral smears, and Coombs test results were negative. Testing for CMV, EBV, and HIV antibodies was conducted. CMV IgM was detected, but IgG was negative. On the tenth day, a repeat CMV antibody test showed CMV IgG positive with a detectable serum CMV PCR. EBV antibody testing indicated a past infection, and HIV antibody testing was negative. Based on these results, the patient was diagnosed with transient hemolytic anemia and splenic infarcts due to acute cytomegalovirus infection. As the patient was immunocompetent, no antiviral treatment or anticoagulants were administered, and her symptoms were managed symptomatically. A follow-up AP CT on day 10 showed a significant reduction in the size of the peripheral splenic infarcts, which became less visible. The patient was discharged on day 11 with a hemoglobin level of 9.9 g/dl. When she visited the clinic two weeks after discharge, her health had returned to normal, and her hemoglobin level was 12.1 g/dl with a normal LDH level.

Conclusion:

This case highlights the possible role of CMV in causing splenic infarction, expanding our knowledge of CMV-related complications. While the etiology of splenic infarction is multifactorial, it's important to consider acute CMV infection as a potential cause in both immunosuppressed and immunocompetent patients, underscoring the necessity for tailored management strategies.

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Invasive BCG infection: a rare but dangerous adverse event following bladder cancer therapy.

Background: In the realm of treating non-muscle invasive bladder cancer (NMIBC), intravesical BCG plays a crucial role in stalling disease progression and extending bladder preservation. While the primary approach remains transurethral resection of bladder tumor (TURBT), it has been reported that TURBT followed by BCG reduces recurrence rates in Ta/T1 bladder cancer. The treatment protocol entails an intravesical BCG induction phase followed by maintenance. Adverse effects encompass cystitis, hematuria, fever, and heightened urinary frequency. This article underscores two rare instances of invasive *Mycobacterium bovis* (*M. bovis*) infection subsequent to BCG therapy for bladder cancer.

Case 1: A 63-year-old man received intravesical BCG for bladder cancer, five weeks after an endovascular abdominal aortic aneurysm repair with graft. Three years later, he exhibited weight loss, fever, and leukopenia. Imaging revealed a right psoas fluid collection and a confined area of accumulation at the aortic bifurcation. Drainage of the fluid unveiled *M. bovis* growth in acid-fast bacilli (AFB) cultures. The patient was started on ethambutol, isoniazid, and rifampin, holding off graft removal due to severe malnutrition. His systemic symptoms abated, and his weight improved. After six months of treatment, he developed a mycotic aneurysm in the lower abdominal aorta and right iliac artery, prompting graft excision and an axillo-femoral bypass. Ethambutol was discontinued after three months, and rifampin plus isoniazid after 12 months. Post-treatment, no recurrence of infection was noted.

Case 2: An 85-year-old male, with recurrent bladder cancer treated with a combination of resection and intravesical BCG, presented with an enlarging mass in his right thigh accompanied by fever, weakness, and fatigue. Imaging revealed an abscess in the right thigh. The abscess was drained, and AFB cultures from the aspirated fluid revealed the presence of *M. bovis*. The patient was started on a combination of isoniazid, ethambutol, and rifampin which is ongoing. Systemic symptoms resolved and after two months of therapy the abscess has not recurred.

Discussion: Invasive infection following treatment for non-muscle invasive bladder cancer is a rare but potentially lethal adverse effect. It is postulated that intravesical BCG induces an inflammatory response that destroys malignant cells. Despite uncertainties surrounding factors predisposing individuals to invasive infection after BCG therapy, variables such as BCG load, treatment frequency, and time since tumor removal do not appear to correlate with infection development.

Conclusion: Despite its utilization in the treatment of bladder cancer for more than five decades, BCG therapy carries risks. This includes systemic symptoms, and, less commonly, invasive BCG infections including osteomuscular, vascular, and ocular structures. *M. bovis* commonly exhibits resistance to pyrazinamide. The treatment entails anti-tuberculosis therapy, employing a combination of isoniazid, ethambutol, and rifampin, for 3 to 12 months. In cases where vascular graft infections develop, surgical intervention is usually required.

Resident/Fellow Clinical Vignette

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The Double Vision Paradox: A Rare Case of Cerebral Venous Thrombosis Causing Trochlear Nerve Palsy

Introduction

Cerebral venous thrombosis (CVT) is a rare cerebrovascular disorder that can rarely cause cranial nerve palsy.

Case Description

A 75-year-old male with relevant past medical history of provoked deep vein thrombosis (currently on rivaroxaban) was sent to the emergency room after presenting to his primary care provider with 6 days of frontal headache and binocular diplopia in forward gaze and an outpatient MRI brain revealing a likely cerebral venous thrombosis (CVT). On examination, vitals were stable; he had vertical binocular diplopia with grossly intact extraocular movements and there were no other focal neurological deficits. Labs revealed glucose of 110. An MR venogram demonstrated non-occlusive thrombus in right sigmoid and transverse sinus. A lumbar puncture was deferred secondary to anticoagulation. Due to developing CVT despite anticoagulation, rivaroxaban was transitioned to warfarin for treatment. Further lab testing revealed positive ANA; acetylcholine receptor modulating, binding and blocking antibodies (Ab), lyme titers, beta-2 microglobulin and IgM anticardiolipin Ab were negative. He was discharged home with neuro-ophthalmology follow-up. Neuro-ophthalmologic exam revealed right trochlear nerve palsy with mild limitation of depression of the right eye and right superior oblique muscle weakness.

Discussion

CVT is a rare cerebrovascular disorder caused by complete or partial occlusion of the cerebral venous and sinus system; it occurs in 2-4 per million people per year, which contributes to nearly 0.5% of all strokes. Females are more likely to be diagnosed with CVT with a ratio of 3:1. CVT risk factors include prothrombotic conditions, head/face infections, malignancy, systemic inflammatory diseases, oral contraceptives, HRT, pregnancy and puerperium. In CVT, intracranial pressure (ICP) can be increased due to venous stasis by venous outflow obstruction. Increased venous pressure directly increases venular and capillary pressure or indirectly affect them by elevating ICP, which contribute to manifestations such as headache (70-100%), visual disturbances, and neurological deficits. The gold standard to diagnose CVT is MRI with MR venogram. The mainstay of treatment is anticoagulation with heparin or LMWH; endovascular treatment is an option for patients with worsening neurological status despite anticoagulation. CVT usually has a favorable prognosis. Cranial nerve palsy is an unusual presentation of CVT, with unclear pathogenesis. Venous stasis leading to reversible compromised oxygen or glucose consumption within the intrinsic vascular system of the nerve can potentially be the etiology for cranial nerve palsies, as seen in this case. Cases of CN III, VI, and VII palsy have been reported in literature, but trochlear nerve palsy due to CVT in a patient on full-dose anticoagulation, such as our patient, has not been reported.

Conclusion: Physicians should keep CVT in the differential for patients who present with headache and double vision.

Resident/Fellow Clinical Vignette

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Acute Esophageal Necrosis in the Setting of Severe Sepsis

Introduction:

Black esophagus (BE), also known as Gurvits syndrome, is characterized by a circumferential black discoloration of the esophageal mucosa that is caused by acute necrotizing esophagitis and is described as a rare entity. The pathophysiology is believed to be multifactorial, including hypertension, diabetes mellitus, cirrhosis with a precipitating event of ischemia, corrosive injury, and disruption of the intrinsic mucosal barrier of the esophagus. We describe a rare occurrence of black esophagitis, which was diagnosed following coffee-ground emesis in a patient with severe sepsis.

Case description:

A 72-year-old female with a past medical history of a cerebral tumor status post-surgical resection, in remission for 5 years, presented to the emergency department with generalized abdominal pain associated with nausea and vomiting. She reported 16 episodes of vomiting (initially non-bilious and non-bloody, then coffee-ground emesis) as well as dysuria.

The physical examination was notable for hypotension, tachycardia, fever, and generalized abdominal tenderness. Laboratory work-up showed leukocytosis of 27000 with neutrophilia, PCR: 41.70 mg/dl, procalcitonin: 1.06 ng/ml, lactate: 1.6 mmol/l, creatinine: 1.97 mg/dl, and urinalysis with pyuria, nitrates, and bacteria. Esophagogastroduodenoscopy revealed diffuse necrosis of the proximal, middle and distal portion of the esophagus, congestive gastropathy, and a hiatal hernia. Biopsies showed fibrinopurulent exudates and necrotic tissue with a loss of cell architecture.

The patient was managed conservatively with nothing by mouth, intravenous fluids, antibiotics, high-dose omeprazole, and sucralfate. Her evolution was satisfactory without complications.

Discussion:

BE is a rare illness with an incidence of 0.2%, but given the nature of the insult and the tendency for early tissue healing, the true prevalence is probably underestimated. The mortality of BE remains variable, with reports in the literature ranging from 15% to as high as 36% in some series.

Although the exact cause of BE is unknown, risk factors have been identified, including infections, hyperglycemia, cancer, shock, acute alcohol abuse, and hypoperfusion. Hypoperfusion could be caused by sepsis or volume loss, as was the case in this instance. Up to 90% of cases can have upper gastrointestinal bleeding along with hematemesis or melena. Severe sepsis has been reported in case reports, but urinary tract infections (UTI) have not been identified as the source of infection.

This case highlights the significance of UTI as a predisposing factor for severe sepsis and the requirement for expeditious therapy to identify the trigger and the severity of extension upon esophagogastroduodenoscopy given that most cases are found in the distal third, which is a "watershed" area. In this case, the patient was given the appropriate care for the underlying condition, including PPIs, sucralfate, and antibiotics.

Resident/Fellow Clinical Vignette

Mst Laizuman Nahar,

Dr Keith Brennan

A case report of facial nerve paralysis secondary to acute otitis media

Otitis media is more common in children, cases are rarely seen in adults. Due to the close relation between the facial nerve and temporal bone, the facial nerve can be affected in otitis media. Even in the case of children, a facial nerve palsy is a rare complication nowadays due to antibiotic use in the treatment of otitis media. Among the organisms, bacterial infection by *Streptococcus pneumoniae* is most common. Viral pathogens can be a predisposing infection or co-infection with bacterial pathogens. Other risk factors, such as anatomical abnormality of the Eustachian tube, ciliary dysfunction, immune deficiency can also contribute to the development of otitis media. Here we describe a case of a 42-year-old male who developed facial nerve palsy associated with otitis media. The patient initially presented to urgent care with a viral syndrome, left eye erythema with purulent discharge. Later he developed a sore throat and left ear pain. He presented to emergency department with left-sided, constant, and stabbing ear pain for 2 days. He was prescribed per oral antibiotic, Augmentin along with otic-antibiotic (polymyxin, trimethoprim, tobramycin) solution, and discharged to home. Two days later, the patient presented to emergency with the complaint of worsening left ear pain, left jaw pain, difficulty swallowing, drooling, a popping sensation in his ear, and hearing loss as well as left ear discharge. The patient was admitted with a diagnosis of acute otitis media with ruptured TM along with facial nerve palsy. The patient was treated initially with Zosyn and vancomycin, but the Zosyn was later changed to meropenem pending the results of cultures. Intravenous steroids were administered as well. Later, an antifungal (micafungin) was added to the regimen due to the presence of yeast cells in the cytology of the left ear. ENT, Neurology, Endocrinology, and Infectious Diseases were involved. Pain and blood sugar were controlled. The patient was discharged with long-term antibiotics through a peripherally inserted central catheter (cefepime and vancomycin) after he was clinically improved.

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The First Reported Case Of *Kocuria kristinae* Vertebral Osteomyelitis And Epidural Abscess.**INTRODUCTION:**

Kocuria species are catalase-positive, coagulase-negative, non-hemolytic cocci. They are environmental bacteria, as well as human skin and oropharynx mucosa commensals¹. However, recent reports showed an increased clinical role in human infectious diseases. A recent study published in 2019 noted that *Kocuria kristinae* was involved in 17 cases of central venous catheter-related bacteremia, four infective endocarditis, three acute peritonitis, one abdominal abscess, umbilical sepsis, acute cholecystitis, and urinary tract infection². We report here the first case of vertebral osteomyelitis caused by *Kocuria kristinae*.

CASE PRESENTATION:

A 53-year-old male patient with a history of chronic obstructive pulmonary disease and cervical spondylosis C6-C7 on long-term pain medications initially presented with a 4-month history of worsening mid-thoracic back pain. His back pain was associated with an unintentional 10 pounds of weight loss. He had received steroid trigger point injections to his mid back in the past couple of months. He was evaluated in the outpatient by neurosurgery and was noted to have thoracic spine tenderness and weakness of right ankle dorsiflexion. A CT scan revealed discitis with osteomyelitis at the T5-6 level with associated epidural abscess. He was admitted for T5-T6 bilateral laminectomies, evacuation of epidural abscess, and multilevel arthrodesis from T2-T10. Surgical samples were sent to the microbiology lab, and *Kocuria kristinae* was identified. Blood cultures and transthoracic echo were negative. The patient was initially started on Cefepime, Vancomycin, and Metronidazole. *Kocuria kristinae* minimum inhibitory concentration (MIC) testing was limited and showed a MIC of 1.5 for Vancomycin, 0.125 for Ceftriaxone, and 0.064 for Cefepime. The patient was continued on a course of Cefepime and oral Metronidazole for 8 weeks, and he showed significant improvement both clinically and radiologically upon subsequent follow-up. He was thereafter kept on Doxycycline suppressive therapy.

DISCUSSION/CONCLUSION:

Recent observations have illuminated *Kocuria kristinae*'s involvement across a spectrum of human clinical diseases, sparking concerns over escalating resistance trends, as corroborated by contemporary reports. This compelling instance of epidural abscess and spinal osteomyelitis attributed to *Kocuria kristinae* in an immunocompetent patient not only underscores its burgeoning role in human infectious diseases but also accentuates the absence of a standardized reference for minimum inhibitory concentration (MIC) interpretation and mortality data. The patient's favorable response to the above antibiotic regimen underscores the emergence of *Kocuria kristinae* as a pertinent pathogen for both immunocompetent and immunocompromised individuals, accentuating the need for precise sensitivity testing to guide effective therapeutic strategies.

Resident/Fellow Clinical Vignette

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A Case of Acute Refeeding Syndrome after prolonged Fasting: A Rare but Potentially Life-Threatening Diagnosis

Introduction: Refeeding syndrome is a potentially life-threatening complication that can occur in individuals who have been fasting and are then abruptly re-fed. This syndrome is characterized by electrolyte abnormalities, including hypophosphatemia, hypomagnesemia, and hypokalemia, which can lead to various symptoms such as cardiac arrhythmias, respiratory failure, and seizures.

Case Description: We present a case of a 42-year-old African American female who initially presented to the Adult Medicine Clinic with acute onset of generalized weakness and red color urine for 1 day. She had been fasting for 21 days and started eating the day prior to presentation due to religious reasons. In the clinic, the patient was found to be bradycardic in the 40s with intermittently heart rate going to the 80s. She appeared very fatigued and ill on examination, EKG showed HR of 83 with frequent PVCs with bigeminy pattern, which was a new finding for her. Due to concern for refeeding syndrome in the setting of bradycardia with EKG changes, the patient was sent to the ED via EMS.

In the ED, vitals were within normal limits. Review of systems was positive for generalized weakness, fatigue, arthralgia, dry mouth, hematuria, and dysuria. The physical exam showed a very thin, cachectic young lady, and the rest of the exam was normal. Family, psycho-social history was non-contributory. Laboratory workup revealed hypokalemia: 2.6 mmol/L (normal: 3.4 - 5.1 mmol/L), hyponatremia: 128 mmol/L (normal: 136 - 145 mmol/L), and severe hypophosphatemia: 1.1 mg/dL (normal: 2.5 - 4.5 mg/dL). The patient was then admitted to the hospital for refeeding syndrome and was made NPO. She was started on IV fluids, placed on telemetry, and given sodium phosphate infusion and potassium supplements to correct electrolyte derangements. Her BMP, magnesium, and phosphorus were closely monitored every 4 hours and replete as needed. The patient's diet eventually advanced slowly as the patient was tolerating it well. Repeat BMP labs were within normal limits. She was subsequently discharged after 3 days with resolution of her clinical symptoms and electrolyte imbalances.

Discussion: Refeeding syndrome is a life-threatening condition that can occur when a malnourished individual rapidly starts to consume calories, leading to electrolyte imbalances and other metabolic disturbances. The pathogenesis is thought to be due: rapid intracellular uptake of phosphate, magnesium, and potassium triggered by switch from fasting gluconeogenesis to carbohydrate-induced insulin release. The symptoms and complications of refeeding syndrome mostly related to hypophosphatemia such as cardiac arrhythmia, heart failure, respiratory failure due to impaired diaphragmatic contractility, skeletal muscle weakness, impairment, and rhabdomyolysis, tremors, delirium, and seizures. Treatment includes close monitoring of electrolyte levels, gradual advancement of the diet, and correction of electrolyte abnormalities through intravenous supplementation. Prompt recognition and management of refeeding syndrome is crucial to prevent complications and mortality.

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UNCHARTED AFTERMATH OF COLCHICINE TOXICITY: RENAL FAILURE

Introduction: Colchicine is a well-known plant alkaloid used for acute gout treatment. Due to its anti-inflammatory, anti-mitotic activity, colchicine has been a popular treatment strategy in medical literature. However, colchicine overdose and toxicity can cause serious adverse effects affecting multiple organs, especially the kidneys. In this case report, we report a patient with history of gout who presented with heavy colchicine ingestion and developed acute renal failure, severe anion gap metabolic acidosis, and multiple electrolyte disturbances.

Case presentation: 47-year-old Hispanic male presented to the emergency department with diffuse abdominal pain, nausea, vomiting, non-bloody diarrhea, inability to tolerate oral intake, headache, dizziness, and generalized weakness for two weeks. The patient has a medical history of gout, stage 3 chronic kidney disease (CKD), hypertension, sleeve gastrectomy in 2013, and cholangitis with biliary stent placement in April 2018. He also endorsed drinking excessive alcohol a few days before the presentation and ingested 30 tablets of colchicine (0.6mg per tablet, 18mg total) for acute gout flare for fourteen days. In the emergency, the patient's initial labs revealed severe high anion gap metabolic acidosis 37 mmol/L, azotemia 150 mg/dL, acute kidney injury 24.9 mg/dL on chronic kidney disease 1.5 mg/dL, hypocalcemia 5.4 mg/dL, hyperphosphatemia 13 mg/dL, elevated lipase level 1034 u/L, rhabdomyolysis 783 unit/L, and normal hepatic function panel. Pt also underwent CT abdomen and pelvis without contrast which was not suggestive of pancreatitis. He was admitted to the intensive care unit for further management. Initially, the patient was anuric, and a bladder scan revealed only 35ml of urine. After aggressive electrolyte replacement, he was also started on a bicarbonate drip for severe metabolic acidosis. Nephrology service was consulted, and the patient was scheduled for emergent hemodialysis (HD). He underwent two consecutive hemodialysis sessions; the bicarbonate drip was discontinued after the first session of HD. The patient was able to produce urine after his first HD session. Gradually, his metabolic acidosis improved, and he was transferred to the medical floor on the fourth day of admission. However, the patient's creatinine failed to improve 9.4mg/dL, and he progressed to end-stage renal disease requiring permanent HD.

Discussion: Colchicine has a narrow therapeutic index and dose adjustment is necessary for patients with pre-existing kidney dysfunction. Symptoms are proportional to the duration of ingestion and typically start twelve hours after ingestion. The direct effect of colchicine on renal tubular epithelial cells causes acute kidney injury and anuria/oliguria. Colchicine poisoning can range from mild gastrointestinal symptoms to severe fatal toxicity with multiorgan failure. Clinicians must be vigilant while prescribing colchicine in patients with CKD, and the dose must be renally adjusted. Patients should be warned about the toxicities of the drug and when to stop taking the medication.

Resident/Fellow Clinical Vignette

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IMPACT: Improving Physician-Patient Communication in a Residency Training Clinic

Patients and caregivers often report difficulty in understanding treatment plans. There are many barriers to communication within our healthcare system and lack of understanding of medical instructions leads to poor adherence to follow up appointments, continuity, medication errors, and eventually overall patient dissatisfaction. Good communication is usually described by patients in vague terms. However, quality discharge instructions have been proven to maximize communication and further improve patient satisfaction in an inpatient setting. However, little to no data is provided on the value of discharge instructions in an outpatient setting. By implementing a new discharge workflow and as part of our efforts for quality improvement (QI) we aimed to improve patient satisfaction through enhancement in communication in our office. To implement this QI project we reviewed the current visit workflow and discharge process for areas to implement change. We utilized the Press Ganey patient survey from October-December 2022 as a baseline in the categories of interest. The survey results for the attending physicians who supervise the residents were used for this study. After reviewing the barriers for patients, we implemented our IMPACT plan which was to provide education for residents and attendings about the QI efforts and implement a new workflow for patient check out. We implemented use of this discharge sheet from Jan-March 2023 in the clinic. Over three months, residents used the visit summary sheet with their respective preceptors. We saw improvements in Press Ganey scores for two preceptors. As predicted, the discharge sheet improved communication and allowed patients to understand the care they were receiving. Our IMPACT efforts demonstrated that through a simple homework style discharge check list patients and physicians can work together during a visit to improve communication and eventually patient satisfaction.

Resident/Fellow Clinical Vignette

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Tuberculous Arthritis in a Prosthetic Knee Joint - A Diagnostic Challenge

Introduction

Prosthetic joint infection (PJI) is a common complication following prosthetic joint implantation, affecting up to 10% of recipients and causing significant patient suffering. Accurate diagnosis is critical due to the distinct management approaches between PJI and non-infectious joint failure. Mycobacterial infection is a rare cause of PJI and is challenging to diagnose due to the nonspecific symptoms and a low index of suspicion. Surgical intervention and antibiotics are often used to eradicate the infection, but there are no official guidelines on managing this condition.

Case Description

An 85-year-old female presented with worsening swelling and pain in her left knee for the past fourteen months. She had been seeing her orthopedist, and synovial fluid analysis showed a white cell count (WBC) of 3560/ μ L with 97% neutrophils, but crystal analysis, gram stain, and bacterial culture were all negative. She underwent an MRI of her left knee, which showed a large cystic mass measuring 6.9 cm anteroposterior by 4.2 cm transverse by 9.3 cm craniocaudal, originating from the medial component. However, there were no signs of prosthesis loosening. Despite multiple aspirations and symptomatic treatment for the presumptive diagnosis of the synovial cyst, her swelling worsened and affected her mobility. She denied any trauma and had not experienced fevers, chills, fatigue, night sweats, cough, shortness of breath, or weight changes.

Her medical history was significant for hypertension, diabetes mellitus, atrial fibrillation, and she had undergone total left and right knee replacements in 2015 and 2016 due to osteoarthritis. The patient was originally from Puerto Rico and immigrated to the United States when she was 12.

On exam, her vital signs were normal, and her BMI was 31. A cystic mass was palpated at the medial aspect of the left knee, but there was no erythema, warmth, or tenderness. The rest of the exam was unremarkable. Repeat arthrocentesis showed a WBC of 56,000/ μ L with 61% neutrophils and 34% lymphocytes. Glucose was 2 mg/dl, total protein was 4.8 gm/dl, and alpha-defensin was positive. Synovial fluid bacterial and fungal cultures were negative, but the AFB culture revealed the presence of *Mycobacterium tuberculosis* complex and was confirmed by MALDI-TOF. Chest CT showed no evidence of active pulmonary disease. Anti-TB treatment: isoniazid, ethambutol, pyrazinamide, and rifabutin was started.

Conclusion

Diagnosing *Mycobacterium tuberculosis* PJI can be challenging due to its rarity and nonspecific presentation. We found it unusual for an obese patient with no constitutional symptoms or identifiable source to have an MTB PJI infection. Clinicians should consider MTB PJI in cases of culture-negative PJI, particularly in patients with a history of tuberculosis or relevant epidemiological risk factors. A high index of suspicion can lead to an early diagnosis and prompt medical and surgical management.

Resident/Fellow Clinical Vignette

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Atrial Flutter: An Atypical Presentation of Overt Hypothyroidism

Introduction:

Hypothyroidism is a well known endocrine disorder defined biochemically by an elevated serum thyroid-stimulating hormone (TSH) and decreased serum free thyroxine (FT4) concentrations. It is a well known risk factor for cardiovascular disease which can predispose to bradyarrhythmias. However, we present a unique case of atrial flutter in the context of hypothyroidism.

Case Presentation:

A 100-year-old female with a known history of hypothyroidism, non-compliant with levothyroxine, presented to the emergency department with complaints of frequent palpitations. She denied associated symptoms of fatigue, chest pain, dyspnea, cold intolerance, or constipation. Vital signs were significant for an elevated blood pressure of 134/94 mmHg, and a heart rate was 125 beats per minute. On physical examination the patient showed no alterations in mental status and an irregularly irregular pulse was palpated. Initial ECG demonstrated atrial flutter with 2:1 conduction and chest x-ray revealed rightward tracheal deviation, suggestive of a thyroid goiter. Laboratory results were significant for a markedly elevated TSH level of 100 uIU/mL and a low free T4 level of 0.17 ng/dL. However, subsequent thyroid ultrasound displayed a small, hypovascular thyroid gland with no discrete nodules. She was treated with intravenous metoprolol tartrate (5mg) followed by oral metoprolol tartrate (25mg) twice daily. Levothyroxine supplementation (25 mcg) was also initiated. A CHADS-VASc score of 3 was calculated prompting the initiation of anticoagulation with apixaban (2.5mg). Transthoracic echocardiography further revealed a left ventricular ejection fraction of 60%, normal left ventricular size, and moderate left ventricular hypertrophy. On follow-up, the patient was noted to be in normal sinus rhythm with the above medication interventions.

Discussion:

Hypothyroidism is associated with multiple cardiovascular risk factors and the mechanism behind atrial tachyarrhythmias is complex and likely multifaceted. Thyroid hormone regulation of genes which code for specific enzymes responsible for myocardial contractility and relaxation are diminished in hypothyroidism, resulting in slowed myocardial relaxation and impaired ventricular filling. Abnormal left ventricular diastolic function increases left atrial pressure and can result in stretch-induced atrial tachyarrhythmias. In addition, hypothyroidism causes a decrease in the release of endothelial-derived relaxing factors, which results in contraction of vascular smooth muscle cells. This mechanism promotes peripheral vascular resistance and arterial stiffness resulting in increased left ventricular mass and myocardial stiffness on cardiac

imaging, which are known risk factors for tachyarrhythmias. This constellation of cardiovascular abnormalities are generally reversible with the initiation of appropriate doses of levothyroxine.

Conclusion:

To the best of our knowledge, this is the first reported case of Atrial Flutter as an initial presenting symptom of hypothyroidism. While the association of hyperthyroidism and atrial tachyarrhythmias are established, this case highlights that the role of hypothyroidism as a causal factor should also be considered.

Resident/Fellow Clinical Vignette

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Incidental Asymptomatic Para-aortic Sympathetic Paraganglioma complicated by Intraoperative Hypertensive Crisis

Introduction

Paragangliomas are rare neuroendocrine tumors which can form from extra-adrenal autonomic paraganglia. They can be similar symptomatically and microscopically to pheochromocytomas which are found in the adrenal medulla. If the paragangliomas are catecholamine-secreting the presentation is similar to pheochromocytomas with symptoms of headache, diaphoresis, tachycardia, and hypertension. We present a rare case of an incidentally found asymptomatic sympathetic paraganglioma complicated by an intraoperative hypertensive crisis.

Case presentation

A 70-year-old male with a past medical history of prediabetes, chronic gastritis, and tobacco use presented with intermittent abdominal pain exacerbated by leaning forward and post prandially. Esophagogastroduodenoscopy did not reveal any abnormalities, colonoscopy showed a 5mm polyp which was removed. MRI abdomen with and without contrast showed a left sided para-aortic mass 2.2 x 1.7 x 4.6 cm in size and without definitive metastasis. PET/CT scan revealed mildly increased uptake in the para-aortic mass, parotid gland, and intra-abdominal and cervical lymph nodes, read as likely reactive. Percutaneous CT guided core biopsy was notable for poorly differentiated carcinoma with significantly elevated Chromogranin A level, which was concerning for a possible neuroendocrine tumor. The patient remained normotensive without tachycardia, headaches, or diaphoresis. He underwent laparoscopic surgical excision complicated by systolic blood pressure to 240mmHg upon manipulation of the mass. Intraoperatively, the patient was treated with nitroglycerin and nicardipine drips to maintain blood pressure control. The pathology report identified the mass as a sympathetic paraganglioma with positive chromogranin, synaptophysin, CD56, INS MI, GATA-3, and S100 markers. Immediate postoperative plasma normetanephrine was elevated to 2.16nmol/L (0-0.89nmol/L) and metanephrine was within range 0.33 nmol/L (0.0-0.49 nmol/L). Repeat plasma metanephrine, normetanephrines and chromogranin A levels at a follow up visit two weeks later were within normal range.

Conclusion

This case highlights the importance of diagnosing and treating paragangliomas. This patient had a rare form of chromaffin-cell tumor as only 15-20% are extra-adrenal and only 1% are functional and produce catecholamines. Despite the rarity of paragangliomas it is important to consider as a differential diagnosis in an intra-abdominal mass along the ganglion sympathetic chain as it can be malignant or cause severe symptoms such as hypertension, tachycardia, and psychiatric disorders. Surgical resection is the treatment of choice for paragangliomas. It is crucial to preoperatively treat hypertension with alpha blockers before treating with beta blockers to avoid unopposed alpha-adrenergic effect. Once alpha blockade is accomplished reflex tachycardia will likely present and can be treated with beta-blockers. This patient was asymptomatic prior to his procedure and only became hypertensive perioperatively. Catecholamine released from paragangliomas during physiologic stress or tumor manipulation may increase risk of arrhythmias, hypertension, morbidity, and mortality. Therefore, it is important to be prepared for perioperative hypertensive crisis even in patients who are normotensive prior to paraganglioma excision.

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"Nutmeg" Esophagus: Food Bolus Impaction vs Pseudo-Zenker's Diverticulum

Introduction

Esophageal diverticula are an uncommon but problematic entity usually affecting patients in the seventh and eighth decade of life. Diverticula of the esophagus are attributed to either traction, tumor mass effect, or excess pulsion forces from peristaltic waves against weakened esophageal musculature. A pseudo-Zenker's is a small transient outpouching visualized after ingestion of contrast media against an incompletely relaxed cricopharyngeus muscle with a non-distended proximal esophagus. In contrast, a true Zenker's diverticulum is a sac-like outpouching of the esophageal mucosa and submucosa within the weakness of the cricopharyngeus muscle. Patients with pseudo-Zenker's diverticulum are typically asymptomatic but may complain of dysphagia when associated with food impaction.

Case Presentation

We report a case of an 87 year old female who initially presented to the hospital for evaluation of new onset heart failure and was found to have severe mitral regurgitation. Three days prior to admission she also had noted the development of sudden onset of dysphagia. Laryngoscopic exam was notable for a left sided pharyngeal edema. CT scan of the neck showed Zenker's diverticulum at the level of C5-C6. The patient was managed conservatively and discharged to return in one month for a MitraClip procedure and EGD to further evaluate her dysphagia. On endoscopy, a 2 centimeter (cm) esophageal outpouching was noted with retained food bolus. Barium esophagram confirmed a left sided 2 cm outpouching of the esophagus with notable contrast filling defect, consistent with a Zenker's diverticulum and impacted food bolus. On repeat endoscopy, the foreign body was successfully removed and found to be a 2.5 cm nutmeg. Examination of the surrounding esophageal mucosa revealed friable tissue without any obvious diverticula. Repeat EGD two months later revealed a normal esophagus without evidence of Zenker's diverticulum.

Discussion

Our case is a unique presentation of a patient with chronic retained food bolus causing pseudo-Zenker's diverticulum. Chronic impaction in this case may have led to fibromuscular weakness of the cricopharyngeus resulting in the formation of the pseudo-Zenker's diverticulum.

Notably, two months prior to admission, the patient was evaluated for a UTI, confusion, and acute onset dysphagia. We theorize that the patient likely ingested the entire nutmeg at that time. After removal of the foreign body there was no evidence of mucosal defect on repeat endoscopy. Patients with chronic impaction should undergo interval EGD to detect predisposing intraluminal narrowing.

Resident/Fellow Clinical Vignette

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NOT JUST FROM ANTIPSYCHOTICS: TARDIVE DYSKINESIA FOLLOWING BUPROPION AND DEXTROAMPHETAMINE-AMPHETAMINE

Tardive dyskinesia (TD) is a movement disorder characterized by involuntary movements of the face, mouth, tongue, trunk, and extremities and caused by chronic exposure to certain medications. TD is commonly associated with dopamine antagonists, particularly antipsychotic medications. However, other frequently prescribed medications, including some antidepressants and stimulants, are associated with this debilitating and difficult-to-treat adverse effect.

A 47-year-old woman with a history of attention-deficit/hyperactivity disorder (ADHD) presented to her primary care physician with abnormal jaw movements. Over the prior 11 months, she was treated by a psychiatrist for symptoms including inability to concentrate, lack of energy, and reduced motivation. She was started on dextroamphetamine-amphetamine (DA) 10 mg daily for treatment of ADHD. After 1 month, her symptoms had not significantly improved, and her dose was increased to 20 mg daily and augmented with bupropion extended-release 75 mg daily. Due to persistent symptoms of ADHD, the DA dose was increased to 30 mg daily and the bupropion dose was increased to 300 mg daily. After 6 months on these doses, she developed involuntary lateral movements of her jaw that were exacerbated by stress. She attributed the dyskinesia to bupropion and stopped the medication on her own. She presented to her primary care physician 4 months after the onset of orofacial dyskinesia. At that time, she noted less frequent jaw movements following discontinuation of bupropion. She denied mood changes, alterations in sleep, and substance use. She had no prior exposure to antipsychotic medications and no family history of neurologic disorders. Physical examination revealed involuntary jaw movements towards the left side while talking, no abnormal tongue movement, normal cognition and mood, clear and coherent speech, normal gait, no tremors, and no rigidity. Laboratory tests, including a complete blood count and a complete metabolic panel, were unremarkable. She was diagnosed with bupropion-induced tardive dyskinesia and was referred to a neurologist. She was advised to decrease caffeine intake and offered multiple treatment options, including alprazolam, valbenazine, and botulinum toxin injections. Additionally, she was started on a slow DA taper. Her symptoms improved gradually with cessation of bupropion, decrease of the DA dose, and symptomatic treatment with alprazolam. The tardive dyskinesia was attributed to prolonged exposure to 2 dopaminergic medications: dextroamphetamine-amphetamine and bupropion.

The mechanism by which these medications cause tardive dyskinesia is not fully understood but may be due to increased extracellular dopamine concentration in the nigrostriatal pathway and dopamine receptor hypersensitivity. Awareness and judicious prescribing of common medications that can cause this rare adverse effect is critical as there is no curative treatment for TD and disabling symptoms can persist despite discontinuation of the causative drug. Furthermore, early diagnosis and prompt withdrawal of the offending drug increases the likelihood of resolution of tardive dyskinesia.

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NON-ATHEROSCLEROTIC SPONTANEOUS CORONARY ARTERY DISSECTION PRESENTING AS ATYPICAL CHEST PAIN

Spontaneous coronary artery dissection (SCAD) is a rare cause of acute coronary syndrome (ACS) and tends to affect young female patients. Therefore, it is important to recognize this as part of the differential diagnosis for young women presenting with chest pain.

A 35-year-old female with past medical history notable for hypertension and obstructive sleep apnea presented to the emergency department for evaluation of a 3-day history of constant left-sided chest pain. The pain radiated to her left arm and left neck and was exacerbated with bending forward. The pain was not associated with shortness of breath, nausea, diaphoresis, weakness, or numbness of the extremities. Initial vital signs were notable for tachycardia to 117 and blood pressure of 162/101. Physical examination demonstrated a well-appearing, non-toxic patient with tachycardia without murmurs, rubs, or gallops. The patient had strong distal pulses, no peripheral edema, and normal capillary refill with warm extremities. An initial EKG was notable for sinus tachycardia and non-specific 0.5mmST elevation in lead I. Initial troponin was elevated at 310 ng/dL and the patient was given 325mg of aspirin. A three-hour troponin was 318 ng/dL (delta = 8). A chest CT angiogram was negative for pulmonary embolus. Given dynamic troponin changes, the patient was admitted for observation, cardiology evaluation, and echocardiogram. However, a follow up EKG showed sinus tachycardia with 2mm ST-elevation in the leads I and aVL. Following the development of these ischemic EKG changes, the patient was loaded with a P2Y12 inhibitor and started on a heparin infusion as well as sublingual nitroglycerin as needed. Echocardiogram showed normal left ventricular systolic function with an inferolateral wall motion abnormality. The patient underwent emergent coronary angiography which was notable for a completely stenosed distal left anterior descending artery with angiographic features that were most consistent with non-atherosclerotic spontaneous coronary artery dissection (SCAD). The patient was started on a statin, beta-blocker, and angiotensin receptor blocker. She recovered well and was discharged home from the hospital. The patient continues to follow with cardiology outpatient while undergoing work up for fibromuscular dysplasia.

This case highlights the need for a high index of suspicion care teams must maintain in evaluating young patients without typical risk factors for acute coronary syndromes. With prompt recognition of ACS, patients can undergo coronary angiography early on with the goal of preserving cardiac muscle function.

Resident/Fellow Clinical Vignette

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AN ATYPICAL PRESENTATION OF PITUITARY ADENOMA WITH SEVERE SYMPTOMATIC HYPONATREMIA

Introduction:

Pituitary adenomas can cause hormone abnormalities through excessive secretion or mass effect, which can be an infrequent cause of hyponatremia. As hyponatremia is a prevalent finding in elderly populations, a broad differential and workup is important, including hormone evaluation as indicated.

Case Presentation:

A 71-year-old man with hypertension presented to the emergency room with new-onset generalized seizures. He was confused, hemodynamically stable, and appeared euvolemic. He felt malaise for several days prior but denied any preceding complaints or infectious symptoms. Laboratory results were notable for sodium 112 mmol/L (135-145), serum osmolality 245 mOsm/kg (280-296), urine sodium 80 mmol/L, and urine osmolality 505 mOsm/kg (50 " 1200). He was treated with fluid restriction and 3% saline for presumed SIADH with minimal improvement in sodium levels.

Further testing revealed TSH 0.062 uIU/mL (0.40-4.20), free T4 0.70 ng/dL (0.80-1.5), AM cortisol 3.3 mcg/dL (6.7-22.6), and ACTH 10.0 pg/mL (7.2-63.3). ACTH stimulation test showed cortisol 1.9 mcg/dL (baseline), "9.6 mcg/dL (30 minutes), and "12.30 mcg/dL (1 hour). Due to concern for central hypothyroidism (low TSH and free T4) and secondary adrenal insufficiency (low-normal ACTH with inappropriate response to stimulation test) he was initiated on levothyroxine and high-dose hydrocortisone with subsequent normalization of sodium.

MRI pituitary gland showed a 1-centimeter lesion compatible with a pituitary macroadenoma. Prolactin, FSH, LH, IGF-1, and testosterone were within normal limits. He was discharged on hydrocortisone, levothyroxine, and neurosurgery follow-up.

Discussion:

Hormone dysfunction from a nonfunctioning pituitary adenoma was the likely driving force behind hyponatremia in this case, which presented as a seizure. Severe hyponatremia (less than 125 mmol/L) has a prevalence of 4.5% on geriatric wards. Evaluation includes urine studies, and if indicated, thyroid and adrenal function tests. This patient had hypothyroidism and adrenal insufficiency, which led to further testing with MRI and other hormonal tests.

Pituitary adenomas exhibit an estimated prevalence of 10%. Roughly half are functional or hormone-secreting, usually prolactin or growth hormone. Asymptomatic adenomas which are non-compressive and nonfunctional, can be managed conservatively. The mass effect of pituitary adenomas can lead to decreased TSH and ACTH secretion. Hypothyroidism decreases cardiac output, stimulating carotid baroreceptors to increase ADH secretion. Glucocorticoid deficiency is believed to impair free water clearance in the kidneys independent of ADH through an unclear mechanism. SIADH, a diagnosis of exclusion, is managed with fluid restriction and salt repletion, which were insufficient in this case. The treatment for hyponatremia secondary to adrenal insufficiency or hypothyroidism involves steroid or thyroid hormone replacement to restore proper sodium regulation.

Resident/Fellow Clinical Vignette

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A case of laughing her way to vitamin B12 deficiency

Introduction

Recreational use of nitrous oxide, the psychoactive drug known as "Whippets" or "laughing gas" is easily missed due to its short half-life (5 mins) and undetectability on routine drug urine tests. Chronic use has been shown to cause Vitamin B12 deficiency. We report the case of a young female experiencing unstable gait for two months and was found to have severe vitamin B12 deficiency after admitting to chronic Whippets use.

Case report

23-year-old female with no past medical history presented with chief complaint of persistent right knee pain after a fall three months ago, though she denied loss of consciousness or any head trauma. She appeared disheveled and cognitively impaired. On physical examination, she was unable to dorsiflex her feet and had sensory ataxia with accentuated flexion at the hips and knees. She could not walk without visual cues. She had bilateral lower extremity numbness and upper extremity tremors. Her motor strength was intact in all extremities. No acute findings on the right knee examination. Laboratory data showed macrocytic anemia (Hb-10.8 g/dL and MCV-110 fL). Cerebrospinal fluid analysis, Chest X-ray, and computed tomography (CT) of Head was unremarkable. Her urine toxicology screen was negative. Her vitamin B12 level was <146 pg/mL. Further inquiry revealed that she had inhaled "whipped cream" several times a week for more than a year. She ultimately chose to leave against medical advice. Drug cessation counseling was done. She was advised to take high dose vitamin B12 supplementation.

Discussion

There are several proposed mechanisms of nitrous oxide toxicity. Nitrous oxide oxidizes the central cobalt moiety of vitamin B12, converting irreversibly from its monovalent to a divalent form. This form of methyl cobalamin cannot act as a cofactor in methionine and DNA synthesis (1,2,3). The inactivation of vitamin B12, leads to the production of methylmalonic acid instead of succinyl-CoA, leading to myelin inflammation (1,3,5). The interruption of these pathways leads to a concomitant increase in homocysteine and methylmalonic acid, which are sensitive markers of nitrous oxide toxicity despite normal Vitamin B12 levels (1,2,3).

Whippets is the most popular inhalant in the United States with 4.7% of people over age 12 and 5.2% of people over age 26 having used them at some point in their lives (12). Nitrous oxide should be considered in young patients with neurologic and mental symptoms despite a negative urine drug screen. Evidence of macrocytic anemia is often a sign of late progression of the disease, in many instances there is no evidence of hematologic effects (10). Our patient exhibited a rare combination of neurological, psychiatric, and hematological effects. Prompt cessation of nitrous oxide use and high dose vitamin B12 supplementation is required to prevent irreversible neurological deficits.

Fatima Sajid

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RAPID IMPROVEMENT OF HYPERLIPIDEMIA FOLLOWING THE TREATMENT OF OVERT HYPOTHYROIDISM

INTRODUCTION

Hypothyroidism is a secondary cause of hyperlipidemia. Evidence suggests that in some cases of hyperlipidemia secondary to hypothyroidism, treatment of the underlying thyroid condition alone can lead to a reduction in cholesterol levels. Guidelines suggest the use of statin therapy if LDL is 190 mg/dL or above. We present a case where the patient's LDL was >400 mg/dL, and it reduced by >50% in approximately two weeks without the use of statin therapy.

CASE PRESENTATION

A 37-year-old man with a history of depression and polysubstance use presented to the emergency department after a fall. He reported poor sleep, intermittent constipation, chronic fatigue, and 15-pound weight gain. He denied cold or heat intolerance, palpitations, and tremors. He had no history of radiation to the neck, neck surgery, amiodarone, or lithium use. Family history was negative for thyroid diseases, cardiac diseases, or dyslipidemia.

On physical examination, the patient had no bradycardia or hypotension on vital signs. There was no evidence of a neck scar, goiter, or palpable nodules. Laboratory tests were notable for TSH 141.68 mIU/mL (0.38-4.08), free T4 < 0.25 ng/dL (0.58-1.64), total cholesterol 522 mg/dL (101-200), LDL > 400 mg/dL (40-100), HDL 64 mg/dL (>40), triglycerides 139 mg/dL (41-150), apolipoprotein A1 152 mg/dL (≥ 115), apolipoprotein B >240 mg/dL (<90) and CPK 1165 IU/L (59-367). Thyroid peroxidase (TPO) antibody was positive. Thyroid ultrasound showed a small and heterogeneous thyroid without nodules.

The patient was started on a weight-based dose of Levothyroxine. After two weeks, TSH was 40.7 mIU/mL, free T4 was 0.67 ng/dL, total cholesterol improved from 522 mg/dL to 292mg/dL, and LDL from >400 mg/dL to 194 mg/dL.

DISCUSSION

A significant reduction in cholesterol levels can be seen after treatment of hypothyroidism without the use of statin therapy as seen in our patient. Though the patient's LDL was >400 mg/dL, we opted not to initiate statin therapy due to the increased risk of rhabdomyolysis with statin therapy. Additionally, we suspected that the patient's LDL would improve with the treatment of his hypothyroidism.

Hyperlipidemia, secondary to hypothyroidism, is mediated through various mechanisms, including absorption, synthesis, metabolism, and clearance of lipids. In a recent meta-analysis, when patients with overt hypothyroidism were treated with levothyroxine, their total cholesterol levels decreased by an average of 58 mg/dL, and LDL cholesterol decreased by 41 mg/dL. Whereas in our patient, total cholesterol decreased by 230 mg/dL, and LDL cholesterol decreased by 206 mg/dL, a greater than fifty percent reduction in LDL. On discharge, the patient's LDL was 194mg/dL. We suspected that it would decrease further in a few weeks and since his ASCVD score was <5%, he would not need statin therapy in the future.

Resident/Fellow Clinical Vignette

Tooba Salar,

Khizar Salar

Afrah Misbah

Abrar Shah

Lyme Carditis: A case of Complete Heart Block in a 39-year-old male

Lyme Carditis is a rare manifestation of Lyme disease which can be prevented by early treatment.

A 39-year-old male presented to the Emergency Department in July complaining of ongoing dizziness, shortness of breath, and chest tightness for 1 week. He was diagnosed with Bell's palsy 3 weeks prior and received oral Prednisone and Valacyclovir outpatient. He had no medical problems, regular medications, or allergies. He was a non-smoker, drank 30-50 cans of beer a week. There was no history of tick exposure or rash.

Upon arrival, patient was alert and oriented. Vital signs showed a Blood Pressure of 102/58 mmHg and a pulse of 44 beats/minute. Physical examination revealed right-sided facial droop. Cardiovascular examination showed bradycardia with no murmurs.

An EKG showed a 3rd-degree atrioventricular block(Fig 1). Laboratory results showed a White Cell Count of $14.4 \times 10^3/\mu\text{L}$, Hemoglobin 12 g/dL, and Creatinine 1.18 mg/dL with normal electrolytes and liver function. Troponin was $<3 \text{ pg/ml}$. Chest X-ray appeared normal. Transthoracic Echocardiogram indicated an ejection fraction of 60% without any valvular abnormalities. Lyme serology was positive.

The patient received temporary wire placement for transvenous pacing. He was admitted to the ICU and started on IV Ceftriaxone 2g/day. Pacemaker was set at 60 beats/minute. Initially, he exhibited 100% ventricular pacing at the rate of 60. By Day 3, intrinsic rhythm began to return, prompting a reduction in the pacemaker rate to 40.

On Day 5, EKG indicated 1st-degree AV block with a PR interval of 414ms. The temporary wire was removed. On Day 7, the PR interval measured 284ms. He had received 7 days of Ceftriaxone and was discharged with oral Doxycycline for 14 days. On Day 21, he was seen for outpatient follow-up and EKG revealed resolution of AV block(Fig 2).

Lyme disease is caused by *Borrelia burgdorferi* and is most prevalent during July. Tick exposure may not always be evident and only 40% of cases recall erythema migrans.

Because of the early initiation of antibiotics, carditis is uncommon in Lyme disease and only occurs in 4-10% of cases, and complete heart block in only 1% of cases. Whereas 1st-degree block can be treated with oral doxycycline as an outpatient, high-degree AV block or 1st-degree block with PR $>300\text{ms}$ necessitates hospitalization and should be treated with IV Ceftriaxone until there is resolution, or the PR interval is $<300\text{ms}$. Afterwards, IV antibiotics can be switched to PO, for a total duration of 21 days. Temporary pacing strategies should be used in symptomatic patients as AV block is reversible with proper antibiotic treatment.

This case demonstrates the evolution of EKG changes as a direct result of therapy. Early treatment at the onset of neurological symptoms may have prevented disseminated disease with cardiac involvement.

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Comparative Outcomes of Esophageal Stent Placement in Esophageal Cancer Patients: A Prospective Study of 183 Cases

Objective: This prospective cohort study aimed to compare the outcomes of different types of esophageal stents in 183 patients diagnosed with esophageal cancer, assessing their efficacy, safety, and impact on patient quality of life. **Methods:** Between January 2022 and December 2022, 183 patients with esophageal cancer were enrolled and divided into three groups based on the type of esophageal stent used: self-expanding metallic stents (SEMS, n = 84), self-expanding plastic stents (SEPS, n = 61), and fully covered self-expanding metallic stents (FCSEMS, n = 38). Detailed clinical and demographic data were recorded, and stent placement was performed under fluoroscopic and endoscopic guidance. Follow-up assessments were conducted at 1 week, 1 month, 3 months, and 6 months post-stent placement to evaluate stent patency, dysphagia relief, and complications. **Results:** The technical success rates for stent placement were high across all groups, with SEMS at 96.4%, SEPS at 95.1%, and FCSEMS at 97.4%. Immediate dysphagia relief was achieved in 87.4% of patients across the three stent types. FCSEMS demonstrated a significantly longer median stent patency duration (8.0 months) compared to SEMS (6.3 months) and SEPS (5.6 months). The SEPS group experienced a higher incidence of stent migration (13.1%) compared to SEMS (8.3%) and FCSEMS (6.5%) groups. Post-interventional complications were documented in 18.0% of patients, with tissue overgrowth (8.7%) and stent migration (6.0%) being the most common. The overall survival rates at 6 months were comparable among the three groups. **Conclusion:** Esophageal stent placement is an effective and safe palliative treatment for dysphagia relief in esophageal cancer patients. FCSEMS showed superior stent patency compared to SEMS and SEPS, making it a potentially preferable choice in select cases. However, the higher incidence of stent migration in the SEPS group warrants careful patient selection. Further research and prospective studies are necessary to optimize stent selection and improve long-term outcomes in esophageal cancer patients undergoing stent placement

Ethar Salman

Nashwa Ali, Manasik Abdu, Nashat Rabadi

Silent Threats: Pneumocystis Carinii Pneumonia and Tension Pneumothorax Leading to Mortality In Newly Diagnosed HIV Infection**Introduction**

Pneumocystis Carinii Pneumonia (PCP) is considered a leading cause of respiratory failure in Human Immunodeficiency Virus (HIV) patients, with a mortality rate of about 10%. In patients with undiagnosed HIV, the incidence of PCP increased from 48% in 2000 to 67% in 2013. While pneumothorax is a potential complication related to PCP infection and more likely to be bilateral in contrast to other etiologies, tension pneumothorax as an initial sign is uncommon.

Case

A 40-year-old African-American female recently diagnosed with severe asthma requiring maintenance systemic steroid therapy, presented to the ED with worsening dyspnea and cough for the past eight months. She traveled to Mexico and Florida within the past year. Initially, the patient was admitted for management of acute hypoxic respiratory failure secondary to asthma exacerbation from underlying community-acquired pneumonia. Despite broad-spectrum antibiotic coverage and systemic corticosteroids, she continued to have increased oxygen requirements necessitating positive pressure ventilation (bilevel positive airway pressure). Consequently, she was transferred to the intensive care unit (ICU). CT chest showed bilateral patchy infiltrates, ground glass opacities, and interlobular septal thickening. A full workup confirmed PCP infection and HIV. The patient was then started on trimethoprim-sulfamethoxazole and corticosteroids. Antiretroviral was not started as per infectious disease recommendation, the earlier Antiretroviral therapy is started, the greater the chance of later developing immune reconstitution inflammatory syndrome IRIS, triggering drug toxicities, and starting harmful drug-drug interactions. During her ICU stay, she suddenly developed severe chest pain and shortness of breath and became hemodynamically unstable requiring pressors support. Chest X-ray (CXR) revealed a large left-sided pneumothorax and mild mediastinal shift, treated promptly with needle thoracostomy, chest tube placement, and mechanical ventilation. The following day, the patient continued to desaturate despite 100% FiO₂. The CXR revealed a new large right-sided pneumothorax with massive mediastinal shift and complete right lung collapse. It was treated similarly with needle thoracostomy and chest tube placement. Shortly afterward, she went into cardiac-pulmonary arrest, and despite resuscitative efforts, the patient expired.

Conclusion

We report a case wherein bilateral PCP-related tension pneumothorax emerged as the cause of mortality in an HIV patient. It is crucial to include pneumothorax in the differential diagnosis for individuals with PCP experiencing worsening respiratory symptoms. Immediate intervention for tension pneumothorax should not be delayed, as it's a clinical diagnosis. In hemodynamically unstable cases with suspected pneumothorax, urgent bedside ultrasound should be conducted concurrently with resuscitative efforts. Otherwise, an empiric decision to place a chest tube should be made if clinically indicated. While PCP-associated pneumothorax is acknowledged, it's imperative for medical practitioners to recognize that this infection can also give rise to rare yet life-threatening tension pneumothorax.

Resident/Fellow Clinical Vignette

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LEGIONELLA PNEUMONIA WITH RHABDOMYOLYSIS WITH EXTREMELY HIGH CREATININE KINASE WITHOUT AKI

Introduction:

Legionella pneumophila is a common cause of atypical pneumonia. We describe an unusual presentation of a known, but rare complication of severe rhabdomyolysis without acute kidney injury.

Case presentation:

A 38-year-old male with a history of epilepsy was brought to the ED after a seizure and fall in his bathtub. The patient was confused, febrile with some vomiting one day prior to admission. On exam, he was febrile (104.4F), tachycardia (111bpm), tachypnea (22/min) and hypoxemic (SpO₂: 92% on room air), confused with multiple bruises on his shoulders. He had leukocytosis with lymphopenia, thrombocytopenia (69,000/ μ l), hyponatremia (128mEq/L), elevated CPK (749U/L), normal serum creatinine (0.7mg/dL) and elevated ALT (43U/L), AST(64U/L). CT chest revealed a dense left lower lobe bilateral with multiple large foci of discrete ground glass attenuation. He was started on broad-spectrum antibiotics including azithromycin and fluids. His mental status improved rapidly. Urine legionella antigen was positive and antibiotics were narrowed to Azithromycin.

On day 2, he developed hematuria, diarrhea, chills, cough, and hypoxia requiring oxygen supplementation. Urinalysis was positive for blood with no RBCs. CPK levels peaked at 240,880 U/L on day 5 without a rise in creatinine (0.8mg/dL). ALT(317U/L) and AST(1925U/L) peaked on day 5. IV Azithromycin was changed to IV Levofloxacin on day 5 due to possible rare treatment failure as the patient showed minimal improvement. By day 8, he became afebrile, with resolving symptoms and no longer needing supplemental oxygen. CPK (290,00U/L) levels, AST(1469 U/L), ALT (268 U/L) started down-trending, creatinine (0.5mg/dL) remained normal. He was discharged on hospital day 10 after 5 days of treatment with Levofloxacin.

Discussion:

Legionella pneumonia is difficult to distinguish from bacterial pneumonia. Rapid Legionella testing aids targeted therapy, reducing unnecessary antibiotic use. Legionella with rhabdomyolysis and AKI have high mortality (51% vs. 15% without AKI). Legionella and other infectious agents are associated with rhabdomyolysis with renal failure. However, instances of preserved renal function are possible. For example, a report published by Soliman describes a case of Coxsackie B Virus in a 14-year-old girl with rhabdomyolysis without renal failure. Normal renal function could be explained by protective factors like young age, oral fluid intake, no cocaine use, early treatment, and no co-morbidities, similar to our patient. Our search yielded no other report of Legionella with rhabdomyolysis without renal failure. Further exploration of this entity would be helpful in understanding these findings.

Conclusion:

Legionella pneumonia with rhabdomyolysis with extremely high CPK levels is usually associated with AKI but preserved kidney function is possible and early diagnosis and treatment can lead to decreased mortality and morbidity in severe disease.

Sangam Sangam, MD

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PRIMAMRY PYOGENIC VENTRICULITIS CAUSED BY STREPTOCOCCOUS AGALACTAE (GROUP B STREPTOCOCCOUS) IN ADULTS

Introduction:

Primary pyogenic ventriculitis complicating streptococcus agalactiae (group B streptococcus; GBS) meningitis is primarily found in infants. In adults primary pyogenic ventriculitis is rare. We described to our knowledge the first adult case of primary pyogenic ventriculitis complication GBS meningitis in an adult.

Case Presentation:

A 74-year-old female with hypertension, diabetes mellitus, and MGUS presented with 3 days of worsening headaches, photophobia, chills, abdominal pain and non-bilious, non-bloody vomiting. Patient was febrile on admission, lethargic but arousable, not oriented to self, time, or place, Kernig's & Brudzink's signs were negative. Labs showed leukocytosis (26300/ $\hat{1}\%$) with neutrophilia (88%), and elevated inflammatory markers. Intravenous vancomycin, ceftriaxone, ampicillin, acyclovir, and dexamethasone were started for suspected meningoencephalitis. CT Head was negative and lumbar puncture showed RBCs (460/mm³) and WBCs (7100/mm³) with a neutrophil predominance (93%), less than half CSF glucose to serum glucose ratio, and elevated protein(371mg/dL). CSF gram stain showed numerous wbcs however gram stain and blood and CSF cultures were negative. MRI Brain revealed fluid levels, increased diffusion, FLAIR signal within the occipital horns of bilateral lateral ventricles consistent with pyogenic ventriculitis. It also showed an anterior skull base bony defect and a very small encephalocele in the midline. CSF multiplex was positive for GBS and negative for other bacteria and viruses. Antibiotics were switched to ceftriaxone and metronidazole due to concern for possible abscess for a total of 6 weeks duration. Although patient did not have a urinary tract infection, her urine did grow GBS. Transthoracic echocardiography was unremarkable. Neurosurgery evaluation ruled out need for surgical intervention. By Day 11 symptoms improved, WBC counts, ESR, CRP returned to normal levels as did patient's mental status. She was discharged to skilled nursing facility to complete a total of 6-weeks of IV antibiotics. Repeat MRI Brain during infectious disease clinic follow-up showed complete resolution of pyogenic ventriculitis.

Discussion:

GBS is a common cause of bacterial meningitis and pyogenic ventriculitis in infants but is rarely the cause of meningitis in adults (7% of all adult bacterial meningitis cases) with no reported cases of GBS ventriculitis in adults found in the literature. Although GBS is a rare cause of invasive diseases such as meningitis and infective endocarditis in non-pregnant adults, it has a high mortality in ages above 65 years, 56% and 40% respectively. Our patient was over 65 years of age as well as diabetic which are known risk factors for GBS invasive disease. She had genitourinary tract colonized with GBS, which could have increased risk for invasive disease as seen in pregnant women.

Conclusion:

This case shows a rare and undocumented form of invasive GBS in an adult with risk factors where early antibiotics and prompt diagnosis led to improved outcomes.

Resident/Fellow Clinical Vignette

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Valsartan-sacubitril induced recurrent pancreatitis

Abstract:

Valsartan-Sacubitril is a relatively novel angiotensin receptor-neprilysin inhibitor (ARNI) that has demonstrated remarkable efficacy in reducing morbidity and mortality among patients with chronic symptomatic heart failure. However, limited literature exists regarding potential adverse gastrointestinal side effects associated with ARNI use. Here, we present the case of a 70-year-old female who developed recurrent pancreatitis and multiple pseudocysts following the initiation of valsartan-sacubitril therapy for heart failure.

Case Presentation:

A 70-year-old female presented with sudden and intense epigastric pain for one day. She had a history of cholecystectomy three decades ago and denied alcohol use, abdominal trauma, or prior endoscopic procedures. Her vital signs were within normal ranges. Elevated lipase levels (1558 U/L) and triglyceride levels (152 mg/dL) were found in her laboratory results, confirming acute pancreatitis. A subsequent abdominal CT scan revealed pancreatic edema, leading to her hospitalization. Notably, one month prior to admission, her antihypertensive medication had been changed from amlodipine to valsartan-sacubitril a month before admission due to an echocardiogram showing an ejection fraction of 35-40% and decreased exercise tolerance. She received intravenous fluids and pain management during her hospital stay, ultimately being discharged upon symptom improvement. However, the patient experienced a recurrence of similar symptoms of pancreatitis, with a subsequent CT scan indicating inflammation in a different region of the pancreas. The scan also revealed the presence of multiple pseudocysts around the pancreatic head and the uncinate process. As part of her management strategy, valsartan-sacubitril was discontinued, and she was started on metoprolol succinate 25mg and amlodipine 10 mg daily in addition to guideline-directed medical therapy for pancreatitis. Following these medication changes, the patient did not experience any further episodes of pancreatitis over the course of the next six months.

Angiotensin receptor blockers (ARB) and angiotensin-converting enzyme inhibitors (ACE-I) are known to potentially induce pancreatitis by triggering increased bradykinin-induced inflammation and pancreatic edema. The combination of sacubitril/valsartan acts as a dual inhibitor of neprilysin and angiotensin receptors, linked to bradykinin accumulation and angioedema similar to ARBs and ACE-Is. The patient's case highlights a close temporal relationship between initiating sacubitril/valsartan and symptom resolution upon discontinuing valsartan-sacubitril, strongly suggesting its role as the likely cause. With no other clear etiology, the pancreatitis link becomes more evident. Given the growing use of ARNIs in heart failure, comprehensive awareness of their adverse effects, like pancreatitis, is imperative. Urgent research is needed to establish guidelines for ARNI use, especially in patients with pancreatitis history, ensuring safe prescription practices in the expanding population benefiting from ARNI therapy.

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Skin Talks: Leser-Trélat sign as a dermatological detective in ovarian malignancy

Background: The Leser-Trélat sign, characterized by the sudden appearance of multiple seborrheic keratoses, has long been recognized as a potential paraneoplastic marker of internal malignancy. Although its association with gastrointestinal cancers is well documented, its occurrence in ovarian cancer is exceedingly rare and can represent a paraneoplastic clue in appropriate clinical settings.

Case discussion: A 64-year-old female with no significant medical history presented with a sudden onset of crampy lower abdominal pain, nausea, and vomiting lasting one day. Physical examination showed a soft, distended abdomen with tenderness in the lower region. Additionally, she exhibited multiple waxy, brown to tan-colored skin eruptions on her back, resembling "raindrops", consistent with seborrheic keratoses. This dermatological finding was new, as her previous evaluation a year ago had shown only a few seborrheic keratoses. A CT scan of the abdomen and pelvis revealed an 8.3 x 6.0 x 6.3 cm mass in the left adnexa, suggestive of an ovarian neoplasm. Tumor markers CA 19⁹, CA 125, and hCG were elevated, while CEA levels remained normal. Colonoscopy and esophagogastroduodenoscopy revealed a few hyperplastic polyps in the colon and gastric polyps in the stomach, but biopsies were negative for malignancy. The patient underwent diagnostic laparoscopy, followed by exploratory laparotomy and extensive surgical intervention. The pathological analysis confirmed a mixed carcinoma, predominantly clear cell carcinoma (80%), with a minor component of endometrioid carcinoma (20%). The patient is currently undergoing adjuvant chemotherapy for further management.

Discussion and Conclusion:

Leser-Trélat sign demonstrates the paraneoplastic phenomenon of underlying cancer with abrupt onset of seborrheic keratoses. Adenocarcinomas account for more than 50% of the associated malignancies. Most cases have been reported from the stomach, colon, rectum, breast, rarely lungs, ovaries, skin, and uterus. Our report demonstrates an unusual occurrence of the Leser-Trélat sign in the context of ovarian cancer, expanding the spectrum of this paraneoplastic manifestation. Moreover, amidst the advancements in medical technology and diagnostic tools, this case highlights the importance of conducting a thorough physical examination as early recognition can facilitate further investigations, prompt diagnosis, and timely management in patients with potentially associated malignancies.

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TO DRAIN OR NOT TO DRAIN? A CASE OF MRSA HEPATIC ABSCESS

Introduction:

Pyogenic hepatic abscesses are usually polymicrobial, with less than 10% of cases being attributed to *Staphylococcus aureus*, and even less frequently to methicillin-resistant *Staphylococcus aureus* (MRSA). They are often associated with an underlying gastrointestinal or biliary disorder. Timely recognition and management are crucial due to the severe associated morbidity and mortality.

Case Presentation:

A 24-year-old, previously healthy male, recently immigrated from the Middle East, presented with right upper quadrant abdominal pain, subjective fever, night sweats, and chills for 1 week. Pain worsens with deep breaths. No cough, shortness of breath, nausea, vomiting, diarrhea, or constipation. Vital signs noted a fever of 101.5°F. Deep palpation of the right upper abdomen induced discomfort, but with no masses. Initial chemical panel revealed an elevated alkaline phosphatase level 255 U/L (34-115 U/L) and low albumin 2.5 g/dl (3.5-5 g/dl). CBC showed no remarkable abnormalities.

Abdominal US revealed a large hepatic mass with varying density in the right lobe. Chest CT Angio showed a right subsegmental acute embolism. Abdominal contrast CT displayed a complex lesion in the liver's right lobe, with septate cysts and surrounding edema, suggestive of an underlying pyogenic or amoebic abscess. MRI was inconclusive for echinococcus.

A comprehensive infectious workup (Blood cultures and Echocardiogram) yielded no significant findings. We initiated empirical treatment with ceftriaxone for pyogenic abscess, metronidazole for *Entamoeba* infection, and albendazole for echinococcus infection. Due to suspected echinococcus, drainage was deferred.

After 7 days the fever persisted while serology tests for amoeba and echinococcus were pending. Considering that the potential benefits outweighed the risks, ultrasound-guided abscess drainage was performed, revealing MRSA on culture. Vancomycin started and Empiric therapy stopped. Repeat CT after 5 days showed size improvement. He was discharged on clindamycin for 3 weeks.

Discussion:

Pyogenic hepatic abscesses are an infrequent event within the United States, manifesting at a rate of 3.6 per 100,000 individuals. It is mainly a disease of the elderly characterized by an average presentation age of 63 years. Among cultured specimens, *Streptococcus* and *E. coli* dominate, whereas *Staphylococcus aureus* only represents 10.5% of isolates. With a mortality rate of 6 to 10% among patients with pyogenic liver abscesses, early recognition and treatment are key.

Conclusion:

Our patient had no recent hospital admission indicating a community-acquired source for MRSA. The morphology of the abscess in our case on imaging is very similar to a hydatid cyst caused by echinococcus resulting in a complex treatment pathway. Hydatid cysts are extremely rare with an unknown prevalence in the US. It is mostly seen among individuals immigrating from endemic countries as in our case. A high index of suspicion can help avoid peritoneal dissemination related to drainage, which is the mainstay treatment of pyogenic abscess.

Resident/Fellow Clinical Vignette

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A case of tumor lysis syndrome following palliative radiotherapy

Introduction:

Often seen following cytotoxic chemotherapy and hematological cancers, tumor lysis syndrome (TLS) is an oncologic emergency that occurs due to massive release of intracellular ions and nucleic acids. It is characterized by hyperkalemia, hyperphosphatemia, hypocalcemia and hyperuricemia which can lead to acute renal failure and fatal arrhythmias if not recognized early. TLS rarely occurs in those with solid tumors spontaneously or after radiotherapy. Herein, we report a rare case of tumor lysis syndrome in solid tumor following palliative radiotherapy.

Case description:

A 75-year-old female with history of breast cancer status post right mastectomy and chemotherapy, CKD stage 3a and current metastatic adenocarcinoma of unknown primary complicated by bilateral hydronephrosis secondary to a large pelvic mass requiring nephrostomy tube insertion and cord compression from paraspinal mass with epidural extension presented with decreased urine output. Three days prior, she completed her seventh session of palliative radiotherapy to T4-T10. On presentation, she was afebrile, BP 103/63 mmHg, HR 105 bpm, SPO2 95% on ambient air. Lower abdominal tenderness and bipedal grade 1 pitting edema were noted. Work up revealed leukocytosis with left shift, normocytic anemia, anion gap acidosis, elevated creatinine (2.52 mg/dL), BUN (44 mg/dL) and lactic acid (5.8 mmol/L). She was admitted for sepsis secondary to complicated urinary tract infection. Fluid resuscitation and piperacillin/tazobactam were immediately initiated and nephrostomy tube was exchanged. Her kidney function continued to worsen over the next two days. Blood culture came back positive for *Pseudomonas aeruginosa*. Hypocalcemia (corrected Ca⁺⁺ 7.1 mg/dL) and hyperphosphatemia (7.3 mg/dL) were noted but potassium was normal. On the third hospital day, she was found to be lethargic. Hypocalcemia persisted despite repletion and hyperphosphatemia worsened (11.3 mg/dL). Her potassium (5.6 mg/dL) and uric acid (22 mg/dL) were also elevated. Telemetry did not show significant dysrhythmia. With concern for tumor lysis syndrome, aggressive hydration, rasburicase and allopurinol were promptly given. Sodium bicarbonate and calcium drips were also started. Subsequently, her sensorium improved as well as her kidney function. However, her course was further complicated with large ascites necessitating therapeutic paracentesis. Given her poor prognosis, her family opted for comfort care measures. She was discharged on the tenth hospital day to home hospice.

Discussion:

Most of the reported cases of radiation-induced TLS occurred within 7 days after radiotherapy. In this case, the high tumor burden and the rapid cell lysis after radiotherapy likely overwhelmed the kidneys' compensating ability causing the metabolic disorder. High index of suspicion is crucial to recognize TLS even in settings without cytotoxic chemotherapy as risk of mortality is high particularly among those with solid malignancies.

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Successful Use of Tocilizumab for Catastrophic Antiphospholipid Syndrome in an SLE Patient.

Introduction:

Catastrophic antiphospholipid syndrome (CAPS) represents a rare and potentially fatal variant of antiphospholipid syndrome (APLS), which affects approximately 1% of the APLS population. It is characterized by severe thrombotic complications, typically involving both microvascular and large-vessel thrombosis, affecting multiple organs. The diagnosis of CAPS greatly relies on a prior APLS diagnosis and the sustained clinically significant presence of antiphospholipid antibodies (APLA). Anticoagulation, immunosuppression, plasma exchange, intravenous immunoglobulins (IVIg), and antiplatelet agents, used in various combinations, have demonstrated improved patient outcomes. Here we present the case of a 69-year-old male who developed CAPS. After failing all standard APLS treatments, he showed significant improvement when tocilizumab, a recombinant humanized monoclonal antibody targeting the Interleukin-6 receptor, was administered.

Case presentation:

A 69-year-old male with a history of SLE (ANA 1:160 speckled pattern) and raised antiphospholipid titers was admitted with bilateral pulmonary embolisms and started on a heparin drip. Within hours, sudden diffuse alveolar hemorrhage, profound thrombocytopenia, renal failure, and anemia developed, necessitating intubation and transfer to ICU. Laboratory results revealed strikingly elevated anti-cardiolipin IgG/IgA, β_2 -glycoprotein IgG/IGA, prolonged DRVVT, low C3, C4, CH50; consistent with CAPS. His mental status worsened, and he had increasing vasopressor requirements. A head CT was suggestive of an acute stroke in multiple watershed areas, consistent with ongoing microvascular thrombus formation. He was clinically and serologically resistant to treatment with conventional anticoagulation, immunosuppression, IVIg, and plasmapheresis. C3, C4, and CH50 levels remained profoundly low suggestive of ongoing complement activation; rising APLA titers, predominantly of IgA and IgG isotype, suggested persistent autoantibody release from a plasma cell source. Additionally, attempts to inhibit complement activation with eculizumab had no effect on either clinical status or hypocomplementemia. Serum cytokine profiling was performed. This revealed persistently elevated serum Interleukin-6, implicated in promoting plasma cell survival and function. Accordingly, we administered anti-IL-6 therapy with tocilizumab (8 mg/kg). Following the first dose of tocilizumab, we saw a remarkable clinical improvement in pressor requirements, hypocomplementemia, and IgA/IgG APLA titers. Soon after, our patient became alert and responsive; his residual encephalopathy resolved completely after sedation was weaned; corticosteroids could be tapered. Ultimately, he could be discharged on hydroxychloroquine 200 mg twice daily, and oral anticoagulation. The favorable response to tocilizumab suggests the importance of the Interleukin-6 pathway in sustaining APLA production and resisting standard treatments. This highlights the potential for treatment approaches beyond the existing literature for managing CAPS.

Resident/Fellow Clinical Vignette

Conclusion:

This challenging case highlights the potential complications of catastrophic antiphospholipid syndrome. The apparent treatment response to tocilizumab suggests that the Interleukin-6 axis can play a key role in sustaining APLS production and complement activation resistant to conventional APLS therapies. It also underlines the potential utility of individually targeted treatment approaches in critical cases of systemic autoimmune disease.

Resident/Fellow Clinical Vignette

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TRENDS OF SOCIAL DETERMINANTS OF HEALTH IN PATIENTS WITH CHRONIC HEART FAILURE AT LINCOLN MEDICAL CENTER, SOUTH BRONX

Introduction: Chronic heart failure (CHF) remains a significant burden to cardiovascular and general healthcare systems. Management and outcomes have been continuously improving through medical advances, especially with recent clinical trials including the DAPA-HF and STEP-HFpEF trials. However, there is a paucity of literature analyzing the impact of social factors, including social determinants of health (SDoH) on the outcomes of patients with CHF. The major components of SDoH include the socioeconomic, environmental, and habitual factors influencing one[™]s health.

Objective: This study aims to investigate the individual SDoH in our population with CHF.

Methods: This study employs a longitudinal design to investigate the SDoH in CHF patients over a 6-month period. Data was collected using a questionnaire method administered at two-time points: baseline and at 6 months. A total of 260 adult patients diagnosed with CHF were recruited from Lincoln Medical Center, Bronx, NY. The mean age of participants was 64 years. Of these, 65% were male. 49% of the studied population were of African American race. The average number of comorbidities in our cohort was 3.53. 24% of patients had a substance use history, and 29% had alcohol use disorder. We used a questionnaire that included items assessing certain social determinants such as education, occupation, housing stability, financial stability, and immigration status. A higher proportion of our cohort utilized Medicaid insurance (55%).

Results: At baseline, we noted that 47% of our cohort had not graduated high school. 83% were unemployed (average annual income of about \$25,400) but a down-trend to 64% was observed at 6 months follow-up. We observed that 35% of our population required public assistance/SSI, 31% had difficulties with paying bills, 25% had housing insecurity and 28% reported food insecurity at baseline. This decreased to 30%, 23%, 19%, and 12% respectively after a period of 6 months. A significant proportion of our cohort relayed having issues with immigration (10%), but this dropped to about 1%. We observed a total eradication of homelessness during our study period (15% vs. 0%).

Conclusions: We observed several trends in the individual SDoH in patients with CHF. These SDoH have significant impacts on the outcomes of said patients. An in-depth study of the interplay between the SDoH and the outcomes of CHF patients is warranted in order to curb the potential suboptimal or detrimental effects on the burden and outcomes of CHF in our population.

Saphal Subedi, MD

Shristi Nepal

Ranjit Sapkota

Navin Bhatt

Phuong M. Nguyen²**A Race Against Time: The Swift Onset and Early Demise in Lambda-Restricted Plasma Cell Dyscrasia with Cardiac Infiltration**

Background: Lambda-restricted plasma cell dyscrasia involves excess lambda light chains, leading to cardiac infiltration and life-threatening cardiac amyloidosis. Light-chain (AL) amyloidosis carries the worst prognosis with an increased mortality rate. We present a case of an adult male who developed rapidly progressive heart failure due to a cardiac infiltrative process associated with congo-negative lambda-restricted monoclonal plasma cell dyscrasia. Case discussion: A 46-year-old Hispanic male with no known medical history presented seven months ago with complaints of bilateral limb swelling, shortness of breath, fatigue, and orthopnea. On the first admission, he had been diagnosed with acute exacerbation of heart failure with preserved ejection fraction in the setting of non-ischemic cardiomyopathy. The patient had a good response to diuretic therapy and was subsequently discharged. However, he has had multiple readmissions with similar presentations and recently was readmitted with worsening symptoms and hemodynamic instability. A transthoracic echocardiogram showed a decline in ejection fraction (35-40%) with severe pulmonary hypertension, diffuse hypokinesis, and markedly increased left ventricular wall thickness. Given suspicions of infiltrative cardiac disease, a bone marrow biopsy was done and revealed 10-20% cellularity of plasma cells. Congo red staining, a standard method for identifying amyloid structures, returned negative. Elevated lambda light chain levels (847) and an M peak of 0.21g/dl were also observed. Urine immunofixation demonstrated monoclonal lambda light chains. Therapeutic treatment with bortezomib, cyclophosphamide, and dexamethasone for lambda-restricted monoclonal plasma cell dyscrasia was initiated. However, the patient's condition deteriorated, leading to cardiogenic and vasogenic shock, necessitating vasopressors and inotropes. Despite resuscitative efforts, the patient succumbed to cardiac arrest. Conclusion: This case highlights the rare and aggressive nature of lambda-restricted monoclonal plasma cell dyscrasia with cardiac involvement, resulting in rapid cardiac decline and early mortality despite intensive treatment. Enhancing awareness and urgent evaluations by healthcare providers for cardiac infiltrative diseases can lead to early initiation of appropriate therapies, potentially improving outcomes despite the challenging prognosis.

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ALLOGENEIC CARDIOSPHERE-DERIVED CELLS FROM AN AGED DONOR STIMULATE ENDOGENOUS MYOCYTE PROLIFERATION AND IMPROVE LEFT VENTRICULAR FUNCTION IN A MINI-SWINE MODEL OF CHRONIC CORONARY ARTERY DISEASE

Purpose: Administration of allogeneic cardiac-derived progenitor cells (cardiosphere-derived cells; CDCs) is a promising new therapeutic approach to promote cardiac repair, but the influence of donor age on reparative efficacy is incompletely understood. Accordingly, we assessed the therapeutic efficacy of aged donor-derived CDCs in a mini-swine model of chronic coronary artery disease (CAD).

Methods: A total of 18 Sinclair mini swine were instrumented with a 1.25mm Delrin stenosis on the proximal left anterior descending (LAD) coronary artery. Four-months after instrumentation, immunosuppression was initiated (cyclosporine; 100 mg/day) and animals received 20×10^6 allogeneic CDCs derived from a 9-year old donor (n=10) or saline (vehicle; n=8) via intracoronary infusion into the 3 major coronary arteries (10^6 cells/min) under continuous flow. Left ventricular (LV) function was assessed by echocardiography at 1-month intervals throughout a 3-month follow-up period. Regional myocardial perfusion was evaluated at rest and during adenosine vasodilation (0.9 mg/kg/min iv) using fluorescent labeled microspheres. Blinded histological analysis of interstitial fibrosis (picrosirius red staining), arteriolar density (smooth muscle actin staining), capillary density (Von Willebrand Factor staining), myocyte proliferation (Ki67 staining) and myocyte morphometry (hematoxylin and eosin staining) were performed on LV tissue sections collected following a terminal physiological study.

Results: One month after treatment, LV ejection fraction (LVEF) was significantly higher in allogeneic CDC-treated animals (73.3 \pm 1.1% vs. 45.8 \pm 2.6% in untreated animals, $p < 0.05$). Regional LAD wall thickening (WT) was also significantly higher 1-month after CDC treatment (53.0 \pm 1.7% vs. 44.9 \pm 2.6%, $p < 0.05$) and persisted 3-months later (60.2 \pm 1.6%, $p = 0.01$). Although resting and vasodilated myocardial blood flow was comparable between groups, treatment with aged CDCs produced a significant increase in myocyte nuclear density (1231 \pm 34 vs. 1094 \pm 34 nuclei/mm², $p = 0.02$) and a reciprocal reduction in myocyte diameter in the ischemic LAD region (13.9 \pm 0.2 vs. 14.5 \pm 0.3 μ m, $p = 0.05$), indicative of myocyte regeneration primarily attributed to an increase in endogenous myocyte proliferation (468 \pm 92 vs. 199 \pm 32 Ki67+ nuclei/ 10^6 myocyte nuclei, $p = 0.02$). Interstitial fibrosis, arteriolar density capillary density, and capillary/myocyte ratio were similar in treated and non-treated animals throughout the left ventricle.

Conclusions: Aged donor-derived CDCs promote persistent improvements in LV function and a sustained increase in myocyte number 3-months after global intracoronary infusion without affecting coronary blood flow, arteriolar density, or interstitial fibrosis. These results suggest that donor age does not compromise the therapeutic efficacy of allogeneic CDCs and provides further support for continued investigation of allogeneic CDC therapy as a novel approach to promote myocardial repair in ischemic heart disease.

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A Rare Case of De Novo Lupus Nephritis Presenting After Group A Streptococcus Infection In A Young Hispanic Male With Normalized Kidney Function

Introduction

Incidence of lupus nephritis (LN) ranges from 40-60% of patients with systemic lupus erythematosus (SLE) and contributes to significant morbidity and mortality of the disease, especially among younger, male, or non-White individuals. It has been hypothesized that bacterial infections can stimulate immune complex formation and complement activation leading to flares of lupus nephritis. We describe a case of a young, Hispanic patient with Group A Streptococcus (GAS) pharyngitis complicated by bacteremia who presented with acute kidney injury, initially thought to be post-infectious glomerulonephritis, but ultimately confirmed to be new-onset LN.

Case Presentation

A 37-year-old Hispanic man with compensated alcoholic cirrhosis and well-controlled diabetes presented with three weeks of lower extremity edema and new-onset proteinuria. Vital signs were unremarkable; the physical examination was notable for bilateral lower extremity pitting edema and posterior oropharyngeal crusting. Initial urine studies showed 85 RBC/hpf with cellular casts and urine protein-to-creatinine ratio (UPCR) of 3.2 g/g; serum creatinine was 1.77 mg/dL. He was subsequently found to have GAS bacteremia from nasopharyngeal mucositis confirmed on laryngoscopy with a positive rapid streptococcal antigen test. Extensive autoimmune workup (Fig. 1) was remarkable for hypocomplementemia, high-titer anti-nuclear antibodies, and weakly positive anti-La/SSB antibodies. He was treated for suspected PSGN with antibiotics, diuresis, and supportive therapy and had subsequent clinical improvement and normalization of serum creatinine. Nevertheless, lower extremity edema persisted even one week later; urine studies were repeated and showed paradoxically worsening proteinuria (UPCR 19.6 g/g and 36.9 g/g three days apart) with persistent microscopic hematuria. Renal biopsy was pursued and revealed focal-segmental glomerulonephritis with a full-house immunofluorescence pattern and extensive podocyte foot process effacement on electron microscopy, consistent with LN Class III + V (Fig. 2). He was discharged on prednisone and mycophenolate mofetil with close outpatient follow-up. A thorough history did not reveal any typical SLE manifestations including photosensitivity, malar rash, oral ulcers, arthritis, serositis, cytopenia, or any family history of autoimmune disorders.

Discussion

LN in Hispanic populations tends to have a more severe presentation and higher incidence of mixed histological classes with up to 60% Class III+V or IV+V. Our case re-emphasizes such racial and ethnic differences in the time to onset and presentation of LN. Of note, only 25-50% of patients with LN have abnormal kidney function; clinicians should have a low threshold for kidney biopsy for any SLE patients who present with active urinary sediment, regardless of serum creatinine. The progressively worsening proteinuria in this case, despite normalization of the serum creatinine, suggests a possible interaction between the immune response to GAS and precipitation or exacerbation of LN. Further exploration into this association may provide additional insight into the pathogenesis of LN.

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A Case of Gastrointestinal Alpha Heavy Chain Disease with Persistent *Campylobacter jejuni* Colonization and Refractory Giardiasis**INTRODUCTION:**

Extranodal marginal zone lymphoma of the mucosa-associated lymphoid tissue (MALT) most frequently involves gastrointestinal (GI) tract. Immunoproliferative small intestinal disease (IPSID), also called alpha heavy chain disease ($\hat{\pm}$ HCD), is a variant of MALT lymphoma that secretes alpha heavy chains. The pathogenesis of MALT lymphoma is linked to clonal B cell expansion from chronic immune stimulation by infectious agents. We report a rare case of GI $\hat{\pm}$ HCD with five concomitant pathogens identified on a GI multiplex real-time polymerase chain reaction panel, featured by persistent *Campylobacter jejuni* (*C jejuni*) colonization and refractory giardiasis.

CASE DESCRIPTION:

A 34-year-old man with three-month history of lower abdominal pain, intermittent bloody diarrhea and weight loss was admitted following outside colonoscopy findings of congested and nodular terminal ileum and serum electrophoresis detection of a monoclonal alpha heavy chain suspicious for $\hat{\pm}$ HCD. Repeat scopes (Fig. 1) with biopsies confirmed intestinal monocytoid lymphocytes infiltration positive for CD20, MUM-1, and IgA featuring $\hat{\pm}$ HCD (Fig. 2), and *Helicobacter pylori* (*H pylori*) infection. A GI multiplex was collected positive for *C jejuni*, *Giardia lamblia*, Enteroaggregative and Enteropathogenic *Escherichia coli* (EAEC, EPEC), and *Cryptosporidium*; results were confirmed on a repeat test 48 hours later. Patient was treated with antibiotics and started on Bendamustine plus Rituximab (BR) for $\hat{\pm}$ HCD. His GI symptoms improved and *H pylori* was eradicated. However, similar symptoms recurred three times within nine months, and GI multiplex tests showed persistent colonization of *C jejuni* and refractory *Giardia* despite treatment with different antibiotics for prolonged courses (Fig. 3). In addition, repeat endoscopy after six cycles of BR showed relapse $\hat{\pm}$ HCD, prompting escalation of therapy to ibrutinib.

DISCUSSION:

To our knowledge, this is the first case of GI $\hat{\pm}$ HCD with five pathogens concomitantly identified on GI multiplex. Associations between *H pylori* and gastric MALT lymphoma or *C jejuni* and $\hat{\pm}$ HCD have been established. We suspected that persistence of *C jejuni* colonization and Giardiasis despite extensive antibiotic treatment correlated with the progression of lymphoma, contributed to failure of BR therapy, and portended a poor long-term prognosis. Further studies are needed to support the identification and eradication of all infectious agents with lymphomagenic capability as part of routine care for $\hat{\pm}$ HCD.

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SEVERE SEPSIS SECONDARY TO EXTENSIVELY DRUG-RESISTANT SALMONELLA TYPHI: A CASE REPORT

BACKGROUND:

Typhoid fever is an illness transmitted through contaminated food and water, commonly observed in developing countries. It presents itself across a wide spectrum, ranging from mild symptoms like fever, abdominal pain, constipation, and flu-like symptoms to severe sepsis and confusion. The primary cause of Typhoid fever is *Salmonella typhi*, a gram-negative rod. The emergence of extensively drug-resistant (XDR) typhoid fever resistant to five antibiotics (ampicillin, trimethoprim-sulfamethoxazole, chloramphenicol, fluoroquinolones, and third-generation cephalosporins) has become a global cause for concern since its initial outbreak in Pakistan in 2016. In the US, between February 2018 and August 2019, 33 cases of ceftriaxone-resistant *Salmonella Typhi*, associated with travel to Pakistan and Iraq, were detected. This resistance poses a significant treatment challenge due to the absence of readily available sensitivity data.

CASE:

A 34-year-old female was admitted for severe abdominal pain, accompanied by nausea and vomiting. Her symptoms emerged a day after returning from a three-month trip to Iraq. Upon arrival, she was febrile at 39.4 C and had a blood pressure of 95/56 mm Hg. On physical examination, she was diaphoretic and had generalized abdominal tenderness. Laboratory analysis revealed lactate 2.8 mmol/L and a white blood cell count of 6200 u/L. A CT angiogram of the abdomen and pelvis was only notable for cholelithiasis. Empirical treatment with sepsis dose of IV fluid bolus, vancomycin, and piperacillin/tazobactam was initiated. However, the patient continued to deteriorate in the next 24 hours with continuous fever spikes, falling blood pressure, worsening abdominal pain, nausea, and intolerance to oral diet.

Given her recent travel history, concerns of potential typhoid fever were raised. Upon reviewing the literature, meropenem was noted to be the drug of choice considering the prevalence of multidrug-resistant *Salmonella* strains in Iraq. Antibiotics were changed to meropenem considering possible drug-resistant typhoid fever. Subsequent blood cultures confirmed the growth of an Extensively Drug-Resistant *Salmonella* species. It showed resistance to cefepime and ceftazidime, moderate sensitivity to ciprofloxacin, and susceptibility to meropenem. Over the course of a week, the patient's condition significantly improved. She was discharged with two-week intravenous meropenem.

DISCUSSION/CONCLUSION:

Decades of indiscriminate antibiotic use have contributed to the emergence of the increasingly prevalent extensively drug-resistant (XDR) typhoid fever. Untreated, it has a mortality rate as high as 30%. In returning travelers exhibiting symptoms of fever, abdominal pain, and sepsis, where typhoid fever is being considered within differential diagnosis, carbapenems should be initiated as empirical treatment while awaiting culture data. This approach is particularly crucial for individuals who are immunocompromised. Accurate historical information gathering plays an important role in swiftly evaluating patients, potentially saving lives in the process.

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First degree heart block As Herald Of Granulicatella Prosthetic Aortic Valve Endocarditis With Aortic Root Abscess

Introduction: *Granulicatella adiacens* is a fastidious gram-positive coccus of the nutritionally variant streptococci (NVS) and is a commensal organism of the mouth. Given its fastidious nature and its poor identification in testing, it is rarely implicated in infectious endocarditis (IE). We present a case of *G. adiacens* IE with aortic root abscess initially identified by new first-degree heart block and complicated by postoperative complete heart block.

Case Presentation: A 74-year-old-female with history of severe aortic stenosis with bioprosthetic aortic valve (AV) replacement and conservatively treated *G. adiacens* IE with 6 weeks of intravenous ceftriaxone presents with acute left flank pain for one day. Exam notable for 2/6 systolic murmur at the left sternal border, left flank tenderness, and absence of traditional clinical minor criteria of IE such as fever and immunologic phenomenon. Admission EKG was notable for sinus rhythm with a new first-degree heart block. CT Abdomen demonstrated a wedge-shaped infarct in the left kidney concerning for arterial embolus. Blood cultures grew *G. adiacens* in 6/6 bottles and IV ceftriaxone and gentamycin were initiated. Transthoracic echocardiography showed significantly thickened prosthesis leaflets with reduced excursion and linearly, slightly mobile echogenicity on the ventricular side of the aortic valve. Cardiac PET-CT showed circumferential FDG avidity along the AV prosthesis. MRI/MRA demonstrated no evidence of mycotic aneurysm with some evidence of emboli with associated CNS hemorrhage. Cardiothoracic surgery was consulted for AV replacement in the setting of AV IE relapse with persistent aortic root abscess. During evaluation for valve replacement, she complained of acute left hip pain for which MRI lumbar spine and sacrum was performed and revealed left sacroiliac septic arthritis/osteomyelitis. Surgical AV replacement was complicated by a complete heart block and a dual chamber permanent pacemaker was placed. Subsequent blood cultures were negative. The patient was continued on gentamycin for two weeks post-procedure and discharged on vancomycin for a six weeks post-procedural course of therapy.

Discussion: *G. adiacens* is an uncommon cause of infection and in this case, a rare and life-threatening cause of IE. Anatomic proximity of the AV to the bundle of His provides pathway for direct perivalvular extension of infection to the interventricular septum and formation of AV or bundle branch blocks. Aortic perivalvular involvement by acute IE is associated with increased mortality. Swift identification of new conduction abnormalities by EKG such as first-degree heart block, commonly perceived as benign, should prompt an immediate evaluation for intracardiac pathology and disease especially in the setting of extracardiac manifestations of IE.

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Multivalvular Infective Endocarditis Caused By Streptococcus Pyogenes

Background: Streptococci bloodstream infections (BSIs) are a leading cause of infective endocarditis (IE), however the prevalence of BSIs and IE varies among streptococci species. While Streptococcus (Strep) pyogenes commonly infects the skin and pharynx and is associated with intravenous drug use, less than 3% of Strep pyogenes BSIs result in IE with few such cases documented. Herein, we present a unique case of Strep pyogenes IE.

Case: A 39-year-old male with a history of cocaine use, bipolar disorder, and schizophrenia was admitted for sepsis secondary to Strep pyogenes BSI after being found with skin lacerations covered in fecal matter. A TTE revealed an LVEF 60-65%, severe aortic valve prolapse with evidence of a vegetation, mild mitral regurgitation with evidence of a vegetation on the annulus, and a patent foramen ovale. A follow-up TEE with bubble study confirmed the above findings and also identified a small pulmonic valve vegetation. A brain MRI revealed multiple subcentimeter intracranial septic emboli.

Decision-making: Once blood cultures speciated to Strep pyogenes, empiric antibiotics were narrowed to 4-6 weeks of intravenous penicillin G and 2 days of clindamycin to inhibit toxin production. Cardiothoracic surgery was consulted recommending aortic valve replacement and mitral valve annuloplasty. While awaiting pre-operative medical optimization, the patient tested COVID-19 positive and developed PEA arrest. Despite resuscitative efforts, ROSC was not achieved and the patient expired.

Conclusion: In cases of Strep pyogenes BSIs, clinicians should maintain a high index of suspicion for IE to ensure prompt diagnosis and timely treatment. In IE patients with multi-valvular involvement and septic emboli, early targeted antimicrobial therapy, supportive care, and medical optimization should be performed immediately prior to any urgent valvular intervention.

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Transcending Isolated Hyperkalemia: A Case Report On The Cascade Of Intricate Symptoms In BRASH Syndrome

Introduction: BRASH Syndrome, an acronym encompassing Bradycardia, Renal Failure, AtrioVentricular (AV) nodal blockade, shock, and Hyperkalemia, is a recently recognized clinical entity with a distinct interplay of symptoms. Although straightforward in its pathophysiology, it was not identified as a unified syndrome until 2016 when Dr. Joshua Farkas coined the term. The syndrome's core mechanism hinges on an initial trigger such as dehydration, leading to Acute Kidney Injury (AKI) in an already diseased kidney, fostering hyperkalemia due to impaired potassium excretion. Concurrently, AV nodal blockers accumulate, which in synergy with the hyperkalemia initiates a self-perpetuating cycle of Bradycardia and hypotension, with further worsening of Kidney injury, and build-up of AV nodal blockers and potassium. Often misdiagnosed as isolated hyperkalemia, BRASH syndrome presents Electrocardiogram (EKG) changes that manifest more prominently than the severity of hyperkalemia, indicating a synergy between AV nodal blockers and hyperkalemia. This underscores the importance of a holistic approach to the diagnosis and treatment of this syndrome.

Case Description: In this case report, we illustrate an 80-year-old Cantonese-speaking woman with chronic kidney disease (CKD) and Atrial Fibrillation (AF), on multiple AV nodal blockers and Antihypertensives. She arrived at the Emergency Department with back pain, chest pain, shortness of breath, and weakness. Hypotensive and bradycardic, her labs revealed serum potassium of 6.7, Creatinine of 1.8, and a urinalysis positive for Urinary Tract Infection. EKG revealed a third-degree AV block. Standard ACLS measures failed to address her Bradycardia. However, a comprehensive approach involving membrane stabilization, hyperkalemia correction, temporary cessation of AV nodal blockers, pressor support, fluid resuscitation, antibiotics, and acidosis reversal gradually improved her condition.

Conclusion: The above case exemplifies the critical importance of addressing all facets of the syndrome simultaneously to prevent rapid deterioration and the need for more invasive interventions. As the elderly population's life expectancy increases, BRASH syndrome's incidence is on the rise due to concomitant arrhythmias, hypertension, coronary artery disease, and CKD. It highlights the pitfalls of Polypharmacy and the particular challenge it poses with medication administration in this vulnerable demographic. BRASH syndrome presents a fascinating clinical conundrum that epitomizes the importance of a comprehensive understanding of interconnected symptoms, and the need for tailored interventions. Recognition and management in a timely and holistic manner can drastically improve clinical outcomes and result in reduced hospitalization. Furthermore, to reduce the likelihood of future recurrence, it's crucial to carefully consider discharge medications and arrange regular outpatient follow-ups.

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A case of Coomb's negative hemolysis-post mRNA COVID-19 vaccine in a patient with Polycythemia Vera

Introduction:

Hemolytic anemia can be inherited, or acquired. Etiologies for acquired hemolytic anemias can be quite varied, ranging from autoimmune hemolytic anemias to hemolysis reactions related to vaccination, infection, and drug-induced. Our patient had a serious case of transient hemolytic anemia post-mRNA-1273 COVID-19 Vaccine.

Case:

A 69-year-old male patient with a past medical history of hypertension, gastroesophageal reflux disease (GERD), and Polycythemia Vera with the JAK2 V617F mutation presented with worsening fatigue. He had been on Aspirin and Hydroxyurea (HU) since 2015. The patient had a history of oral-genital Herpes Simplex Viral ulcers and was treated with as-needed acyclovir. The patient received his second dose of the COVID-19 vaccine 13 days before his presentation. During the examination, the patient appeared pale. He denied any history of noticeable blood loss, dark and tarry stools, or fresh blood in his stool.

Lab investigations revealed a drop in his hemoglobin levels from 11.4 mg/dl (reference range 14.0 mg/dl to 18.0 mg/dl) during his previous visit to 5.9mg/dl. His reticulocyte count was high, 6.15% (reference range 0.5-1.5), haptoglobin was undetectable, and Lactate dehydrogenase (LDH) was elevated to 252 and had previously been normal 3 months prior. Urinalysis and total bilirubin were normal.

Investigations for G6PD deficiency, direct Coomb's test, plasma cell dyscrasia, viral hepatitis, and Paroxysmal Nocturnal Hemoglobinuria (PNH) were all negative. A peripheral blood smear showed polychromasia, rare spherocytes, mild Rouleaux formation, and no notable RBC fragments. Clinical concern was for an immune-mediated but Coomb's negative hemolytic reaction triggered by the COVID-19 vaccine. HU was held and his hemoglobin gradually improved over the next month without an RBC transfusion. Subsequently, his LDH, haptoglobin levels, and reticulocyte count returned to their baseline. The patient was restarted on HU and he did not encounter any further hemolysis episodes.

Discussion:

The clinical presentation of Autoimmune Hemolytic Anemia varies from mild or compensated cases to instances of life-threatening anemia. Our patient had a history of Polycythemia Vera and experienced a significant drop in hemoglobin levels after his second dose of the mRNA-1273 COVID-19 vaccine. He was found to have Coomb's negative hemolysis which resolved with supportive management. In our literature review, we discovered instances where individuals developed sudden hemolysis subsequent to COVID-19 vaccination. The data revealed occurrences of hemolysis in patients with PNH, thrombotic thrombocytopenic purpura, and hereditary spherocytosis. One case involved splenectomy and eculizumab for treatment, while others showed recovery through corticosteroid administration. Interestingly, our search did not yield any cases of severe hemolysis in the context of Polycythemia Vera. With the regular implementation of extensive COVID-19 vaccination drives, it's crucial for medical professionals to remain watchful in quickly identifying, attending to, and effectively handling possible adverse reactions and associated concerns.

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Constrictive pericarditis: a unique cause of cirrhosis

Introduction

Constrictive pericarditis is a rare, chronic complication of infectious, autoimmune, traumatic, or general inflammatory insult to the pericardium. In some cases, the initial presentation is that of right-sided heart failure and subsequent cardiogenic cirrhosis, which poses a significant diagnostic challenge.

Case description

A 57-year-old man presented to the emergency room with a subacute, progressive onset of shortness of breath associated with abdominal distension and leg swelling. Over the past three months, his exercise tolerance decreased to 20-25 meters due to dyspnea. He had severe abdominal distension, positive fluid wave, and 2+ bilateral lower extremity pitting edema. CT of the chest, abdomen, and pelvis revealed a large right pleural effusion, massive ascites, a cirrhotic liver, and retroperitoneal mesenteric adenopathy.

Hepatitis serologies and anti-smooth muscle antibodies were unremarkable. Thoracentesis yielded fluid consistent with a transudative effusion (LDH of 59 U/L), which was thought to be secondary to hepatic hydrothorax. Paracentesis was performed, draining 4 liters of yellow fluid with a SAAG of 2.1 and total protein of 3.7, concerning for a pre-sinusoidal etiology.

Upon admission, further history revealed that he had similar symptoms in 2012 in the Dominican Republic where CT chest identified a pericardial effusion. At that time, he received pericardiocentesis, and candesartan and furosemide were initiated. Careful repeat physical examination was notable for jugular venous distention to the level of the earlobe, positive Kussmaul's sign, and pulsus paradoxus. Transthoracic echocardiogram showed a left ventricular ejection fraction of 60% and minimal pericardial effusion. However, a septal bounce seen with respiration suggested the presence of pericardial constriction.

Subsequent right heart catheterization showed severely elevated mean right atrial pressure (17 mmHg), a post-capillary wedge pressure of 20 mmHg, and pericardial calcification. A diagnosis of constrictive pericarditis was made, and the patient underwent pericardiectomy with symptom resolution and an improvement in his MELD-Na score from 15 to 9 within two weeks.

Pericardial biopsy revealed a fibrous pericardium with mild lymphoplasmacytic infiltrate. Laboratory testing was significant for markedly elevated IgG and IgA alongside positive but low titers of anti-topoisomerase I antibodies. Despite these findings (which may be present in general systemic inflammation) and given he had no history or signs of rheumatologic disease, the most likely diagnosis was idiopathic constrictive pericarditis, complicated by cardiac cirrhosis.

Resident/Fellow Clinical Vignette

Discussion

Though cardiac cirrhosis is a rare complication of longstanding pericarditis, this vignette illustrates several important findings on physical examination, fluid analysis, and imaging that can suggest this diagnosis and avoid unnecessary workup for other etiologies of liver disease. Due to their preload dependency, patients with constrictive pericarditis may experience end-organ hypoperfusion when diuresis (commonly used in conventional heart failure or portal hypertension) is implemented. Timely identification and the decisive implementation of pericardiectomy carry substantial implications for patient outcomes.

Resident/Fellow Clinical Vignette

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Metastatic pheochromocytoma with fumarate hydratase missense mutation

Introduction

Pheochromocytoma(PCC) and paraganglioma(PGL) are uncommon neuroendocrine tumors from the adrenal medulla and paraganglia, respectively. Majority of PCC/PGLs are benign, with malignant potential of 10-15%. Genetic assessment is recommended for all PCC/PGLs, because >35% are associated with genetic mutations. Among them, VHL, succinate dehydrogenase(SDH), NF1, and MEN1 mutations are common, whereas fumarate hydratase(FH) mutation is infrequent. FH is important in cellular respiration and implicated in tumorigenesis such as hereditary leiomyomatosis and RCC (HLRCC), and hereditary PCC,PGL. Herein, we present a case of metastatic pheochromocytoma with a history of right adrenal resection from localized pheochromocytoma three years ago, presenting with C7 cord compression, and metastases, harboring a FH missense mutation(c.934T>C;p.Phe312Leu).

Case presentation

A 59-year-old gentleman presented with a 5-week history of right shoulder pain with numbness and fine motor difficulties but no associated pain, stiffness, warmth or swelling. He has hypertension and a history of right adrenal pheochromocytoma with adrenalectomy in 2020. There is no congenital disorders or malignancy history.

On physical examination, vital signs were normal. Cardiovascular, respiratory, and abdominal examinations were unremarkable. Musculoskeletal examination revealed pain and numbness in his right ring and little fingers, diffuse tenderness in his neck without sensory deficits or muscle wasting. Initial CBC, and CMP were unremarkable. Spine CT demonstrated C7 vertebral mass with compression fracture, and a lytic L1 vertebral lesion without fracture. Whole body CT revealed multiple liver lesions with retroperitoneal lymphadenopathy. Follow-up labs indicated elevated metanephrine of 4497(0-244pg/ml), elevated serotonin of 572(<330ng/ml), chromogranin of 1376(0-101.8ng/ml), and CEA of 4.5(0.3-2.5ng/ml). Spinal procedure(PSIF and laminectomy) and L1 lesion biopsy were performed which revealed metastatic paraganglioma. 68Ga-DOTATE PET/CT scan demonstrated widespread bone and liver metastasis expressing SSTR2. Genetic testing identified a FH missense mutation(c.934T>C;p.Phe312Leu). Genetic counseling was offered. Bone supplements and phenoxybenzamine were prescribed. Radiation therapy and Lu-177DOTATATE radioisotope or 131-I MIBG therapy was recommended.

Discussion

FH gene is located at chromosome 1q43 and missense mutations(57%) constitute the most common, followed by frameshifts and nonsense mutations. HIF gene regulation serves as the cornerstone for cellular differentiation and angiogenesis under low oxygen with mitochondrial enzyme defects. HIF-1 α degradation failure and upregulation are responsible for T cell suppression, and chemokines release which foster angiogenesis, tumor evasion, progression, and tumor microenvironment maintenance.

Resident/Fellow Clinical Vignette

In our patient, a single nucleotide polymorphism results in missense mutation by replacing Phenylalanine with Leucine at codon 312. Although not present in population databases, this mutation is expected to disrupt FH protein function, thus carrying pathogenic conditions like HLRCC, PCC/PGLs.

Conclusion

Our case presents a unique occurrence of metastatic pheochromocytoma with a rare FH gene mutation. While FH missense mutations are known culprits, this specific variant is less common compared to more prevalent genetic abnormalities such as in SDH, VHL, NF1, and MEN1 genes.

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Monckeberg Medial Sclerosis: a rare Giant cell Arteritis mimic

Introduction

Monckeberg medial sclerosis (MMS) is a rare chronic, non-inflammatory condition characterized by calcification in the tunica media of arteries, affecting extremities and visceral organs. MMS infrequently involves the temporal artery and can present with clinical features similar to Giant Cell Arteritis (GCA), a serious immune-mediated vasculitis that can potentially cause permanent blindness. There are few reported cases where GCA was clinically suspected but MMS was diagnosed using a temporal artery biopsy (TAB). This case report highlights the importance of recognizing the need for TAB in guiding treatment for patients with suspected GCA.

Case presentation

We present a case of a 69-year-old male with a medical history of obesity, hypertension, diabetes mellitus (DM), hyperlipidemia, and a previous cerebrovascular accident (CVA) resulting in residual dysarthria. The patient presented with abrupt-onset right-sided continuous headaches, prompting concerns for possible Giant Cell Arteritis (GCA). The patient denied other associated symptoms such as fever, neck pain, jaw claudication, vision loss/change, nausea, vomiting, vision changes, rash, paresthesia, or weakness. Physical examination revealed right-sided scalp tenderness and residual dysarthria from the previous CVA.

Laboratory investigations revealed an elevated erythrocyte sedimentation rate (ESR) of 90 mm/hr, C-reactive protein (CRP) levels of 1.5 mg/L, leukocyte count of $6.1 \times 10^3/L$, hemoglobin of 11.4 g/dL, and platelet count of $177 \times 10^3/L$. The creatinine level initially rose to 1.5 but later improved after hydration. Imaging studies, including CT head and CT angiogram head/neck, showed a chronic infarct at the left parietal lobe and left frontal corona radiata, along with occlusion of the left middle cerebral artery (MCA). These findings were consistent with MRI brain imaging also obtained during admission.

Considering the clinical presentation and concern for GCA, the patient received high-dose methylprednisolone in the emergency room and was started on prednisone 60 mg daily. However, following a right temporal artery biopsy, the pathology report revealed damage to elastic fibers due to calcification, consistent with Monckeberg's Medial Sclerosis (MMS). Consequently, the use of steroid therapy was stopped. The patient's risk factors for atherosclerotic cardiovascular disease (ASCVD) and stroke were addressed during the hospital stay. Following discharge, the patient remained asymptomatic.

Discussion

This case highlights the diagnostic challenges in differentiating MMS from GCA and underscores the importance of biopsy in guiding appropriate treatment decisions and avoiding prolonged steroid exposure. Given that medial calcification is recognized as an independent risk factor for cardiovascular events and all-cause mortality, this case emphasizes the need for comprehensive secondary prevention and optimal management of associated diseases, such as atherosclerosis, type 2 diabetes (T2D), and chronic kidney disease-mineral and bone disorder (CKD-MBD). Early identification of GCA "mimics" and appropriate treatment is crucial in addressing these conditions effectively.

Resident/Fellow Clinical Vignette

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Creutzfeldt Jacob disease "" Illustrating the importance of early diagnosis

Introduction

Creutzfeldt-Jacob disease is a progressive spongiform encephalopathy characterized by its relatively acute onset and rapidly progressive neuropsychiatric decline. The incidence is 1 to 2 per 1,000,000 individuals/year with a mean age of onset being 62 years of age. Clinical presentation is variable and includes progressive dementia, sleep disturbances, tremors, myoclonus, cerebellar dysfunction, pyramidal & extrapyramidal symptoms. Due to the rarity & non-specific presentation, diagnosis is often made in the advanced stages as a diagnosis of exclusion. Our case illustrates the benefits of early diagnosis in the care of this progressive & debilitating disease.

Clinical course

This is a case of CJD in a 64-year old male from Bangladesh presenting to our outpatient facility with a 6 month history of progressive memory loss. His symptoms were suggestive of early-onset dementia. An MRI was done as part of the work up which revealed relatively symmetric gyriform diffuse hyperintensity of the posterior frontal lobes, parietal lobes and posterior temporal lobes with hydrocephalus ex-vacuo. These findings were suspicious for CJD. Relevant labs were within normal limits and his symptoms could not be attributed to his medications. CSF analysis revealed a positive RT-Quic test and a high 14-3-3 and T-Tau level, thereby meeting CDC criteria for probable CJD. His family was made aware of the diagnosis and his poor prognosis. He was started on Memantine and Donepezil for his progressive symptoms. 8 months later, the patient was ultimately admitted to our hospital for worsening functional status and failure to thrive. Inpatient neurology evaluation showed increased right upper extremity tone with paratonia & bilateral Babinski's sign suggestive of pyramidal tract involvement. The pain and palliative care team was consulted due to poor prognosis. Aware of the progressive nature of CJD, the patient's family was receptive to Goals of care and of life discussions. A Percutaneous endoscopic gastrostomy (PEG) tube was placed for feeding and the patient was ultimately discharged to a nursing home and rehabilitation center for continued care.

Discussion

This case demonstrates the importance of considering prion disease in the differential diagnosis for early onset dementia, especially given the rising incidence of sporadic CJD. Most cases of CJD are sporadic and are not thought to be acquired. In our case, MRI findings alongside the early onset of dementia allowed us to establish the diagnosis prior to initial hospitalization. Early diagnosis can facilitate smoother transition towards discussing goals of care with the patient and their families. The aetiology of CJD in our patient is currently unknown.

New York



New York Chapter
American College of Physicians

Annual Scientific Meeting

Resident/Fellow Research

Poster Presentations

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The Trends of Diabetes Mortality Attributed to Vascular complications Among US Adults (2001 -2020)

Introduction

The prevalence of diabetes mellitus continues to increase and is associated with significant morbidity and mortality. To inform prevention strategies to reduce the burden of diabetes and its related complications, we aimed to investigate trends of diabetic vascular complications-related deaths in the United States.

Methods

We obtained 20 years of diabetes mortality data for US adults aged 18 years and older from the National Vital Statistics System (NVSS), multiple-cause-of-death files (2001 "" 2020) using the International Classification of Diseases, 10th Revision codes to identify all diabetes mortality and vascular complications, including nephropathy, retinopathy, neuropathy and peripheral circulatory. We derived crude and age-standardized rates for each vascular complication, including renal, ophthalmic, neurological, and peripheral circulatory complications (gangrene, peripheral angiopathy, ulcer). We conducted trend analysis with annual average percentage change (AAPC) of rates by joinpoint regression to detect significant changes in the mortality rates during the study period.

Results

Over the 20 years, there were 4,957,211 diabetes-related deaths, of which 798295 (16.1%) were attributed to vascular complications of organs: Kidney (520934, 65.3%), peripheral circulatory (246,554, 30.9%), nervous system (28,679, 3.6%), and eyes (2,128, 0.3%). Overall, the age-adjusted rate of vascular complications-related mortality was 1257 per 10,000 in the study period. Trend analysis showed the overall age-adjusted mortality rate attributable to vascular complications had increased in the period (AAPC= 6.8% [3.8 "" 9.8%, $p < .0001$]). A significant increase in renal complications drove these increases. Peripheral circulatory complications showed a statistical decrease of 3% in the study period (AAPC= -3.1% [-3.7 "" -2.6%, $p < .0001$]). On the other hand, eye and nerve complications showed no significant increase.

Conclusion

Diabetic deaths related to vascular complications increased from 2001 "" 2020, driven primarily by renal complications.

Resident/Fellow Research

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A SYSTEMATIC REVIEW OF THE EFFICACY OF LIDOCAINE VERSUS AMIODARONE FOR VENTRICULAR TACHYARRHYTHMIA MANAGEMENT IN HEART FAILURE PATIENTS WITH REDUCED EJECTION FRACTION SECONDARY TO ISCHEMIC CARDIOMYOPATHY

Purpose: The goal of this study is to assess whether lidocaine or amiodarone provides better clinical outcomes in ventricular tachycardia management and overall patient mortality when used as first-line therapy in heart failure with reduced ejection fraction (HFrEF) patients secondary to ischemic cardiomyopathy (ICM).

Methods: We aim to conduct a systematic review to assess and consolidate existing evidence on the comparative efficacy of lidocaine and amiodarone in treating ventricular tachyarrhythmias in patients diagnosed with ICM and HFrEF. Electronic databases, including PubMed, Google Scholar, EMBASE, and Cochrane Library, will be searched for relevant studies published up to August 2023. To meet inclusion criteria, studies must have patients who are 18 years of age and older who have suffered from ventricular tachycardia requiring initiation of amiodarone or lidocaine for arrhythmia management and have HFrEF secondary to ICM. Studies directly comparing the effects of lidocaine and amiodarone in this specific context will also be included in the analysis.

Results: Following a rigorous selection process, we will identify articles to be included for further review that encompass the results of randomized controlled trials (RCTs). The primary outcomes to be evaluated will be the successful termination of ventricular tachyarrhythmias, recurrence rates, and overall mortality in this patient population. Secondary outcomes will comprise of adverse events associated with drug administration and hospital readmission rates.

Conclusion: Our systematic review will highlight benefits and drawbacks of both lidocaine and amiodarone when used for ventricular tachyarrhythmias in HFrEF patients due to ICM. While the current evidence supports the antiarrhythmic properties of both medications, there is no clear superiority of one over the other in terms of successfully terminating tachyarrhythmias or reducing recurrence rates in this subpopulation. Lidocaine has been shown to exhibit a favorable safety profile, while amiodarone shows potential for improving left ventricular ejection fraction (LVEF). However, more high-quality randomized trials are needed to draw definitive conclusions regarding the optimal choice between lidocaine and amiodarone in this specific patient population. Clinicians should carefully consider individual patient characteristics and potential adverse effects when selecting the most appropriate antiarrhythmic therapy for managing ventricular tachyarrhythmias in patients with ICM and HFrEF.

Resident/Fellow Research

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SARs-CoV-2 Serosurveillance in Health Care Workers in a New York City Hospital: A Longitudinal Prospective Study

Introduction

New York City was one of the most affected areas during the Covid-19 pandemic, predisposing health care workers (HCWs) to higher risk of infection. This study reports serosurveillance of the immune adaptive response in HCWs of a public hospital followed in 4 phases.

Methods

This prospective, longitudinal study includes a sample of a total of 79 HCWs of a public hospital in the South Bronx. Each participant underwent SARS-CoV-2 PCR and serology testing for anti-spike (S) antibody IgG levels, in addition to completion of an online survey. The testing phases were as follows: Phase 1, initial phase of Covid-19 pandemic (May 2020). Phase 2, 4 months after phase 1 (August 2020). Phase 3 measured antibody response after vaccination, and Phase 4 measured response after booster. Participants were further subdivided into three cohorts: 1- infection before primary vaccine, 2- infection after primary vaccine, 3- no infection only vaccine. Analysis was performed on all 79 HCWs. Statistical analysis compared geometric mean area under the curve (AUC), with statistical significance set as p-value <0.05.

Results

Anti-S titers showed a marked decay from phase 1 to phase 2 (AUC 1126 to AUC 176). When comparing anti-S titers between phase 1 (AUC 1126) and phase 3 (AUC 4915), there was a statistically significant difference ($p < 0.0001$). Across groups, there was an increase in anti-S titers from phase 3 to phase 4 (AUC 4915 to 7909). During these two phases, there was no statistically significant difference in the humoral response between the groups with and without symptoms.

When comparing the titer levels between each group, infection before vaccine group (AUC 7430) showed a higher response than infection after vaccine group (AUC 1532) during phase 3. However, infection before vaccine showed a slow decay (AUC 7430 to 5850) in response while infection after vaccine response increased (AUC 1532 to 11482) from phase 3 to phase 4. A similar trend was observed in the no infection only vaccine group (AUC 3736 to 8822). Also, immune response against the ancestral variant was statistically significantly higher than the omicron variant in phases 1 and 2 ($p < 0.018$ and $p < 0.057$). However, this was not seen during phase 3 and 4, suggesting no significant difference between response to different variants over time.

Conclusion

Infection before vaccination resulted in humoral response with significant decay after 4 months follow-up. Higher levels of humoral response were seen in patients after vaccination with or without previous infection compared to before vaccination. This suggests that immunity after vaccination is similar or higher irrespective of previous infection status. Also, humoral response showed an increase from phase 3 to phase 4 across groups, suggesting that vaccination provides a steady humoral response against SARs-CoV-2.

Ido Goldenberg, MD

Ilan Goldenberg, Wojciech Zareba, Valentina Kutyifa, Scott McNitt, Claudio D Schuger, Martin Steinberg, John Steinberg, Arwa Younis, Mehmet Kemal Aktas

Temporal Trends in Sex-Related Risk of Cardiac Events in Children with Congenital Long-QT Syndrome

Background

Women with the Long QT Syndrome (LQTS) are at increased risk of life threatening cardiac events (CE) when compared to men following puberty. This phenomenon is thought to be mediated by the differential effects of sex-hormones on the QT interval. In contrast, during childhood before puberty, there is an increased male predominance of CEs, the cause of which is poorly understood. As CEs have been linked to the degree of physical activity, we hypothesized that the sex differential previously described may be attenuated by temporal trends in the level of activity in boys and girls with LQTS during childhood.

Methods

The study population comprised 1,356 patients from the Rochester LQTS Registry with genetically confirmed or obligatory LQTS Types 1, 2, or 3 who were followed from birth through their 10th birthday. Based on their year of birth, patients were divided into three groups by vicennium: 1960-1979, 1980-1999, and 2000-2021. The primary endpoint was the first occurrence of CE, defined as nonfatal cardiac arrest, unexplained sudden death, appropriate implantable cardioverter defibrillator shock or syncope. The age-related incidence of a first CE in each vicennium, with birth used as the time of origin, was determined using the Kaplan-Meier method. The hazard ratio (HR) of exposure to a first CE by sex was calculated using multivariate Cox-regression analysis adjusting for LQTS genotype, QTc interval, and time-dependent beta-blocker usage. All models were stratified by decade of birth.

Results

In the 1960-1979 cohort, the incidence of a first CE at age 10 was significantly higher among boys compared with girls (23% vs 8%, respectively; $p < 0.001$). In the 1980-1999 cohort, event rates were still higher among boys compared with girls, however, this difference was somewhat attenuated (24% vs 15%, in boys vs. girls, respectively; $p = 0.010$). In contrast, in the 2000-2021 cohort the incidence of CE was non-significantly lower among boys compared with girls (13% vs 15%, respectively, $p = 0.471$). Multivariate cox-models comparing the risk of boys to girls yielded the following hazard ratios: 3.881 ($p < 0.001$), 1.686 ($p = 0.011$), and 0.733 ($p = 0.422$) in the first, second, and third vicennium, respectively. The results were consistent in a subgroup analysis of patients with either the LQT1 or LQT2 genotype.

Conclusion

The strength of male sex as a risk factor for CEs appears attenuated in contemporary populations of children with congenital long QT syndrome.

Resident/Fellow Research

Terrence Henry, MD

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Prognostic Value of ProBNP Levels at Admission for Predicting Length of Hospital Stay in Patients With Sepsis

Background: Elevated ProBNP is a known prognostic factor for mortality in septic patients. Its role in predicting disease severity and length of stay is not studied much. In this study, we evaluate the role of elevated proBNP in predicting the length of stay (LOS) among hospitalized patients with a diagnosis of sepsis in a predominately diverse population from New York.

Method: We analyzed data retrospectively from January 2022 to January 2023 of 347 patients with sepsis admitted to the medicine service at Harlem Hospital Center with a documented proBNP level on admission. To extract initial data, EPIC slicer dicer was used followed by the study staff's direct examination of medical records.

Results: We included 102 of 347 patients based on the inclusion and exclusion criteria. We used multilinear regression analysis to test an association between proBNP and LOS. Outcome analysis was completed using Chi-square. The study variables were grouped and compared to proBNP levels. LOS and proBNP levels showed no statistical significance (p 0.580) however both obesity and diabetes did with respective P values of 0.017 and 0.030. We found that a high proportion of deaths occurred within the first 20 days of hospitalization with associated proBNP levels between 1000 and 2500.

Conclusion: ProBNP was not associated with LOS in a linear fashion but the observed trends suggest more extensive studies need to be conducted to assess if there is a relationship between elevated proBNP and LOS in septic patients.

Resident/Fellow Research

Luis Hermosillo Gallardo

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HELICOBACTER PYLORI ERADICATION AND FOLLOW UP: A MULTIFACETED CHALLENGE IN EVERYDAY PRACTICE

Background: Helicobacter pylori (HP) infection is one of the most prevalent chronic bacterial infections, infecting more than half of the population in the world. The sensitivity of HP diagnostic tests decreases in case of antibiotic use and/or antisecretory drugs. In a context of increasing macrolide resistance rates internationally and in the US, all patients should be tested for HP eradication. HP eradication is cost effective by decreasing both gastric cancer incidence and mortality, 46% and 39% respectively and reducing healthcare cost.

During the first stage of this project to improve diagnosis, treatment, and follow up of HP infection in our center, we aimed to assess the appropriateness of HP testing, compliance to evidence-based treatment regimens, and follow up of HP positive patients.

Methods: This a single center retrospective observational study using the Electronic Medical Records of patients admitted in our center. We included adult patients were tested in 2021. Data collection and statistical analysis were performed using Excel version 2019 and Stata version 14.0. We collected data on patient demographics, indications for testing, diagnostic tests, eradication regimen and confirmatory test, documentation of treatment completion, and follow up. A T-test and Chi-square were used to compare results in HP positive and negative patients. Statistical significance was set at a p-value of < 0.05

Results: On 2021, a total of 630 patients were tested using stool antigen, of which 234 (37%) were positive. Among the tested population, a recent history of antisecretory drugs was found in 54% and antibiotics in 24% was noted. The most common complaints leading to HP testing were epigastric pain (59%), heartburn (25%), and nausea (11%). Among patients with a positive HP test, triple therapy with amoxicillin, clarithromycin and proton pump inhibitor (PPI) was the most used regimen (76%). Less than half of HP positive patients had documentation of treatment completion (45%), and follow-up rates were low (54%), with a mean time of follow up of 17.1 weeks. Eradication was tested with stool antigen (26.5%), endoscopy (1.2%), serum antibody (0.4%); however, it was not tested in the majority of patients (71.9%).

Conclusion: Our results indicate that physician with follow up and treatment completion documentation remain low. Improving scheduling of follow-up visits, and documentation of treatment completion in patients with a positive HP test are necessary to confirm eradication, reduce the incidence of gastric cancer, and the healthcare costs associated with these conditions.

Resident/Fellow Research

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OUTCOMES IN PATIENTS WITH STROKE AND LDL <0.7 G/L TO LDL >0.7 G/L

Lowering LDL to below <0.7 g/L reduces the risk of stroke recurrence and improves other cardiovascular outcomes. We aim to compare outcomes (modified rankin scale) in stroke patients with LDL <0.7 g/L and LDL >0.7 g/L.

The stroke patients reported to our tertiary care institution between 2022 and 2023 are the subject of this prospective study. Based on the modified rankin scale of patients at discharge, morbidity and mortality were assessed, and LDL was followed up at 6 months, 12 months, and 18 months. Acute rehabilitation, skilled nursing facilities, and home were among the discharge dispositions.

487 patients were enrolled. Of these, 121 had LDL < 0.7 g/L and 366 had LDL > 0.7 g/L. mRS was divided into moderate disability (0-3), and severe disability (4-6). Patients in high LDL group 162 (52.8%) had moderate disability and 145 (47.2%) had severe disability. Patients in low LDL group 57 (54.8%) had moderate disability and 47 (45.2%) had severe disability. The difference between LDL levels was not significant comparing both groups. In patient group with low LDL at 6 months, 35 patients were followed up, of which 29 (82.9%) had moderate disability, and 6 (17.1%) had severe disability. At 12 months, 29 had moderate disability and 2 had severe disability. At 18 months, 27 had moderate disability and 6 had severe disability. In patients with LDL <0.7, TG/HDL ratio was calculated, 102 patients had ratio <2.

There have been many studies documenting the recurrence of stroke and cardiovascular outcomes while correlating LDL levels. We correlated LDL levels at baseline to determine whether baseline low LDL causes less morbidity/mortality compared to high LDL. The results are not statistically significant. We hence proceeded to calculate TG/HDL ratio in patients with LDL <0.7 to determine whether factors other than LDL can be modified to prevent such high morbidity/mortality.

Nismat Javed,MD

Timothy J. Vittorio

Outcomes of Worsening Transthoracic Echocardiographic Parameters in Patients with Heart Failure

Introduction. Transthoracic echocardiography (TTE) is an important investigative modality in heart failure (HF), however, its impact on outcomes in hospitalized HF patients remains limited. The primary objective was to determine the impact of repetitive TTE imaging on outcomes in compensated and decompensated hospitalized HF patients. The secondary objective was to determine the impact of TTE parameters in HF.

Methods. A retrospective chart review between July 1, 2018 and June 30, 2022 was conducted to identify hospitalized patients with a primary diagnosis of compensated or decompensated HF. This population was categorized into cohorts by repetition of TTEs performed and measured parameters. Data was extracted into excel sheet for review. IBM SPSS software was used to analyze demographic and cardiovascular parameters, including left and right atrial parameters as well as right and left ventricular parameters. Cardiovascular (CV) outcomes, including in-patient mortality and readmission rates, were assessed at the time of presentation and discharge. Chi-square test and t-test were used for analysis of categorical and continuous variables. Logistic regression and mortality analysis were also utilized to determine predictors of outcomes including readmission rates. A p-value<0.05 was considered significant.

Results. A total of 444 hospitalizations were identified. The mean age was 70+15.1 years and the majority of the patients were male (60.5%). Increased left atrium volume index and left ventricular mass index were associated with increased length of stay (LOS) (p<0.05). Readmission rate at 30 days was associated with increased right atrium size and reduced stroke volume (p<0.05). Readmission rate at 90 days was associated with increased left atrial diameter (p<0.05). Inpatient mortality was significantly associated with reduced stroke volume (p<0.05). Repeated TTE imaging did not have an impact on LOS or readmission rates.

Conclusion. The worsening of certain TTE parameters was associated with increased LOS, 30- and 90-day readmission rate as well as inpatient mortality. Further investigation is warranted to validate our findings given the retrospective nature.

Nismat Javed

Timothy J. Vittorio

Outcomes of Loop Diuretic Utilization in Patients with Heart Failure and Mid-Range Ejection Fraction

Introduction. Loop diuretics are a well-known treatment modality in heart failure (HF), however, their impact on outcomes in patients with HF and mid-range ejection fraction (HFmrEF) remains limited. The objective of the study was to determine the cardiovascular (CV) outcomes of patients with HFmrEF who received treatment with loop diuretics.

Methods. A retrospective chart review between July 1, 2012 through June 30, 2022 was conducted to identify hospitalized patients with a primary diagnosis of compensated or decompensated HF and further selected by left ventricular ejection fraction (LVEF) between 40-49%. This population was categorized into cohorts by loop diuretic utilization. Data was extracted into excel sheet for review. IBM SPSS software was used to analyze demographic characteristics and cardiovascular parameters. CV outcomes were assessed at the time of hospital presentation and discharge. Chi-square test and t-test were used for analysis of categorical and continuous variables. Logistic regression and mortality analysis were also utilized to determine predictors of outcomes including need for circulatory support, acute kidney injury, and ICU admissions. A p-value<0.05 was considered significant.

Results. A total of 276 hospitalizations were identified. The mean age was 72+14 years and the majority of the patients were female (53.0%). Hypertension was prevalent in both cohorts (88.3%). Despite no differences in re-admission rates at 30, 90 and 180 days, in-hospital mortality (aOR: 0.50, p=0, 95% CI 0.31-0.80), shock requiring circulatory support, major adverse CV events, respiratory failure requiring assistive devices, acute kidney injury and ICU admissions were significantly reduced in the cohort utilizing loop diuretics in our analysis.

Conclusion. Loop diuretics have promising results in patients with HFmrEF. Further investigation is warranted to validate our findings given the retrospective nature.

Omar Khan, MBBS

Azka Naeem MBBS, Syed Mujtaba Baqir MBBS, Mohammad Hashim Khan MBBS, Anastasia Slobodnick MD, Kseniya Slobodyanyuk MD

Risk of Malignancy with TNF Inhibitors in Patients with Rheumatoid Arthritis: A Systematic Review and Metanalysis of Observational Studies and Randomized Controlled Trials

Background:

The cancer risk in patients with Rheumatoid Arthritis (RA) has been attributed to the disease process itself as well as to non-biologic disease-modifying antirheumatic drugs (DMARDs) such as methotrexate. Tumor Necrosis Factor-alpha (TNF- α) is a key cytokine involved in the pathophysiology of the disease, resulting in the wide adoption of TNF- α inhibitors as a mainstay of treatment for RA. However, TNF- α inhibitors have a potential risk of malignancy, which has been reported in previous studies. Hence, we performed a systematic review and meta-analysis of randomized controlled trials (RCTs) and observational studies to assess the possible risk of cancer in patients with RA on TNF- α inhibitors, compared to patients not exposed to TNF- α inhibitors.

Methods:

We searched MEDLINE, EMBASE, CLINICALTRIALS.GOV, and COCHRANE electronic databases, from inception to 1st November 2022. All RCTs and observational studies were included if they evaluated a TNF- α inhibitor (adalimumab, certolizumab pegol, etanercept, golimumab, or infliximab) as a treatment for adults (>18 years of age) with RA and reported cancer occurrence during the study period. All doses of TNF- α inhibitors were included, as well as patients on concomitant conventional DMARDs. Bias was assessed using the Revised Cochrane risk-of-bias tool (RoB 2.0) for RCTs, whereas the Newcastle Ottawa scale (NOS) was used to assess the quality of observational studies. The random effects model was employed when the number of studies was greater than 10. Between-study heterogeneity was assessed using I² statistics. The odds ratio (OR) and 95% confidence interval (CI) for cancer risk with TNF inhibitors were calculated using SPSS.

Results:

65 studies (12 RCT and 43 observational studies) fulfilled inclusion criteria; only 46 studies were included in the meta-analysis as 19 studies were single-arm studies and hence lacked a control group. One RCT was excluded due to a concern of bias. The included studies had a total of 420697 patients with RA on TNF- α inhibitors, with a total of 10,329 reported cancers. The mean patient age was 55.9 years, with the duration of follow-up ranging from 16 weeks to 9 years. Etanercept and Adalimumab were the most frequently studied TNF- α inhibitors. Overall, RA patients on TNF- α inhibitors had higher cancer risk vs. non-TNF- α inhibitors (OR 1.32, 95% CI 1.14 to 1.54; p=0.00; I²=0.95). Subgroup analysis for Etanercept (OR 1.37, 95% CI 1.26 to 1.50; p=0.00; I²=0.71) and Adalimumab (OR 1.46, 95% CI 1.29 to 1.66; p=0.00; I²=0.67) vs non-TNF- α inhibitors showed similar increased cancer risk.

Conclusion:

Our study shows that patients with RA on TNF- α inhibitors are at an increased risk of cancer compared to those on non-TNF- α inhibitors which includes both conventional and other biological DMARDs.

Resident/Fellow Research

Toni-Ann Lewis, MD, MPH

Michael Kaiser MD., Natalya Goldshteyn MD., Douglas Sepkowitz MD., Harold Horowitz MD., William M. Briggs PhD.

Disruptions in the HIV Continuum of Care During COVID-19: Lessons from a Clinic-Based Study

Background

On March 11, 2020, the WHO declared the COVID-19 outbreak a pandemic. Multiple aspects of healthcare were interrupted, as individuals were instructed to stay home, protect other citizens, and avoid potential exposure. Individuals with HIV heavily rely on healthcare providers for essential medical treatment and critical testing. They are particularly susceptible to the upheaval in healthcare services and access. We undertook this study to evaluate the impact of the COVID-19 pandemic on diverse aspects of HIV patient care.

Methods

Using the Cascades analysis template provided by the New York State Department of Health populated with our patient data, we compared the effects of the COVID-19 pandemic on established clinic patients on Antiretroviral Therapy (ARV) and whether they received viral load testing (VL) or kept viral load suppression (VS). Established clinic patients had two or more visits to our Infectious Disease clinic for HIV management before COVID-19. We also highlighted differences between viral load testing and suppression status within groups when comparing 2019 and 2021 against 2020. Data were stratified by demographics, including; age 20 to 60 years or older, race (Black, White, Asian), and Ethnicity (Hispanic or Non-Hispanic). The relationship between these outcomes was analyzed via the Chi-square test of independence and logistic regression. A p-value < 0.05 indicated statistical significance. 1,498 patients were seen in our Infectious disease clinic and on antiretroviral therapy during 2019-2021.

Results

A significantly higher percentage of patients did not receive testing in 2020 compared to 2019 & 2021 (OR 0.427, CI [0.237- 0.75], p-value = 0.0035, Chi-square p-value = 0.004). During 2019 & 2021, we observed a higher percentage of detectable patients; however, the year was unlikely to be related to decreased suppression rates (p-value= 0.79). Age is a significant predictor of the outcome for viral testing and suppression (F-value < 0.049, F-value < 0.0001) with an average of 55-56 years. Interestingly, we observed no significant difference in the odds or probability between patient race or ethnicity in obtaining VL testing or achieving suppression.

Conclusion

The observation during our analysis that stood out most prominently was the impact of the COVID-19 pandemic in 2020, likely influenced by nationwide medical facility closures and patient reluctance to leave their homes. Telemedicine appointments were a significant response to COVID-19 and were a tool to combat interruption of care. There is further emphasis on the advantages of home delivery of ARV provided by specialty pharmacies, especially under extreme circumstances. Home medication deliveries, telemedicine visits, and considering age-related factors in HIV-care planning during the earliest part of the pandemic may have prevented deterioration in monitoring these at-risk populations. These findings underscore the imperative of adaptive healthcare delivery methods to navigate the consequences of unforeseen medical emergencies effectively.

Resident/Fellow Research

Mark Michael

Sunny Dharia DO, John Tremblay DO, Shirley Botros DO, Mark Michael MD, Lavinia Salama Pharm D, Josephine Lee MD

Quality Improvement in Increasing Rescue Approach for Mild Asthma Symptom Management and Exacerbations

Background: Asthma exacerbations are associated with high rates of morbidity and mortality responsible for on average 1.2 million emergency department visits per year and 3500 deaths per year. The Global Initiative for Asthma (GINA) 2019 guidelines showed that as-needed inhaled corticosteroid (ICS) and long-acting beta-agonist (LABA), such as Symbicort (Budesonide/Formoterol), in mild asthma decreased the risk of serious exacerbation by 64% compared to short-acting beta agonist (SABA) inhaler as-needed alone. Additionally, using a combination inhaler led to reduced steroid use overall.

Purpose: The purpose was to increase the percentage of patients with mild asthma using as-needed combined ICS and LABA inhaler compared to the patients using as-needed SABA alone.

Methods: We conducted a quality improvement study in an academic primary care setting at the Albany Med Health Systems Internal Medicine Group which involved an educational intervention. Pre-intervention, using the electronic health record, we identified patients with mild asthma treated with as-needed SABA or as-needed ICS/LABA. Patients who met the inclusion criteria of mild asthma were grouped into treatment categories of as-needed SABA or as-needed ICS/LABA. Exclusion criteria included COPD, interstitial lung disease, pulmonary fibrosis, emphysema, exercised induced asthma, post infectious airway disease, long COVID, asthma on maintenance inhalers, or on chronic oral steroids. For the intervention, we presented a PowerPoint to the physicians, residents, and nurse practitioners about the new GINA guidelines, statistics on exacerbations and mortality, and asthma control test. Post-intervention, we re-assessed the number of patients in the as-needed SABA and as-needed ICS/LABA group who met the inclusion and exclusion criteria. 265 patients in the pre-intervention group and 261 patients in the post-intervention group met the inclusion and exclusion criteria.

Results: In the pre-intervention group, 5 patients out of 265 patients (1.9%) with mild asthma were treated with as-needed ICS/LABA. Post-intervention, 29 out of 261 patients (11.1%) with mild asthma were treated with as-needed ICS/LABA.

Conclusion: Compared to the pre-intervention group, the post-intervention group had an approximate 6-fold increase in the usage of rescue LABA/ICS inhalers for mild asthma. The GINA guidelines published in 2019 and updated in 2022 have shown improved morbidity and mortality benefit in patients using as-needed LABA/ICS compared to the traditional as-needed SABA. With the overall goal to improve asthma management in the primary care setting, we hope to continue incorporating GINA guidelines into everyday practice. Barriers encountered in transitioning patients to as-needed LABA/ICS included insurance coverage and cost of medication. As more insurance companies in the United States are covering these medications, we are more appropriately able to manage asthma based on guidelines. Future directions of this quality improvement project will include updated GINA guidelines and other studies involving improvement in asthma management.

Resident/Fellow Research

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THE "WEEKEND EFFECT" ON THE IN-HOSPITAL OUTCOMES OF NON-ST ELEVATION MYOCARDIAL INFARCTION (NSTEMI).

Background: Several studies have reported conflicting differences in mortality and length of hospital stay for patients admitted with NSTEMI over the weekends compared to weekdays. Studies that showed poorer outcomes attributed it to lower weekend staffing. Do fewer "on-call physicians" or different workers' attitudes on weekends still affect the mortality and other new outcomes in patients admitted with NSTEMI?

Objective: To investigate the in-hospital outcomes (mortality, respiratory failure and Acute Kidney Injury (AKI)) for patients admitted with an NSTEMI over the weekends.

Method: Using the national inpatient sample database, we identified 2,242,209 patients with NSTEMI between 2016 and 2020. Of these, 575,279 were admitted on the weekends. Baseline demographics, in-hospital procedures, and outcomes were obtained and compared by day of admission.

Result: This study had more males than females but no statistically significant differences in the comorbidities between the two groups. Weekday admissions had a lower mortality rate. However, after adjusting for hospital and socioeconomic status, there was no statistical difference in mortality (aOR: 1.0 CI 0.9-1.1, $p=0.167$). Weekend admissions had higher rates of respiratory failure ($p < 0.001$) and AKI ($p=0.001$) and longer lengths of hospital stay when compared to weekday admissions. Also, lower rates of mechanical circulatory support utilization ($p=0.008$), percutaneous coronary intervention (PCI) (aOR: 0.96, CI 0.95-0.98, $p < 0.001$) and lower total hospital costs (\$94,561 vs \$95,656) were noted on weekends. There was no difference in cardiac arrest ($p=0.334$), cardiogenic shock ($p=0.282$) and acute heart failure ($p=0.170$) between the two groups.

Conclusion: Patients admitted with NSTEMI over the weekend had worse outcomes, lesser PCI procedures and fewer advanced therapies than those admitted on weekdays.

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CARDIOVASCULAR EVENT PREDICTORS IN HOSPITALIZED CHRONIC KIDNEY DISEASE PATIENTS: A NATIONWIDE INPATIENT SAMPLE ANALYSIS

Introduction

Chronic Kidney Disease (CKD) is associated with an elevated risk of cardiovascular events, such as myocardial infarction, stroke, and heart failure. This study seeks to confirm the high burden and risk factors linked to cardiovascular events in CKD, which have been identified as CKD-related. We aim to achieve this using a larger, more diverse, and nationally representative dataset, contrasting with previous research conducted on smaller patient cohorts.

Methods

The study utilized the nationwide inpatient sample database to identify adult hospitalizations for CKD from 2016 to 2020, employing validated ICD-10-CM/PCS codes. A comprehensive literature review was conducted to identify both traditional and CKD-related risk factors associated with cardiovascular events. Risk factors and cardiovascular events were defined using a combination of ICD-10-CM/PCS codes and statistical commands. Only risk factors with specific ICD-10 codes and hospitalizations with complete data were included in the study. Cardiovascular events of interest included cardiac arrhythmias, sudden cardiac death, acute heart failure, and acute coronary syndromes. Univariate and multivariate regression models were employed to evaluate the association between CKD-related risk factors and cardiovascular events while adjusting for the impact of traditional CV risk factors such as old age, hypertension, diabetes, hypercholesterolemia, inactivity, and smoking.

Results

A total of 690,375 hospitalizations for CKD were included in the analysis. The study population was predominantly male (375,564, 54.4%), the mean age of the study population was 61 years (SD 0.1), and 86.7% (598,555) had a CCI of 3 or more. At least one traditional risk factor for CV events was present in 84.1% of all CKD hospitalizations (580,605), while 65.4% (451,505) included at least one CKD-specific risk factor for CV events. The incidence of CV events in the study was as follows: acute coronary syndromes (41,422; 6%), sudden cardiac death (13,807; 2%), heart failure (404,560; 58.6%), and cardiac arrhythmias (124,267; 18%). 91.7% (113,912) of all cardiac arrhythmias were atrial fibrillations. Significant odds of cardiovascular events on multivariate analyses included: malnutrition (aOR: 1.09; 95% CI: 1.06-1.13; $p < 0.001$), post-dialytic hypotension (aOR: 1.34; 95% CI: 1.26-1.42; $p < 0.001$), thrombophilia (aOR: 1.46; 95% CI: 1.29-1.65; $p < 0.001$), sleep disorder (aOR: 1.17; 95% CI: 1.09-1.25; $p < 0.001$), and post-renal transplant immunosuppressive therapy (aOR: 1.39; 95% CI: 1.26-1.53; $p < 0.001$).

Conclusion

This study provides valuable insights into the high burden of cardiovascular disease in CKD patients. It confirmed the predictive reliability of malnutrition, post-dialytic hypotension, thrombophilia, sleep disorders, and post-renal transplant immunosuppressive therapy, highlighting their association with increased risk for cardiovascular events in CKD patients. Understanding these risk factors enables healthcare professionals to prioritize interventions and implement preventive strategies to reduce the incidence of cardiovascular complications in CKD patients.

Chengu Niu, M.D.

Chengu Niu, George Agbakoba, Jing Zhang, Karin Dunnigan, Nagesh Jadhav, Patrick Okolo

Cardiovascular Complications During Delivery Hospitalizations in Patients with Inflammatory Bowel Disease

Background and Aims: The relationship between inflammatory bowel disease and cardiovascular outcomes among pregnant women has yet to be thoroughly investigated. Our aim is to assess the incidence of cardiovascular disease and cardiac arrhythmias during hospital admissions for delivery and identify contributing factors associated with cardiovascular complications in pregnant women with inflammatory bowel disease.

Methods: We performed a retrospective analysis of data obtained from delivery admissions of pregnant women with inflammatory bowel disease, identified via the International Classification of Diseases codes, from 2009 to 2019. In comparing inflammatory bowel disease-affected individuals with the general pregnancy population, we assessed the prevalence of cardiovascular complications.

Results: A total of 71,361 pregnancies with inflammatory bowel disease and 41,117,443 pregnancies without this condition were included in our study. The prevalence of inflammatory bowel disease in pregnancy experienced a near three-fold increase in the last decade. Pregnant patients with inflammatory bowel disease exhibited a significantly higher prevalence of cardiovascular complications, with a heightened risk of peripartum cardiomyopathy compared to those without the condition (AOR 6.64, 95% CI 2.72-16.22). Additionally, the IBD cohort exhibited elevated incidences of cardiac arrhythmia (AOR 2.05, 95% CI 1.69-2.50) and gestational hypertensive complications, such as preeclampsia, eclampsia, and HELLP syndrome (AOR 1.33, 95% CI 1.23-1.44). Pregnancies involving IBD also correlated with increased venous thromboembolism (AOR 3.03, 95% CI 1.51-6.09). However, after adjusting for confounding cardiovascular factors, there was no significant rise in CHF (AOR 0.88, 95% CI 0.12-6.33). There were no maternal death or stroke events in pregnancy patients with IBD. The study revealed that IBD is an independent risk factor for developing CVD. Moreover, the risk of developing CVD was further elevated for IBD patients with traditional cardiovascular risk factors such as hypertension (OR 6.19, 95% CI 6.10-6.28), hyperlipidemia (OR 3.40, 95% CI 3.24-3.57), diabetes (OR 4.67, 95% CI 4.58-4.76), gestational diabetes (OR 1.74, 95% CI 1.72-1.76), PCOS (OR 2.31, 95% CI 2.24-2.40), chronic renal failure (OR 8.63, 95% CI 8.14-9.15), and obesity (OR 2.92, 95% CI 2.88-2.96).

Conclusion: In conclusion, this retrospective study demonstrated an increased prevalence of cardiovascular complications during delivery admissions among pregnant patients with IBD, independent of traditional cardiovascular risk factors. Therefore, a collaborative group of experts should deliver comprehensive guidance for pregnant women with IBD, including gastroenterologists, obstetricians and cardiologists. Further research to identify specific IBD-related factors, such as disease severity, duration, or medication use, contributing to cardiovascular complications will be invaluable for guiding clinical decisions and risk stratification.

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Effectiveness of Immunotherapy in MSI-H vs. MSS Metastatic Colorectal Cancer: Insights from the National Cancer Database**Background:**

Metastatic colorectal cancer (mCRC) patients, particularly those with high microsatellite instability (MSI-H), are increasingly being identified as potential beneficiaries of immunotherapy. The MSI-H phenotype in mCRC tumors is associated with a heightened mutation burden, making them more responsive to immune checkpoint inhibitors. Yet, the efficacy of immunotherapy in microsatellite stable (MSS) mCRC is not well-elucidated. This study aim to evaluated effectiveness of immunotherapy in treating MSI-H and MSS metastatic colorectal cancer through a large population based database.

Methods:

A retrospective analysis was undertaken using the National Cancer Database (NCDB). The study aimed to determine the overall survival (OS) of mCRC patients treated with immunotherapy, categorized by MSI status (MSI-H vs. MSS) and KRAS status(wild type vs. mutated). Multivariable Cox proportional hazard models assessed the link between treatment and OS, adjusting for key confounders such as age, gender, tumor differentiation, and racial background.

Results:

Out of 137,501 mCRC patients, 32,359 (23.5%) received immunotherapy, and 105,142 (76.5%) were given chemotherapy. MSI data was available for 4,945 patients: 223 (4.5%) MSI-H and 4,722 (95.5%) MSS. The average age of those on immunotherapy was 60.1 years, with 53.1% being male. The racial distribution was 78.2% white, 15.7% African American, and 5.3% from other backgrounds. Tumor characteristics showed 21.2% poorly differentiated and 49.9% moderately differentiated in patients who received immunotherapy group. The 5-year survival rate for the immunotherapy group was 87.9%, compared to 93.7% for chemotherapy recipients. Kaplan-Meier curves showed a comparable 24-month survival for both MSI-H and MSS on immunotherapy. However, the MSI-H group exhibited a 5-year survival hazard ratio (HR) of 0.75 (0.62-0.90, $p < 0.05$). KRAS analysis revealed analogous survival rates between wild-type and mutated mCRC patients for the initial 15 months of immunotherapy. Yet, mutated-type KRAS patients had a inferior 5-year survival with an HR of 1.17 (1.11 - 1.22, $p < 0.05$)

Conclusions:

Data from the NCDB underscored the potential benefits of prioritizing immunotherapy for MSI-H mCRC patients, given their improved OS compared to the MSS subgroup. While these findings emphasize the promise of immunotherapy, additional studies are vital to optimize therapeutic strategies for the broader mCRC population, including the MSS subgroup.

Armando Pichs Diez

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A Bridge Too Far: Rare Presentation Of A Left Ventricular Aneurysm Occluding The Right Coronary Artery

Introduction: Ventricular aneurysms (VA) are a complication occurring after MI, commonly at the anterior and apical segments. We present a case of a large aneurysm at the infero-basal portion of the left ventricle with rightward displacement of the basal septum causing a transient systolic obstruction at the posterolateral branch of the RCA.

Clinical Case: A 58-year-old male with a history of CAD with previous CABG and multiple stents, hypertension, hyperlipidemia, and type 2 diabetes mellitus presented with complaint of palpitations. Three weeks prior, he had delayed presentation of an inferior ST elevation MI and received a mid-RCA stent. Echocardiogram (ECHO) revealed LVEF of 47% and ventriculogram revealed a small infero-basal VA. He was discharged on goal-directed medical therapy for heart failure.

During the current admission, the patient was noted to have an episode of VT. An ECHO showed a large VA involving the basal, mid to inferoseptal, and inferior myocardial segments with a wide neck. LVEF was unchanged. Coronary angiogram was performed and showed a right dominant coronary system and a patent mid-RCA stent. Oscillatory flow was seen in the right posterolateral ventricular segment of the RCA with blood flow in the diastolic phase of the cardiac cycle without competitive collateral flow suggesting transient systolic obstruction by an expanding aneurysm. The VA was surgically repaired, and an automatic implantable cardioverter defibrillator was placed.

Discussion: Transient systolic obstruction of flow in the coronary arteries commonly seen with a myocardial bridge (MB). A MB occurs when a portion of the epicardial coronary artery diverts below the surface into the myocardial space, often at the mid-LAD. Artery occlusion occurs during systole leading occasionally to angina, arrhythmias, decreased left ventricular function, myocardial stunning, or even sudden death. In our case, transient systolic obstruction of blood flow occurred due to an expanding large aneurysm that placed extrinsic pressure on the RCA lumen during systole causing complete occlusion thus creating a bridging-like phenomenon that we have coined pseudo-bridging. As coronary blood flow was compromised, this may have contributed to VT.

Patrik Schmidt

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Impact of Hospital Setting on Congestive Heart Failure Exacerbation Length of Stay, Disposition, and Adverse Events: A Retrospective Analysis

Background: Congestive Heart Failure (CHF) is a highly prevalent disease in the United States. It affects a large portion of the population, both in rural and urban settings. Discrepancies in availability of healthcare resources between different community settings lead to significant differences in CHF exacerbation outcomes, from in hospital complications, to length of stay, and final discharge disposition. As socioeconomic disparities have been associated with worse outcomes in many chronic diseases, our aim was to explore the degree to which these differences impact the course of care for patients admitted for CHF exacerbation.

Methods: This was a retrospective cohort analysis of the 2020 National Inpatient Sample Database. We included all adult patients (>18 years old) patients presenting with CHF exacerbation. For univariate analysis, patients were stratified according to hospital admission setting (rural, urban non-teaching, urban teaching). Outcome measures were in-hospital length of stay, patient disposition, major complications. Pearson's square test was performed to compare categorical variables between study groups.

Results: A total of 423,139 adult patients with CHF exacerbation were identified with a mean patient age was 71 years. Median length of Stay (LOS) of patients admitted for CHF exacerbation was 4 days in rural settings, 5 days in urban non-teaching facilities, and 5 days in urban teaching facilities. When comparing final disposition among different hospital settings, patients admitted in rural facilities were discharged more often to short term hospitals (STH), also known as short term rehabilitation (STR), when compared to urban non-teaching and urban teaching facilities. Patients in rural areas were more likely to be transferred to other hospitals and were less likely to be discharged with Home Health Care Services (HHCS). Patients treated in rural and urban non-teaching settings also exhibited a lower mortality rate when compared to patients in urban teaching facilities. Patients treated in rural settings had lower rates of acute respiratory failure when compared to patients in urban non-teaching and urban teaching facilities, and the overall rate of complications was higher among patients treated in urban non-teaching facilities.

Conclusion: Rural healthcare settings have been shown to have greater socioeconomic barriers to healthcare, which may contribute to a higher rate of reliance on STR as a means for post-hospitalization care, rather than HHCS in the setting of a patient's home. Furthermore, reduced access to specialty care, or specialized care in the cases of advanced heart disease may contribute to a greater degree of interhospital transfers from rural centers. Interestingly, rural centers showed overall lower rates of complications from heart failure admissions, and shorter median LOS which may warrant further future investigation.

Garba Rimamskep Shamaki**Predictors and In-hospital Outcomes of ST-elevation Myocardial Infarction Patients without Standard Modifiable Cardiovascular Risk Factors Among Young Patients in the United States**

Introduction: Standard Modifiable Cardiovascular Risk Factors (SMuRF) such as hypertension, diabetes mellitus, hyperlipidemia, and smoking have long been established in the etiology and evolution of atherosclerotic disease. Recent studies suggest that patients who present with ST-elevation myocardial infarction without any of these risk factors (SMuRF-less) have worse outcomes, yet little is known about in-hospital outcomes among younger patients.

Methods: The National Inpatient Sample databases (2016 to 2020) was queried to identify STEMI admissions as a principal diagnosis using ICD 10 codes. Patients with a history of coronary artery disease, myocardial infarction, coronary bypass graft, percutaneous coronary intervention, takotsubo cardiomyopathy, cocaine abuse, and spontaneous coronary dissection were excluded from our study population. A final study population aged 18 years to 45 years was identified and divided into cohorts of SMuRF and SMuRF-less based on the presence of ≥ 1 risk factor (hypertension, diabetes mellitus, hyperlipidemia, and smoking). Multivariate logistic regression model was used to adjust for baseline characteristics and comorbidities and to identify the independence of association between the two study cohorts and in-hospital outcomes. The primary outcome was in-hospital mortality. The secondary outcomes include predictors of in-hospital mortality and ST-elevation myocardial infarction-related complications, including acute heart failure, cardiogenic shock, cardiac arrest, stroke, ventricular fibrillation, acute kidney injury, and the use of vasopressors and intra-aortic balloon pumps.

Results: 41,990 patients were identified as the final study population. 38,195 patients were identified as SMuRF, and 3795 patients were SMuRF-less. Compared to SMuRF patients, SMuRF-less patients are more likely to be females (23.6% vs. 21.7%) of minority race (38.5% vs. 33.5) and younger (mean age 38.1 vs. 40.1 years). SMuRF-less patients were also more likely to be from the highest income quartile (20.0% vs. 15.6%, $p < 0.01$) and less likely to be from the lowest income quartile (28.3% vs. 33.0%, $p > 0.01$). In comparing co-morbidities, SMuRF-less patients were more likely to have congestive heart failure (17.1% vs. 13.6%, $p < 0.01$) but less likely to have COPD (0.5% vs. 2.7%, $p < 0.01$), Obese (13.7% vs. 27.9%, $p < 0.01$) and chronic kidney disease (1.4% vs. 4.2%, $p < 0.01$). In evaluating outcomes, SMuRF-less patients had higher in-hospital mortality (OR 4.7, CI 3.3-6.6, $p < 0.01$), Cardiogenic shock (OR 2.7, CI 2.1-3.5, $p < 0.01$), Cardiac arrest (OR 2.4, CI 1.8-3.2, $p < 0.01$), acute kidney injury (OR 2.2, CI 1.7-2.8, $p < 0.01$), ventricular fibrillation (OR 2.0, CI 1.5-2.5, $p < 0.01$), vasopressor use (OR 2.4, CI 1.4-3.8, $p < 0.01$) and Intra-aortic balloon pump (OR 1.7, CI 1.2-2.4, $p < 0.01$). Predictors of mortality in SMuRF-less patients include chronic kidney disease (OR 5.3, CI 1.1-25.3, $p = 0.03$), Alcohol abuse (OR 18.0, CI 2.2-146.6, $p < 0.01$).

Conclusion: Young patients who present with STEMI and have no traditional cardiovascular risk factors have worse in-hospital outcomes. Further research is needed to evaluate the impact of non-traditional risk factors on myocardial infarction.

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BURDEN OF TREATMENT IN PATIENTS WITH CHRONIC HEART FAILURE AND ITS IMPACT ON THEIR QUALITY OF LIFE- A LONGITUDINAL STUDY AT LINCOLN HOSPITAL

BACKGROUND: Patients with Chronic Heart Failure (CHF) face challenges with their treatment regimen and self-care which has an impact on their psychological, physical, social and health-related quality of life, which leads to a burden of treatment in such patients. The purpose of this study was to identify the burden of treatment in patients living with CHF to illustrate and explain how interactions between patients, their healthcare systems and support networks can affect and exacerbate the patient's ability to live with and manage CHF.

METHODS: In this longitudinal study we collected self-reported data from 260 patients diagnosed with CHF, who received care in our inpatient and outpatient settings and followed them over 6 months. We used Patient Experience with Treatment and Self-management (PETS) measure, which comprises 10 multi-item scales (46 items in total) covering domains such as medical information and role/social activity limitations. PETS measure has good reliability and demonstrated constructive validity against other measures. Descriptive statistics and partial correlations were used for data analysis.

RESULTS: The mean age of patients was 64 years, most were males (65%) and majority belonged to African-American race (49%). Of the patients studied 24% had substance use history and 29% had alcohol use disorder. Each of the patients had an average of 3.53 co-morbidities. 51% of the patients followed up at our Lincoln Ambulatory primary care clinic and 55% had Medicaid, 23% had Medicare and 22% had private insurance. At baseline, the highest mean burden scores were related to difficulty with medical and healthcare-related expenses (86%) which improved to 81% by the end of 6 months. We observed that 82% felt difficulty with self-care that made them feel physically/mentally exhausted, 80% had difficulty with role and social activity, 79% had difficulty with healthcare services, and 47% had difficulty managing their medications. This worsened to 85%, 85%, 81% and 64% respectively. Also 51% of patients had difficulty with managing medical appointments, 58% were bothered by medication, 55% had problems monitoring their health which increased to 65%, 64%, and 68% respectively.

CONCLUSION: Burden of treatment is a significant aspect of CHF management emphasizing the challenges and stress the patients perceive. Higher treatment burden is associated with the number of chronic conditions apart from CHF, less knowledge about treatment, financial difficulty due to treatments and exhaustion related to self-care in a pursuit to manage CHF itself. This study highlights the importance of making treatment regimens for CHF simple and patient-tailored in order to address and relieve these burdens. Patient-reported outcomes have a better potential for translatable actions.

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THE SILENT BATTLE: UNDERSTANDING THE PROFOUND IMPACT OF POST-ACUTE SEQUELAE OF SARS-COV2 INFECTION ON THE QUALITY OF LIFE OF HEALTHCARE WORKERS - A NEW YORK CITY HOSPITAL EXPERIENCE

Background:

New and persistent symptoms have been observed in patients who have recovered from an acute COVID-19 infection, collectively known as post-acute sequelae of SARS-CoV-2 infection (PASC). Healthcare workers (HCWs) are at increased risk of contracting an acute infection and subsequently developing PASC. This cross-sectional study aims at understanding the incidence of PASC among HCWs and its impact on health-related quality of life (HRQoL).

Methods:

This cross-sectional study was carried out in April 2023. Consenting HCWs with a history of confirmed/suspected COVID-19 from March 1st, 2020, to March 1st, 2023 at Lincoln Medical Center,

Resident/Fellow Research

Bronx were included. HCWs infected within 30 days prior to the survey were excluded. Non-identifiable baseline characteristics and information on various symptoms associated with PASC and their impact on the HRQoL were collected using standardized surveys.

Descriptive statistics were used to report baseline characteristics, features of PASC, and its effect on HRQoL. Variances across means were compared using ANOVA. Symptoms were categorized into six system-based clusters and odds ratio was used for bivariate analysis between them.

Results:

Out of 403 consenting respondents, 236 complete responses were included. Respondents were largely female (70%), aged 26-35 years (33%), with similar racial distribution, and 58% were involved in direct patient care. All individuals had completed primary vaccination with ~80% having received the first booster. Six individuals were hospitalized and two required intensive care.

The most commonly reported PASC symptoms were fatigue (40%), headache (21%), confusion (20%), shortness of breath (14%), persistent cough (12%), and joint pain/swelling (11%), with almost 70% responders reporting at least one PASC symptom and 55% reported 2 or more symptoms. Females had more symptoms than males ($\chi^2=2.37$ vs. 1.26, $p=0.005$). HCWs involved in direct patient care reported more symptoms ($p<0.0001$). Additionally, both the wild type ($\chi^2=2.88$) and the Alpha variant ($\chi^2=2.35$) were associated with significantly more PASC symptoms ([Delta $\chi^2=0.6$, Omicron $\chi^2=1.7$], $p=0.01$). When symptoms were divided into clusters, a strong positive correlation was observed between the total number of symptoms experienced and the neuropsychiatric symptom cluster.

PASC adversely affected the activities of daily living of HCWs. Worsening anxiety/depression was observed in 22% of respondents. 93% had difficulty walking and 21% experienced shortness of breath. PASC disrupted HCWs' family life/home responsibilities (53.93%), social life/activities (55.93%), school/work (57.2%), and reduced productivity (29.66%).

Conclusions:

Our findings highlight the need to address and manage PASC among HCWs using a multidisciplinary approach that takes into account psychosocial support. The disruption to HRQoL of HCWs affects all aspects of their daily life and can have significant deleterious implications on providing quality healthcare.

New York



New York Chapter
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Quality, Advocacy and
Patient Safety

Poster Presentations

Calvin Albrecht, M.D.

Anlage, Troy; Palli, Rohith; Sun, James; Hellerstedt, Sage; Ghimire, Anima; & Louie, Ted

Evaluating the Successes & Limitations of the URMC COVID-19 Monoclonal Antibody Program

Background: More than 62,000 fatalities have been attributed to COVID-19 in New York State, including greater than 2,300 in Monroe County. In 2021, therapeutic monoclonal antibodies (mAbs) were distributed to stem the tide of surging COVID-19 fatalities after small studies demonstrated reduced hospitalization rates and deaths. At the University of Rochester Medical Center (URMC), a program was established to have primary care physicians refer outpatients with mild disease and risk factors for disease progression to be considered for infusions of mAbs in the Infectious Disease (ID) clinic or Emergency Department (ED). It is unknown what the clinical outcomes of these patients were, or if the allocation of mAbs was equitable for patients of different socioeconomic groups.

Objective: The purpose of this study was to: 1) determine the clinical outcomes of patients receiving therapeutic mAbs, and 2) assess the equity of mAb allocation at URMC.

Methods: We performed a retrospective study of 327 outpatients who were deemed high risk for COVID-19 disease progression and who received mAbs in ID clinic or ED after referral from their primary care physician. The study population was obtained via query of a pharmacy database. A chart review of these patients was completed to track hospitalization rates within 30 days of mAb administration, severity of COVID-19 disease (e.g. maximum supplemental oxygen requirements, ICU admission, shock, etc.), and COVID-19-related deaths within 90 days of a positive COVID-19 test. Stratification of socioeconomic status (SES) was achieved via the social vulnerability index (SVI), with higher scores reflecting greater vulnerability. Each patient's home address was converted to SVI using a CDC database and Tigris package in R.

Results: A total of 327 patients were included in our analysis. 28 patients (8.56%) were hospitalized or visited the ED due to COVID-19. Of these, 16 patients (57.1%) experienced "mild or moderate" disease (no documented hypoxia), 8 (28.6%) experienced "severe" disease (documented hypoxia requiring minimally-invasive supplemental oxygen), and 4 (14.3%) experienced "critical" disease (ICU admission, high-flow nasal cannula oxygen, intubation, shock). Three patients (0.9%) died of COVID-19-related causes within 90 days of a positive COVID test. Of patients with a recorded SVI (N = 303), 190 (62.7%) comprised the bottom two (lower SVI) quintiles while only 113 (37.3%) accounted for the bottom three (higher SVI) quintiles.

Conclusions: The vast majority of patients who received therapeutic mAbs avoided hospitalization, ED encounters, and severe disease. Patients with lower SVI received a disproportionately higher share of mAb infusions. Future programs requiring allocation of novel treatments should take into account patient SVI during the screening process and attempt to remove barriers to accessing care.

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IMPROVING ACURACY OF IDENTIFYING THE COMMUNITY PHYSICIAN OF INPATIENTS: A MEDICAL STUDENT DRIVEN INTERPROFESSIONAL QUALITY IMPROVEMENT PROJECT

Since the 1990s, the rise of the field of Hospitalist Medicine has resulted in more handoffs in care, namely between the inpatient hospitalist and the community provider. The increase in handoffs can lead to clinical inefficiency, suboptimal quality of care, higher readmission rates, redundancy of testing, and costlier care. In our institution, it is important to document the correct primary care physician (PCP) in the electronic medical record (EMR) because once completed the discharge summary is automatically sent electronically. We hypothesized that one of the gaps in care could be from inaccurate documentation of the community physician in the inpatient EMR. One aim of this project was to assess the accuracy of the outpatient PCP listed in the inpatient EMR on the internal medicine (IM) and elective surgery teaching services. A second aim was to improve the accuracy of PCP documentation in the EMR using the Plan-Do-Study-Act cycles and standardizing brief, efficient interprofessional meetings with a task-oriented framework. In 2016, an analysis of 42 patients on the IM service at our hospital showed that PCP accuracy was 59.5%. In late 2016, to identify weak links in the system, medical students created an interprofessional workgroup, which included registration, information technology specialists, and nurses. Following these meetings, improvements in the system increased the PCP accuracy to 81.1% in 2017 and 86.8% in early 2019. During this time, interprofessional meetings were held periodically to provide informal feedback to all team members, which led to an improved accuracy of 94.3% in late 2019. Patients with the incorrect PCP and "unknown PCP" listed in the EMR decreased from 40.5% to 6%. This increase in accuracy was likely due to several factors, including the initiation of the "Change PCP" order, increased engagement of the interprofessional team, and nursing staff contributions and support. The PCP accuracy for 70 patients on the elective surgery service in 2018 increased from 90.0% to 96.7% after another series of meetings with the interprofessional team. The impact of the "Change PCP" order was demonstrated between October 2016 through October 2017 by its use 153 times (138 IM, 15 elective surgery). During that time, therefore, 153 discharge summaries reached the correct, rather than the incorrect, community physician. Accurate identification and recording of each patient's PCP within the EMR are essential in establishing communication between inpatient and community clinicians. This study shows that a medical student-driven interprofessional quality improvement project can improve the accuracy of this important piece of demographic data. This study shows this objective can be achieved with standard quality improvement (plan-do-study-act cycle) methods coupled with frequent, structured, short, efficient meetings with specific tasks assigned to individuals.

Barry Kemp, MD

Michael Belko MD, Joshua Broden MD, Brett Schuchardt MD, Joseph Glick MD, Nina Rizk MD, Anima Ghimire DO, Sarah Rusnak MD, Teresa Shannon RN, Catherine Glatz MD, Christine M. Osborne MD, and Meghan K. Train DO

MITIGATING EXCESSIVE LABORATORY TESTING IN HOSPITALIZED PATIENTS: AN INTERDISCIPLINARY QUALITY IMPROVEMENT INITIATIVE

Purpose: Excessive laboratory testing performed on hospitalized patients is harmful, costly, and often does not provide information that impacts clinical decision making. This project sought to decrease excessive laboratory testing across two medicine resident-staffed medical-surgical units at a quaternary care center with the aim to decrease median laboratory tests per patient stay by 10% over a 4-month period.

Methods: Automated electronic medical record data mining was utilized to collect baseline data on the total number of laboratory tests performed per patient encounter. Patient encounters with a length of stay greater than 10 days were excluded to eliminate outliers, and manual verification of the automated data collected was performed on an early data set. Data collected was broken into monthly subsets and a 12-month look back revealed a baseline median of 11 laboratory tests per patient encounter, with an average of 130 patient encounters per month. Through a series of PDSA cycles a variety of interventions were utilized (i.e. visual aids, email reminders, check lists, and incorporating discussion of the frequency of laboratory testing into work rounds and interdisciplinary team rounds) in an attempt to improve "mindful" laboratory ordering by interns, residents and attendings, with bi-weekly meetings held to surveil and assess the impact of selected interventions.

Results: Preliminary data demonstrated that these interventions were successful in reducing the total number of laboratory tests. There was a decrease in the median number of laboratory tests per patient encounter from 11 to 9 (calculated using the median of the median of data collected for the preceding four months) representing roughly an 18% decrease, surpassing the initial target of a 10% reduction. However, recent data demonstrates an upward resurgence in this number, most recently in July 2023 to a median laboratory total of 11.

Conclusion: Through multiple interventions a measurable reduction in total number of laboratory tests per patient encounter was observed and suggests that routine laboratory testing may be excessively utilized in the care of hospitalized patients. Notably, this study was limited by small sample size, and more recent data suggesting difficulty in maintaining a sustained response. Our team speculates that this rise in laboratory testing may be due to a decrease in messaging efforts, as well as unit staffing by new residents at the start of the academic year. Future efforts will be aimed at maintaining a sustained response, in addition to examining both resident and nursing perceptions of laboratory testing reduction. Furthermore, means of objectively measuring the possible benefits of laboratory testing reduction, including improved patient and employee satisfaction, and reduced costs, are also being discussed.

Mary LoCastro,

Policy Analysis of New York State Legislation to Improve Equitable Access to Assistive Technology for People with Disabilities

Introduction

Providing access to durable medical equipment (DME) and assistive technology (AT) is vital to better managing the healthcare needs of people with developmental disabilities.¹ AT is the broader umbrella category which may be defined as, “any item, piece of equipment, or product system used to increase, maintain, or improve functional capabilities of an individual”.² DME is a subset of AT that is obtained via insurance reimbursement. DME and AT can prevent prolonged hospitalization for medical complications such as pressure sores in an adolescent with spina bifida and missed school days for escalating behaviors in an autistic teen who needs noise-cancelling headphones, a communication device, or weighted blanket for sensory concerns. DME and AT enable people with disabilities to fully engage in activities at home and in their communities,³ ultimately promoting better health outcomes, improved quality of life and greater social participation.⁴

Rationale

Unfortunately, families face a myriad of barriers in obtaining DME, especially economic ones.⁵ Availability of assistive devices is often dictated by a closed market system run primarily by relatively small, regional or national companies.⁶ Both public and private health insurances cover a small fraction of the cost of equipment deemed medically necessary⁷ and the process to establish medical necessity for insurance reimbursement of DME can be difficult, lengthy, and delayed by initial denials. Timely delivery of DME is especially important for young children during critical windows for brain development and motor learning. It can take more than a year for a child with cerebral palsy to get a wheelchair, and families routinely struggle with getting a sleep safe bed for a child with epilepsy.⁸ Ultimately, many assistive technologies become inaccessible to those who cannot afford them privately.^{4,6} While grassroots efforts exist to provide DME/AT for families, policy action is urgently needed to ameliorate inequities that are structurally embedded in the insurance reimbursement process.

Methods

A policy analysis of three bills proposed in the New York State Legislature and supported by the New York Chapter of the American College of Physicians Services was conducted. If approved, these bills would help to improve access to DME/AT for people with disabilities in New York State. Bills reviewed included the following: (1) Gold Card Program, (2) Same Specialty Peer Review, (3) Collective Negotiations Review.

Results

1) Gold Card Program (A859/S2680)

The “Gold Card” program would exempt physicians and other care providers from prior authorization requirements if they receive at least 90% approval for prior authorizations for specific health care treatments.⁹ The goal of this bill is to prevent unnecessary roadblocks to

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patient care, while also rewarding evidence-based treatment guidelines.¹⁰ The current prior authorization requirements, including those for DME/AT, interfere with timely access to adaptive equipment, thereby interfering with patient health and quality of life. On June 10, 2023 it was decided that the Senate Rules Committee would determine when this bill will go to the Senate Floor for action.

2) Same Specialty Peer Review (A879/S599)

Same Specialty Peer Review would require that when the clinical peer reviewer is a physician, he or she would be board-certified or board eligible in the same or similar specialty as the physician who typically recommends the treatment or manages the condition under review. Currently, the only qualification required for a person who, on behalf of a health care plan or insurer, may deny payment for an otherwise covered benefit on the basis that it is not medically necessary, is that such reviewer be a licensed physician and trained in utilization review. There is no requirement that the reviewing agent be trained in the same specialty as the health care professional who would typically recommend the treatment that is under review.¹¹ Therefore, a patient's treatment recommendation may be reviewed by a provider who is not qualified to review the treatment that has been recommended. This can result in medically necessary-care being inappropriately denied or unnecessarily delayed, especially as it pertains to timely access to DME/AT. Although in 2022 this legislation passed both the Assembly and the Senate, on December 30, 2022, it was vetoed by the Governor.

3) Collective Negotiations Review (A6019/S4785)

Collective Negotiations Review would authorize collective bargaining for physicians. Specifically, this legislation would allow health care providers in New York State to conduct collective negotiations by creating a system under which the state would closely monitor those negotiations, facilitate resolution of negotiation disputes, and actively monitor implementation of agreements.¹² Giving health care providers greater ability to advocate for patients is critical now more than ever before, considering that large health maintenance organizations (HMO) control huge shares of the health insurance market. This imbalance of power in favor of the managed care plans results in burdensome processes and unjustifiably long wait times for obtaining pre-authorization, directly affecting patients' access to DME/AT. Passage of this legislation would give physicians greater ability to advocate for patients in contract negotiations, thereby improving patient care. Neither of these bills made it to a vote by the Assembly or Senate, however they can be re-introduced next year.

Conclusion

Bills supported by the NYACP including the Gold Card Program, Same Specialty Peer Review, and Collective Negotiations Review would help address the urgent need to reform the insurance reimbursement process for DME and AT. Physicians caring for people with disabilities can improve care by contributing to quality improvement of the DME process, and by engaging in advocacy efforts at the state level. New York State must take action to improve equitable access to DME and AT for people with disabilities, in order to support healthy, vibrant, and socially-engaged lives or all.

Kingshuk Mazumdar, MD, MBA

A Multi-Disciplinary Team-Based Initiative to Reduce Chronic Obstructive Pulmonary Disease Readmissions at Highland Hospital

Chronic obstructive pulmonary disease (COPD) is a progressive disorder of inspiratory airflow limitation and expiratory air trapping that contributes substantially to global morbidity and mortality. As a consequence of its high prevalence and proclivity for acute exacerbation requiring frequent emergency department utilization, hospitalization, and ambulatory evaluation, COPD places significant economic strain on the health care system. It is estimated that 20% of patients hospitalized with a COPD exacerbation are readmitted within 30 days of discharge. Worryingly, this burden has worsened with the total annual cost of COPD care in the United States rising to nearly \$50 billion. Reducing COPD readmissions reduction has become a priority for health systems across the country, notably with its inclusion in the Medicare Hospital Readmission Reductions Program (MHRPP) in 2015. A review of the literature suggests numerous interventions to improve COPD readmissions, including early identification of high-risk patients, standardization of care, and comprehensive discharge planning.

The COPD Readmission Prevention Committee is a multidisciplinary Quality Improvement committee at Highland Hospital (HH), a 260-bed community hospital in Rochester, New York. This committee works to reduce readmissions by standardizing care and improving provider compliance with the Global Initiative for Obstructive Lung Disease (GOLD) guidelines for management of COPD exacerbations. An additional aim of the committee is to identify and assess compliance failures to guide future interventions.

Thirty-day COPD readmission data from HH collected by the Quality Improvement department between July 2021 and December 2023 were reviewed. Guideline failures with regard to a numerous metrics were identified to better understand factors leading to re-hospitalization. Changes presented in a Clinical Practice Guideline update (CPGU) at the start of FY23 were used to assess for change in compliance over subsequent months.

There were 310 total admissions to HH for COPD over this time period, with 59 readmissions within 30 days of discharge. The average 30-day readmission rate was 19.0%, higher than the target of 15.48%. Readmission rate did not improve following the CPGU. Metrics with the highest pre- and post-update compliance included appropriate antibiotic administration and smoking cessation counseling. Appropriateness of steroid administration, although not improved in FY23, generally remained above goal. Pharmacist counseling, spacer education, and conversion to metered-dose inhaler (MDI) therapy within 48-hours of discharge were below target prior to FY23 and unimpacted by CPGU. These represent areas selected for further intervention.

Neelanjana Pandey

A Single Center Quality Improvement Study to assess appropriate use of telemonitoring.

Background:

Telemonitoring has been a valuable resource for hospitalized patients. However inappropriate use of this resource has been reported nationally. Appropriate and timely intervention in telemonitoring has shown to decrease the inappropriate use especially by using electronic medical record (EMR) order sets based on American Heart Association (AHA) guidelines. Reports of nearly 70% reduction in inappropriate use of telemonitoring have been published. We are a safety net hospital, situated in one of the poorest congressional districts in the nation and nearly 70% of our patients are covered by Medicaid. In such a setting it becomes imperative to use these resources judiciously.

Method:

We have retrospectively analyzed patients admitted to our telemetry floors from January 1, 2022, to May 31, 2022. AHA 2017 guidelines were used in the analysis of our patients. Data was collected from our EMR system regarding indications, duration of telemetry, events recorded on telemetry and outcomes of the events. Analysis was done using Microsoft Excel and IBM SPSS.

This is an ongoing project, and a six-month educational intervention will be undertaken, and the effect of intervention will be assessed among patients admitted between May 2023 and December 2023 (post-intervention).

Results:

A total of 272 patients were admitted to our telemetry units during, out of which 78 patients (28.6%) did not meet the requirement of telemonitoring as per AHA guidelines. 68 patients were monitored for appropriate duration (32 %). Baseline demographics and other findings are shown in the tables below.

Conclusion:

In our study we observed a high rate of inappropriate use of Telemonitoring in hospitalized patients. In such settings it is important to use resources judiciously.

Educational intervention regarding AHA guidelines and EMR order sets may improve the use of telemonitoring.

TIA-transient ischemic attack, STEMI-ST segment elevation MI, NSTEMI-Non-ST segment elevation MI, HF-Heart Failure, CVA-Cerebrovascular event, VT-Ventricular tachycardia, PVCs-premature ventricular complex, ICU-Intensive care unit.

Table 1: Baseline Demographics and other findings. (N=272)

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Mean age of patients 57 years

Percentage of male: female patients 60: 40

Mean duration of Telemetry use 4 days

Mean length of stay 4.5 days

Most common arrhythmia Atrial fibrillation- 13%

Percentage of patients with clinically significant events (Sustained VT, non-sustained VT, Atrial Fibrillation, Atrial Flutter, Bradycardia, Sick sinus PVCs)-17%

Percentage of patients needing action for events/change in management

(Actions included changes, or starting new medication, cardioversion, or transfer to ICU)-9%

Percentage of patients with cardiac monitor used until discharge.-93%

Bessie Roca Loor, Medical Student

Dr. Mill Etienne, MD, MPH, FAAN, FANA, FAES

Opportunity for racial and ethnic diversity in Adult Gastroenterology Fellowship Pipeline

Background:

The American Society for Gastrointestinal Endoscopy (ASGE) conducted a survey in 2012 that resulted in less than 10% of practicing gastroenterologists self-identifying as Hispanic, African Americans, and Americans Indian and/or Alaskan Native (1). Recent studies have identified that the Latino populations, both nationally and globally, are disproportionately affected by both Non-alcoholic fatty liver disease (NAFLD) and Non-alcoholic steatohepatitis (NASH) compared to non-Latino white populations (2). This gap implies that diversifying the gastroenterology workforce is an indispensable approach to address equity in patient care as physicians Underrepresented in Medicine (URiM) are more likely to practice in minority underserved areas as well as understand social and cultural norms of underrepresented groups which, in turn, lead to increased patient adherence to medical treatment(1, 3). We investigated the trends of URiM representation, as defined by the Licensing Committee on Medical Education (LCME), among adult gastroenterology fellows.

Methods:

This is a quantitative analysis of the Accreditation Council for Graduate Medical Education (ACGME) Data Resource Book from 2011 to 2022. This data was publicly available therefore no IRB approval was required. Demographic data including race, ethnicity, and gender of US adult gastroenterology fellows were extracted and analyzed in Microsoft Excel. Additionally, a multiracial category was introduced as an option in 2020. Chi-Square test was utilized and expected values were calculated using the 2010 census data (2011 to 2019) and the 2020 US census data for 2020 onwards.

Results:

There were 17764 adult gastroenterology fellows between 2010-2022. Chi-square analysis demonstrated significant underrepresentation of Black, Hispanic and Native Americans ($p < 0.0001$) in US adult gastroenterology fellowship programs. As seen in Figure 1, 4% were Black (795/17764), 6% were Hispanic (1008/17764), and 0.05% were Native American (10/17764). Although trend analysis demonstrated a gradual increase in percentage of Black and Hispanic fellows over time, the proportion of URiM adult gastroenterology fellows still lags behind the rapidly changing minority racial/ethnic demographics of the US population.

Conclusions:

Despite the recent increased awareness of the importance of diversity among the healthcare workforce, there has not been significant growth in URiM representation among adult gastroenterology fellows over the last decade. To better reflect the gastroenterology disease patient population where a greater disease burden is prevalent in minoritized groups, attainable and actionable strategies for diversification amongst US adult gastroenterology fellows are urgently needed. Providing URiM students starting in grade school to those entering medical school, early exposure and mentorship via career awareness, access to shadowing and research opportunities in gastroenterology, is essential to ensure sustained interest and pursuit to a career in gastroenterology.

Shane Solger, MD

LANGUAGE JUSTICE: USING RESIDENT UNIONS AND NYACP AS A VEHICLE FOR HEALTH EQUITY

Summary:

Approximately 70,000 Haitian Creole speakers live in Kings County, New York, of which 34,000 report that they are not proficient in English. Haitian Creole is the second most commonly encountered language at the two local hospitals: Kings County Hospital Center (KCHC) and Downstate Medical Center. This poses issues for healthcare workers, as there are no in-person interpreters to communicate with patients during medical, surgical, or obstetric emergencies. While telephone and video interpretation are available, they suffer from intermittent long wait times and connectivity issues, and the video service is unavailable overnight in Haitian Creole.

Summary of Efforts:

The Committee of Interns and Residents (CIR) Union mobilized a multi-specialty group to approach KCHC's administration to address inappropriate interpreter access. We provided a list of concerns and anecdotes about how the lack of in-person interpretation services had compromised care. Unfortunately, we were told there was no plan to provide these services.

CIR then organized another meeting with our hospital's New York City Council Member, the product of which was a letter from herself to the KCHC CEO, stating that in-person interpretation was of extreme urgency. However, this did not lead to a definitive solution, as there were reportedly no hospital funds to pay for interpreters. Through CIR, we engaged multiple City Council Members and connected them with others on the council who were similarly concerned. We contacted the New York City Public Advocate's Office, and they also voiced their support to help address interpreter access.

Through the New York Chapter American College of Physicians (NYACP) and the Diversity, Equity, and Inclusion (DEI) Task Force, we were able to develop a relationship with the New York State Department of Health's Deputy Commissioner for the Office of Health Equity and Human Rights, who was also upset when she heard about our interpreter access.

Impact of Efforts:

At the beginning of the academic year, poor interpreter access was accepted by hospital administration and staff as the status quo. Now, this example of healthcare inequity has the attention of New York City and New York State elected and appointed officials as an urgent matter to be addressed. This effort exemplified how physician organizations in the form of specialty organizations such as NYACP, as well as resident unions, such as CIR, acted as powerful tools to advocate for better care and the civil rights of our patients. Through our efforts, we raised awareness for an issue that had been unaddressed for decades. In addition, we began conversations to help find legislative solutions to incorporate in-person Haitian Creole interpreters into the KCHC budget.

Resident/Fellow and Medical Student: Quality, Patient Safety and Advocacy

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ADDRESSING THE PROBLEM OF SMOKING BY A COMBINATION OF INPATIENT AND OUTPATIENT INTERVENTIONS - A QUALITY IMPROVEMENT PROJECT

Background:

Smoking is associated with the risk of developing Chronic Obstructive Pulmonary Disease (COPD). COPD is highly prevalent in the patient population that is served by Lincoln Hospital. Many patients continue to smoke despite multiple admissions for COPD exacerbation (COPDE). Our quality improvement (QI) project aimed to address this problem by identifying underlying gaps, and designing and implementing interventions that began with identifying active smokers during a COPDE admission and continued with outpatient follow-ups after discharge.

Methods:

Audits of our COPDE admissions identified the following gaps: (1) smoking history was not consistently addressed on admission, (2) referrals to outpatient smoking cessation program was not consistently made, (3) patients were not prescribed nicotine replacement therapy (NRT) during hospitalization and on discharge.

Gaps were addressed in phases. The first phase focused on documenting complete smoking in the history and physical note on COPDE admissions. A standardized COPDE admission template was created which had a dedicated smoking history field. This served to remind the residents to mention current/former/never smoker status and pack-years.

The second phase involved ensuring all active smokers were prescribed combination NRT in the form of nicotine patches and nicotine gums/lozenges during the hospitalization and on discharge. This was done to control their nicotine cravings during the hospitalization and also introduce them to the concept of NRT as an alternative to smoking.

The third phase focused on educating patients about smoking, assessing their willingness to quit, and referring them to our outpatient smoking cessation program. Patients were asked to fill out "œQuiz: What is your relationship with tobacco?"¹, a motivation assessment tool designed by the New York City Department of Health. Patients were then referred to our outpatient smoking cessation program where trained counselors followed up with them.

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Residents were educated at the beginning of each clinical block on the interventions. Education and sensitization were also done in dedicated noon conferences. Patients were educated using video resources. Members of the QI team met monthly to discuss audited data and resident feedback.

Results:

Our audit at the end of April 2023, showed that complete smoking history was documented on 81% of admissions (from baseline 38%). However, NRTs prescribed on discharge decreased to 23% from a baseline of 33%. Patients referred to our outpatient smoking cessation program increased to 9% from 6%, and 50% of referred patients attended the program.

Conclusion:

Our interventions showed improvement in two out of three gaps identified. Continuing resident education, reinforcement, and sensitization is likely to yield better results. Future measures would introduce motivational interviewing of patients, designing order sets for prescribing NRTs and expansion of these interventions to include patients admitted for heart failure exacerbation. These measures should improve morbidity, mortality, and healthcare utilization.

Bailey Perry, MD

Debbie Fermin, MD

Advocating C.H.A.N.G.E. for the most vulnerable by opposing the 340B Drug Pricing Program Carve Out

Background:

Safety net providers and safety net health care centers are an essential part of the healthcare framework. They serve a predominantly medicaid insured population along with underinsured and uninsured patients. These health centers offer a wide variety of services spanning from preventive medicine, mental health, BHI, Women's Health, HIV/AIDs Treatment and care and social services, among many others. This allows for the centers to target specific community needs, especially the vulnerable populations. (1) The 340b Drug Pricing Program protects the community through federal funding given to safety net health care centers to provide resources that are site specific. Other than the services mentioned above, 340b drug pricing program helps fund communitybased vaccination drives, mammogram screenings, discounted medications, mental health treatments, and care coordination. (2).

In chapter 56 of the 2020 laws, there was a distinct transition to be made which gave the Department of Health (DOH) power to authorize transition of the pharmacy benefit from a managed care to fee-for-service (3). However, in doing so this would divert much needed funding away from safety net providers and health centers which would in turn cut crucial services as mentioned above (4). Over 50% of health centers across New York (NY) will have to scale back on or eliminate diabetes education programs, care management for critically ill patients and community outreach to expand access (5).

Through C.H.A.N.G.E (Community for Healthcare Access and Network for Growth and Equity) two resident physicians in NYC are able to use social media as a platform to advocate for increased access to care for medically underserved and vulnerable patient populations by opposing the 340B carve out that is currently pending initiation amid the 2023 NYS Budget

Methods:

To enhance the reach and improve health awareness for our audience, we relaunched our Instagram account (@nycdoctors4change) on April 10, 2023. This relaunching consisted of 4 phases of posting instagram posts, stories and reels in a span of 4 weeks. During phase 1, we rebranded with a new logo and re-introduced the mission and vision of our advocacy page. During phase 2 and 3, we shared information regarding access to care such as Health Insurance basics, Federally Qualified Health Centers (FQHCs) services and locations in New York City, as well as introduced the residents behind the project. During phase 4, we gathered data through a story poll with a 24-hour availability for response to better understand our audience's awareness on FQHCs, 340b Drug Discount Program and 340b carve out. We also gathered data from 3 FQHCs located in Midtown, Upper West Side and Central Harlem through the Azara database. The data showed the number of insured patients and HIV/AIDs treatment and care services that were funded by the 340b Drug Discount Program. We also created reels explaining the 340b Drug

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Discount Program and how the 340b carve-out will negatively impact access to care for the underserved communities in New York City (NYC). We used the Instagram Algorithm insights to determine the number of accounts we have reached, as well as likes and follows.

Evaluation:

Between April 10, 2023 and May 5, 2023, we reached a total of 7,105 Instagram users. The majority (52.1%) of our audience is from the United States and 25.1% of which are from New York City. With the reels we posted, we garnered a total of more than 15,000 views. The poll questions results are as follows: *Are you aware of federally qualified health centers?* Yes 47% (17) and 53% (19), *Do you know that FQHCs offer services such as preventive health, mental health, women's health, HIV/AIDS treatment & care and social services?* YES 48% (16) and NO 52% (17), *Do you think it is important for new Yorkers to have access to health care?* YES 95% (37) and NO 5% (2), *Are you aware of the 340b carve out?* YES 14% (5) and NO 86% (31) and *lastly, Did you know that FQHC services are in jeopardy of getting defunded through the 340b carve out?* YES 3% (1), NO 97% (31). The data mentioned above showed how our online audience had no awareness of the 340b Drug Discount Program and Carve-out. The data from the Azara database showed a total of 940 HIV/AIDS patients across three federally qualified health center sites in NYC will be in jeopardy of losing benefits. Therefore increasing the risk of unnecessary hospitalizations, medication non-adherence and care coordination (6). A total of 2,018 uninsured patients will also lose the sliding-fee per visit benefits from the 340b drug discount program and therefore will intensify the financial disparity further.

Conclusion and Limitations:

The data that we have collected over the past 4 weeks demonstrates the lack of public knowledge about the available valuable resources provided by safety net healthcare centers for the most vulnerable and medically underserved patient populations throughout New York City. Nearly 100% of our followers that took part in our poll had no knowledge of the potential financial impact of the 340B Drug Pricing Program carveout on safety net clinics in New York state. Safety net providers in New York state will be defunded of providing essential services to the community and eventually create more healthy disparities for the underinsured and uninsured patients. By implementing weekly Instagram posts to educate our followers, we have reached a total 7,000 accounts in a span of 4 weeks. We hope to keep posting on a weekly basis to expand our following and reach more accounts. Our posts and reels will hopefully spread awareness to the general public through education on current and relevant access to healthcare issues.

Challenges that we have faced during this project include lack of time as we have collected our data within 4 weeks. We also struggled to obtain standardized data across all safety net health centers and data from Medicaid to further educate ourselves on the potential threat the carevout has on NYC as a whole. Although social media is an excellent avenue to educate the general public with short video clips, our content reached a majority of users (83.3%) who identify as female within the 25-34 age range (66.4%). In the future, we plan to produce posts and reels that will reach men too.

Another challenge that we have faced while researching the 340B carevout is the lack of legitimate resources. A lot of our information was obtained through resources on the Community Health Care Association of New York State's Website and subsidized that information with the Department of Health website.

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Resources:

1. [Safety-Net Health Care Facilities](#) -

<https://www.nyc.gov/assets/manhattan3/downloads/fellowship/Safety-Net-Providersin-CB-3-Final.pdf>

2. [340B Simplified](#) - <https://www.youtube.com/watch?v=SpeqIW7ALr8>

3. [NY State Watch](#) - https://nystatewatch.net/htbin/web_emmaster.com?NY23RSB05136

4. [Don't "Carve Out" New York's Most Vulnerable. – Repeal the Medicaid Pharmacy Carve Out](#) -

<https://www.savenysafetynet.com/in-the-news/dont-carve-out-new-yorks-most-vulnerable-repeal-the-medicare-pharmacycarve-out>

5. [New York's Community Health Centers Depend on the 340B Drug Discount Program](#) -

<https://static1.squarespace.com/static/5f7ddc1bee4dd8763921c00e/t/5f984cb85c84ae4a56ec267f/1603816632723/CHCA>

NYS+Overview_Final.pdf

6. [Joint SNP Pharmacy Impact](#) -

<https://static1.squarespace.com/static/5f7ddc1bee4dd8763921c00e/t/5f973050989b9964b2a3da97/1603743826733/Joint>

+SNP+Pharmacy+Impact-3+Pgs-9.10.20.pdf

Resident/Fellow Clinical Vignette

Debbie Fermin, MD

Advocating C.H.A.N.G.E. for the most vulnerable by opposing the 340B Drug Pricing Program Carve Out

attached

Calvin Albrecht, M.D.

Anlage, Troy; Palli, Rohith; Sun, James; Hellerstedt, Sage; Ghimire, Anima; & Louie, Ted

Evaluating the Successes & Limitations of the URMC COVID-19 Monoclonal Antibody Program

Background: More than 62,000 fatalities have been attributed to COVID-19 in New York State, including greater than 2,300 in Monroe County. In 2021, therapeutic monoclonal antibodies (mAbs) were distributed to stem the tide of surging COVID-19 fatalities after small studies demonstrated reduced hospitalization rates and deaths. At the University of Rochester Medical Center (URMC), a program was established to have primary care physicians refer outpatients with mild disease and risk factors for disease progression to be considered for infusions of mAbs in the Infectious Disease (ID) clinic or Emergency Department (ED). It is unknown what the clinical outcomes of these patients were, or if the allocation of mAbs was equitable for patients of different socioeconomic groups.

Objective: The purpose of this study was to: 1) determine the clinical outcomes of patients receiving therapeutic mAbs, and 2) assess the equity of mAb allocation at URMC.

Methods: We performed a retrospective study of 327 outpatients who were deemed high risk for COVID-19 disease progression and who received mAbs in ID clinic or ED after referral from their primary care physician. The study population was obtained via query of a pharmacy database. A chart review of these patients was completed to track hospitalization rates within 30 days of mAb administration, severity of COVID-19 disease (e.g. maximum supplemental oxygen requirements, ICU admission, shock, etc.), and COVID-19-related deaths within 90 days of a positive COVID-19 test. Stratification of socioeconomic status (SES) was achieved via the social vulnerability index (SVI), with higher scores reflecting greater vulnerability. Each patient's home address was converted to SVI using a CDC database and Tigris package in R.

Results: A total of 327 patients were included in our analysis. 28 patients (8.56%) were hospitalized or visited the ED due to COVID-19. Of these, 16 patients (57.1%) experienced "mild or moderate" disease (no documented hypoxia), 8 (28.6%) experienced "severe" disease (documented hypoxia requiring minimally-invasive supplemental oxygen), and 4 (14.3%) experienced "critical" disease (ICU admission, high-flow nasal cannula oxygen, intubation, shock). Three patients (0.9%) died of COVID-19-related causes within 90 days of a positive COVID test. Of patients with a recorded SVI (N = 303), 190 (62.7%) comprised the bottom two (lower SVI) quintiles while only 113 (37.3%) accounted for the bottom three (higher SVI) quintiles.

Conclusions: The vast majority of patients who received therapeutic mAbs avoided hospitalization, ED encounters, and severe disease. Patients with lower SVI received a disproportionately higher share of mAb infusions. Future programs requiring allocation of novel treatments should take into account patient SVI during the screening process and attempt to remove barriers to accessing care.

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IMPROVING ACURACY OF IDENTIFYING THE COMMUNITY PHYSICIAN OF INPATIENTS: A MEDICAL STUDENT DRIVEN INTERPROFESSIONAL QUALITY IMPROVEMENT PROJECT

Since the 1990s, the rise of the field of Hospitalist Medicine has resulted in more handoffs in care, namely between the inpatient hospitalist and the community provider. The increase in handoffs can lead to clinical inefficiency, suboptimal quality of care, higher readmission rates, redundancy of testing, and costlier care. In our institution, it is important to document the correct primary care physician (PCP) in the electronic medical record (EMR) because once completed the discharge summary is automatically sent electronically. We hypothesized that one of the gaps in care could be from inaccurate documentation of the community physician in the inpatient EMR. One aim of this project was to assess the accuracy of the outpatient PCP listed in the inpatient EMR on the internal medicine (IM) and elective surgery teaching services. A second aim was to improve the accuracy of PCP documentation in the EMR using the Plan-Do-Study-Act cycles and standardizing brief, efficient interprofessional meetings with a task-oriented framework. In 2016, an analysis of 42 patients on the IM service at our hospital showed that PCP accuracy was 59.5%. In late 2016, to identify weak links in the system, medical students created an interprofessional workgroup, which included registration, information technology specialists, and nurses. Following these meetings, improvements in the system increased the PCP accuracy to 81.1% in 2017 and 86.8% in early 2019. During this time, interprofessional meetings were held periodically to provide informal feedback to all team members, which led to an improved accuracy of 94.3% in late 2019. Patients with the incorrect PCP and "unknown PCP" listed in the EMR decreased from 40.5% to 6%. This increase in accuracy was likely due to several factors, including the initiation of the "Change PCP" order, increased engagement of the interprofessional team, and nursing staff contributions and support. The PCP accuracy for 70 patients on the elective surgery service in 2018 increased from 90.0% to 96.7% after another series of meetings with the interprofessional team. The impact of the "Change PCP" order was demonstrated between October 2016 through October 2017 by its use 153 times (138 IM, 15 elective surgery). During that time, therefore, 153 discharge summaries reached the correct, rather than the incorrect, community physician. Accurate identification and recording of each patient's PCP within the EMR are essential in establishing communication between inpatient and community clinicians. This study shows that a medical student-driven interprofessional quality improvement project can improve the accuracy of this important piece of demographic data. This study shows this objective can be achieved with standard quality improvement (plan-do-study-act cycle) methods coupled with frequent, structured, short, efficient meetings with specific tasks assigned to individuals.

Resident/Fellow/Student Quality

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MITIGATING EXCESSIVE LABORATORY TESTING IN HOSPITALIZED PATIENTS: AN INTERDISCIPLINARY QUALITY IMPROVEMENT INITIATIVE

Purpose: Excessive laboratory testing performed on hospitalized patients is harmful, costly, and often does not provide information that impacts clinical decision making. This project sought to decrease excessive laboratory testing across two medicine resident-staffed medical-surgical units at a quaternary care center with the aim to decrease median laboratory tests per patient stay by 10% over a 4-month period.

Methods: Automated electronic medical record data mining was utilized to collect baseline data on the total number of laboratory tests performed per patient encounter. Patient encounters with a length of stay greater than 10 days were excluded to eliminate outliers, and manual verification of the automated data collected was performed on an early data set. Data collected was broken into monthly subsets and a 12-month look back revealed a baseline median of 11 laboratory tests per patient encounter, with an average of 130 patient encounters per month. Through a series of PDSA cycles a variety of interventions were utilized (i.e. visual aids, email reminders, check lists, and incorporating discussion of the frequency of laboratory testing into work rounds and interdisciplinary team rounds) in an attempt to improve "mindful" laboratory ordering by interns, residents and attendings, with bi-weekly meetings held to surveil and assess the impact of selected interventions.

Results: Preliminary data demonstrated that these interventions were successful in reducing the total number of laboratory tests. There was a decrease in the median number of laboratory tests per patient encounter from 11 to 9 (calculated using the median of the median of data collected for the preceding four months) representing roughly an 18% decrease, surpassing the initial target of a 10% reduction. However, recent data demonstrates an upward resurgence in this number, most recently in July 2023 to a median laboratory total of 11.

Conclusion: Through multiple interventions a measurable reduction in total number of laboratory tests per patient encounter was observed and suggests that routine laboratory testing may be excessively utilized in the care of hospitalized patients. Notably, this study was limited by small sample size, and more recent data suggesting difficulty in maintaining a sustained response. Our team speculates that this rise in laboratory testing may be due to a decrease in messaging efforts, as well as unit staffing by new residents at the start of the academic year. Future efforts will be aimed at maintaining a sustained response, in addition to examining both resident and nursing perceptions of laboratory testing reduction. Furthermore, means of objectively measuring the possible benefits of laboratory testing reduction, including improved patient and employee satisfaction, and reduced costs, are also being discussed.

Mary LoCastro

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Policy Analysis of New York State Legislation to Improve Equitable Access to Assistive Technology for People with Disabilities

Introduction

Providing access to durable medical equipment (DME) and assistive technology (AT) is vital to better managing the healthcare needs of people with developmental disabilities.¹ AT is the broader umbrella category which may be defined as, “any item, piece of equipment, or product system used to increase, maintain, or improve functional capabilities of an individual”.² DME is a subset of AT that is obtained via insurance reimbursement. DME and AT can prevent prolonged hospitalization for medical complications such as pressure sores in an adolescent with spina bifida and missed school days for escalating behaviors in an autistic teen who needs noise-cancelling headphones, a communication device, or weighted blanket for sensory concerns. DME and AT enable people with disabilities to fully engage in activities at home and in their communities,³ ultimately promoting better health outcomes, improved quality of life and greater social participation.⁴

Rationale

Unfortunately, families face a myriad of barriers in obtaining DME, especially economic ones.⁵ Availability of assistive devices is often dictated by a closed market system run primarily by relatively small, regional or national companies.⁶ Both public and private health insurances cover a small fraction of the cost of equipment deemed medically necessary⁷ and the process to establish medical necessity for insurance reimbursement of DME can be difficult, lengthy, and delayed by initial denials. Timely delivery of DME is especially important for young children during critical windows for brain development and motor learning. It can take more than a year for a child with cerebral palsy to get a wheelchair, and families routinely struggle with getting a sleep safe bed for a child with epilepsy.⁸ Ultimately, many assistive technologies become inaccessible to those who cannot afford them privately.^{4,6} While grassroots efforts exist to provide DME/AT for families, policy action is urgently needed to ameliorate inequities that are structurally embedded in the insurance reimbursement process.

Methods

A policy analysis of three bills proposed in the New York State Legislature and supported by the New York Chapter of the American College of Physicians Services was conducted. If approved, these bills would help to improve access to DME/AT for people with disabilities in New York State. Bills reviewed included the following: (1) Gold Card Program, (2) Same Specialty Peer Review, (3) Collective Negotiations Review.

Results

1) Gold Card Program (A859/S2680)

The “Gold Card” program would exempt physicians and other care providers from prior authorization requirements if they receive at least 90% approval for prior authorizations for specific health care treatments.⁹ The goal of this bill is to prevent unnecessary roadblocks to

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patient care, while also rewarding evidence-based treatment guidelines.¹⁰ The current prior authorization requirements, including those for DME/AT, interfere with timely access to adaptive equipment, thereby interfering with patient health and quality of life. On June 10, 2023 it was decided that the Senate Rules Committee would determine when this bill will go to the Senate Floor for action.

2) Same Specialty Peer Review (A879/S599)

Same Specialty Peer Review would require that when the clinical peer reviewer is a physician, he or she would be board-certified or board eligible in the same or similar specialty as the physician who typically recommends the treatment or manages the condition under review. Currently, the only qualification required for a person who, on behalf of a health care plan or insurer, may deny payment for an otherwise covered benefit on the basis that it is not medically necessary, is that such reviewer be a licensed physician and trained in utilization review. There is no requirement that the reviewing agent be trained in the same specialty as the health care professional who would typically recommend the treatment that is under review.¹¹ Therefore, a patient's treatment recommendation may be reviewed by a provider who is not qualified to review the treatment that has been recommended. This can result in medically necessary-care being inappropriately denied or unnecessarily delayed, especially as it pertains to timely access to DME/AT. Although in 2022 this legislation passed both the Assembly and the Senate, on December 30, 2022, it was vetoed by the Governor.

3) Collective Negotiations Review (A6019/S4785)

Collective Negotiations Review would authorize collective bargaining for physicians. Specifically, this legislation would allow health care providers in New York State to conduct collective negotiations by creating a system under which the state would closely monitor those negotiations, facilitate resolution of negotiation disputes, and actively monitor implementation of agreements.¹² Giving health care providers greater ability to advocate for patients is critical now more than ever before, considering that large health maintenance organizations (HMO) control huge shares of the health insurance market. This imbalance of power in favor of the managed care plans results in burdensome processes and unjustifiably long wait times for obtaining pre-authorization, directly affecting patients' access to DME/AT. Passage of this legislation would give physicians greater ability to advocate for patients in contract negotiations, thereby improving patient care. Neither of these bills made it to a vote by the Assembly or Senate, however they can be re-introduced next year.

Conclusion

Bills supported by the NYACP including the Gold Card Program, Same Specialty Peer Review, and Collective Negotiations Review would help address the urgent need to reform the insurance reimbursement process for DME and AT. Physicians caring for people with disabilities can improve care by contributing to quality improvement of the DME process, and by engaging in advocacy efforts at the state level. New York State must take action to improve equitable access to DME and AT for people with disabilities, in order to support healthy, vibrant, and socially-engaged lives or all.

Kingshuk Mazumdar, MD, MBA

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A Multi-Disciplinary Team-Based Initiative to Reduce Chronic Obstructive Pulmonary Disease Readmissions at Highland Hospital

Chronic obstructive pulmonary disease (COPD) is a progressive disorder of inspiratory airflow limitation and expiratory air trapping that contributes substantially to global morbidity and mortality. As a consequence of its high prevalence and proclivity for acute exacerbation requiring frequent emergency department utilization, hospitalization, and ambulatory evaluation, COPD places significant economic strain on the health care system. It is estimated that 20% of patients hospitalized with a COPD exacerbation are readmitted within 30 days of discharge. Worryingly, this burden has worsened with the total annual cost of COPD care in the United States rising to nearly \$50 billion. Reducing COPD readmissions reduction has become a priority for health systems across the country, notably with its inclusion in the Medicare Hospital Readmission Reductions Program (MHRRP) in 2015. A review of the literature suggests numerous interventions to improve COPD readmissions, including early identification of high-risk patients, standardization of care, and comprehensive discharge planning.

The COPD Readmission Prevention Committee is a multidisciplinary Quality Improvement committee at Highland Hospital (HH), a 260-bed community hospital in Rochester, New York. This committee works to reduce readmissions by standardizing care and improving provider compliance with the Global Initiative for Obstructive Lung Disease (GOLD) guidelines for management of COPD exacerbations. An additional aim of the committee is to identify and assess compliance failures to guide future interventions.

Thirty-day COPD readmission data from HH collected by the Quality Improvement department between July 2021 and December 2023 were reviewed. Guideline failures with regard to a numerous metrics were identified to better understand factors leading to re-hospitalization. Changes presented in a Clinical Practice Guideline update (CPGU) at the start of FY23 were used to assess for change in compliance over subsequent months.

There were 310 total admissions to HH for COPD over this time period, with 59 readmissions within 30 days of discharge. The average 30-day readmission rate was 19.0%, higher than the target of 15.48%. Readmission rate did not improve following the CPGU. Metrics with the highest pre- and post-update compliance included appropriate antibiotic administration and smoking cessation counseling. Appropriateness of steroid administration, although not improved in FY23, generally remained above goal. Pharmacist counseling, spacer education, and conversion to metered-dose inhaler (MDI) therapy within 48-hours of discharge were below target prior to FY23 and unimpacted by CPGU. These represent areas selected for further intervention.

A Single Center Quality Improvement Study to assess appropriate use of telemonitoring.

Background:

Telemonitoring has been a valuable resource for hospitalized patients. However inappropriate use of this resource has been reported nationally. Appropriate and timely intervention in telemonitoring has shown to decrease the inappropriate use especially by using electronic medical record (EMR) order sets based on American Heart Association (AHA) guidelines. Reports of nearly 70% reduction in inappropriate use of telemonitoring have been published. We are a safety net hospital, situated in one of the poorest congressional districts in the nation and nearly 70% of our patients are covered by Medicaid. In such a setting it becomes imperative to use these resources judiciously.

Method:

We have retrospectively analyzed patients admitted to our telemetry floors from January 1, 2022, to May 31, 2022. AHA 2017 guidelines were used in the analysis of our patients. Data was collected from our EMR system regarding indications, duration of telemetry, events recorded on telemetry and outcomes of the events. Analysis was done using Microsoft Excel and IBM SPSS.

This is an ongoing project, and a six-month educational intervention will be undertaken, and the effect of intervention will be assessed among patients admitted between May 2023 and December 2023 (post-intervention).

Results:

A total of 272 patients were admitted to our telemetry units during, out of which 78 patients (28.6%) did not meet the requirement of telemonitoring as per AHA guidelines. 68 patients were monitored for appropriate duration (32 %). Baseline demographics and other findings are shown in the tables below.

Conclusion:

In our study we observed a high rate of inappropriate use of Telemonitoring in hospitalized patients. In such settings it is important to use resources judiciously.

Educational intervention regarding AHA guidelines and EMR order sets may improve the use of telemonitoring.

TIA-transient ischemic attack, STEMI-ST segment elevation MI, NSTEMI-Non-ST segment elevation MI, HF-Heart Failure, CVA-Cerebrovascular event, VT-Ventricular tachycardia, PVCs-premature ventricular complex, ICU-Intensive care unit.

Table 1: Baseline Demographics and other findings. (N=272)

Mean age of patients 57 years

Percentage of male: female patients 60: 40

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Mean duration of Telemetry use 4 days

Mean length of stay 4.5 days

Most common arrhythmia Atrial fibrillation- 13%

Percentage of patients with clinically significant events (Sustained VT, non-sustained VT, Atrial Fibrillation, Atrial Flutter, Bradycardia, Sick sinus PVCs)-17%

Percentage of patients needing action for events/change in management

(Actions included changes, or starting new medication, cardioversion, or transfer to ICU)-9%

Percentage of patients with cardiac monitor used until discharge.-93%

Bessie Roca Loor, Medical Student

Dr. Mill Etienne, MD, MPH, FAAN, FANA, FAES

Opportunity for racial and ethnic diversity in Adult Gastroenterology Fellowship Pipeline

Background:

The American Society for Gastrointestinal Endoscopy (ASGE) conducted a survey in 2012 that resulted in less than 10% of practicing gastroenterologists self-identifying as Hispanic, African Americans, and Americans Indian and/or Alaskan Native (1). Recent studies have identified that the Latino populations, both nationally and globally, are disproportionately affected by both Non-alcoholic fatty liver disease (NAFLD) and Non-alcoholic steatohepatitis (NASH) compared to non-Latino white populations (2). This gap implies that diversifying the gastroenterology workforce is an indispensable approach to address equity in patient care as physicians Underrepresented in Medicine (URiM) are more likely to practice in minority underserved areas as well as understand social and cultural norms of underrepresented groups which, in turn, lead to increased patient adherence to medical treatment(1, 3). We investigated the trends of URiM representation, as defined by the Licensing Committee on Medical Education (LCME), among adult gastroenterology fellows.

Methods:

This is a quantitative analysis of the Accreditation Council for Graduate Medical Education (ACGME) Data Resource Book from 2011 to 2022. This data was publicly available therefore no IRB approval was required. Demographic data including race, ethnicity, and gender of US adult gastroenterology fellows were extracted and analyzed in Microsoft Excel. Additionally, a multiracial category was introduced as an option in 2020. Chi-Square test was utilized and expected values were calculated using the 2010 census data (2011 to 2019) and the 2020 US census data for 2020 onwards.

Results:

There were 17764 adult gastroenterology fellows between 2010-2022. Chi-square analysis demonstrated significant underrepresentation of Black, Hispanic and Native Americans ($p < 0.0001$) in US adult gastroenterology fellowship programs. As seen in Figure 1, 4% were Black (795/17764), 6% were Hispanic (1008/17764), and 0.05% were Native American (10/17764). Although trend analysis demonstrated a gradual increase in percentage of Black and Hispanic fellows over time, the proportion of URiM adult gastroenterology fellows still lags behind the rapidly changing minority racial/ethnic demographics of the US population.

Conclusions:

Despite the recent increased awareness of the importance of diversity among the healthcare workforce, there has not been significant growth in URiM representation among adult gastroenterology fellows over the last decade. To better reflect the gastroenterology disease patient population where a greater disease burden is prevalent in minoritized groups, attainable and actionable strategies for diversification amongst US adult gastroenterology fellows are urgently needed. Providing URiM students starting in grade school to those entering medical school, early exposure and mentorship via career awareness, access to shadowing and research opportunities in gastroenterology, is essential to ensure sustained interest and pursuit to a career in gastroenterology.

Shane Solger, MD**LANGUAGE JUSTICE: USING RESIDENT UNIONS AND NYACP AS A VEHICLE FOR HEALTH EQUITY**

Summary:

Approximately 70,000 Haitian Creole speakers live in Kings County, New York, of which 34,000 report that they are not proficient in English. Haitian Creole is the second most commonly encountered language at the two local hospitals: Kings County Hospital Center (KCHC) and Downstate Medical Center. This poses issues for healthcare workers, as there are no in-person interpreters to communicate with patients during medical, surgical, or obstetric emergencies. While telephone and video interpretation are available, they suffer from intermittent long wait times and connectivity issues, and the video service is unavailable overnight in Haitian Creole.

Summary of Efforts:

The Committee of Interns and Residents (CIR) Union mobilized a multi-specialty group to approach KCHC's administration to address inappropriate interpreter access. We provided a list of concerns and anecdotes about how the lack of in-person interpretation services had compromised care. Unfortunately, we were told there was no plan to provide these services.

CIR then organized another meeting with our hospital's New York City Council Member, the product of which was a letter from herself to the KCHC CEO, stating that in-person interpretation was of extreme urgency. However, this did not lead to a definitive solution, as there were reportedly no hospital funds to pay for interpreters. Through CIR, we engaged multiple City Council Members and connected them with others on the council who were similarly concerned. We contacted the New York City Public Advocate's Office, and they also voiced their support to help address interpreter access.

Through the New York Chapter American College of Physicians (NYACP) and the Diversity, Equity, and Inclusion (DEI) Task Force, we were able to develop a relationship with the New York State Department of Health's Deputy Commissioner for the Office of Health Equity and Human Rights, who was also upset when she heard about our interpreter access.

Impact of Efforts:

At the beginning of the academic year, poor interpreter access was accepted by hospital administration and staff as the status quo. Now, this example of healthcare inequity has the attention of New York City and New York State elected and appointed officials as an urgent matter to be addressed.

This effort exemplified how physician organizations in the form of specialty organizations such as NYACP, as well as resident unions, such as CIR, acted as powerful tools to advocate for better care and the civil rights of our patients. Through our efforts, we raised awareness for an issue that had been unaddressed for decades. In addition, we began conversations to help find legislative solutions to incorporate in-person Haitian Creole interpreters into the KCHC budget.

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ADDRESSING THE PROBLEM OF SMOKING BY A COMBINATION OF INPATIENT AND OUTPATIENT INTERVENTIONS - A QUALITY IMPROVEMENT PROJECT

Background:

Smoking is associated with the risk of developing Chronic Obstructive Pulmonary Disease (COPD). COPD is highly prevalent in the patient population that is served by Lincoln Hospital. Many patients continue to smoke despite multiple admissions for COPD exacerbation (COPDE). Our quality improvement (QI) project aimed to address this problem by identifying underlying gaps, and designing and implementing interventions that began with identifying active smokers during a COPDE admission and continued with outpatient follow-ups after discharge.

Methods:

Audits of our COPDE admissions identified the following gaps: (1) smoking history was not consistently addressed on admission, (2) referrals to outpatient smoking cessation program was not consistently made, (3) patients were not prescribed nicotine replacement therapy (NRT) during hospitalization and on discharge.

Gaps were addressed in phases. The first phase focused on documenting complete smoking in the history and physical note on COPDE admissions. A standardized COPDE admission template was created which had a dedicated smoking history field. This served to remind the residents to mention current/former/never smoker status and pack-years.

The second phase involved ensuring all active smokers were prescribed combination NRT in the form of nicotine patches and nicotine gums/lozenges during the hospitalization and on discharge. This was done to control their nicotine cravings during the hospitalization and also introduce them to the concept of NRT as an alternative to smoking.

The third phase focused on educating patients about smoking, assessing their willingness to quit, and referring them to our outpatient smoking cessation program. Patients were asked to fill out "æQuiz: What is your relationship with tobacco?"¹, a motivation assessment tool designed by the New York City Department of Health. Patients were then referred to our outpatient smoking cessation program where trained counselors followed up with them.

Residents were educated at the beginning of each clinical block on the interventions. Education and sensitization were also done in dedicated noon conferences. Patients were educated using video resources. Members of the QI team met monthly to discuss audited data and resident feedback.

Results:

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Our audit at the end of April 2023, showed that complete smoking history was documented on 81% of admissions (from baseline 38%). However, NRTs prescribed on discharge decreased to 23% from a baseline of 33%. Patients referred to our outpatient smoking cessation program increased to 9% from 6%, and 50% of referred patients attended the program.

Conclusion:

Our interventions showed improvement in two out of three gaps identified. Continuing resident education, reinforcement, and sensitization is likely to yield better results. Future measures would introduce motivational interviewing of patients, designing order sets for prescribing NRTs and expansion of these interventions to include patients admitted for heart failure exacerbation. These measures should improve morbidity, mortality, and healthcare utilization.

Bailey Perry, MD

Debbie Fermin, MD

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Advocating C.H.A.N.G.E. for the most vulnerable by opposing the 340B Drug Pricing Program Carve Out

Background:

Safety net providers and safety net health care centers are an essential part of the healthcare framework. They serve a predominantly medicaid insured population along with underinsured and uninsured patients. These health centers offer a wide variety of services spanning from preventive medicine, mental health, BHI, Women's Health, HIV/AIDs Treatment and care and social services, among many others. This allows for the centers to target specific community needs, especially the vulnerable populations. (1) The 340b Drug Pricing Program protects the community through federal funding given to safety net health care centers to provide resources that are site specific. Other than the services mentioned above, 340b drug pricing program helps fund communitybased vaccination drives, mammogram screenings, discounted medications, mental health treatments, and care coordination. (2).

In chapter 56 of the 2020 laws, there was a distinct transition to be made which gave the Department of Health (DOH) power to authorize transition of the pharmacy benefit from a managed care to fee-for-service (3). However, in doing so this would divert much needed funding away from safety net providers and health centers which would in turn cut crucial services as mentioned above (4). Over 50% of health centers across New York (NY) will have to scale back on or eliminate diabetes education programs, care management for critically ill patients and community outreach to expand access (5).

Through C.H.A.N.G.E (Community for Healthcare Access and Network for Growth and Equity) two resident physicians in NYC are able to use social media as a platform to advocate for increased access to care for medically underserved and vulnerable patient populations by opposing the 340B carve out that is currently pending initiation amid the 2023 NYS Budget

Methods:

To enhance the reach and improve health awareness for our audience, we relaunched our Instagram account (@nycdoctors4change) on April 10, 2023. This relaunching consisted of 4 phases of posting instagram posts, stories and reels in a span of 4 weeks. During phase 1, we rebranded with a new logo and re-introduced the mission and vision of our advocacy page. During phase 2 and 3, we shared information regarding access to care such as Health Insurance basics, Federally Qualified Health Centers (FQHCs) services and locations in New York City, as well as introduced the residents behind the project. During phase 4, we gathered data through a story poll with a 24-hour availability for response to better understand our audience's awareness on FQHCs, 340b Drug Discount Program and 340b carve out. We also gathered data from 3 FQHCs located in Midtown, Upper West Side and Central Harlem through the Azara database. The data showed the number of insured patients and HIV/AIDs treatment and care services that were funded by the 340b Drug Discount Program. We also created reels explaining the 340b Drug Discount Program and how the 340b carve-out will negatively impact access to care for the underserved communities in New York City (NYC). We used the Instagram Algorithm insights to determine the number of accounts we have reached, as well as likes and follows.

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Evaluation:

Between April 10, 2023 and May 5, 2023, we reached a total of 7,105 Instagram users. The majority (52.1%) of our audience is from the United States and 25.1% of which are from New York City. With the reels we posted, we garnered a total of more than 15,000 views. The poll questions results are as follows: *Are you aware of federally qualified health centers?* YES 47% (17) and NO 53% (19), *Do you know that FQHCs offer services such as preventive health, mental health, women's health, HIV/AIDS treatment & care and social services?* YES 48% (16) and NO 52% (17), *Do you think it is important for New Yorkers to have access to health care?* YES 95% (37) and NO 5% (2), *Are you aware of the 340b carve out?* YES 14% (5) and NO 86% (31) and lastly, *Did you know that FQHC services are in jeopardy of getting defunded through the 340b carve out?* YES 3% (1), NO 97% (31). The data mentioned above showed how our online audience had no awareness of the 340b Drug Discount Program and Carve-out. The data from the Azara database showed a total of 940 HIV/AIDS patients across three federally qualified health center sites in NYC will be in jeopardy of losing benefits. Therefore increasing the risk of unnecessary hospitalizations, medication non-adherence and care coordination (6). A total of 2,018 uninsured patients will also lose the sliding-fee per visit benefits from the 340b drug discount program and therefore will intensify the financial disparity further.

Conclusion and Limitations:

The data that we have collected over the past 4 weeks demonstrates the lack of public knowledge about the available valuable resources provided by safety net healthcare centers for the most vulnerable and medically underserved patient populations throughout New York City. Nearly 100% of our followers that took part in our poll had no knowledge of the potential financial impact of the 340B Drug Pricing Program carveout on safety net clinics in New York state. Safety net providers in New York state will be defunded of providing essential services to the community and eventually create more healthy disparities for the underinsured and uninsured patients. By implementing weekly Instagram posts to educate our followers, we have reached a total 7,000 accounts in a span of 4 weeks. We hope to keep posting on a weekly basis to expand our following and reach more accounts. Our posts and reels will hopefully spread awareness to the general public through education on current and relevant access to healthcare issues.

Challenges that we have faced during this project include lack of time as we have collected our data within 4 weeks. We also struggled to obtain standardized data across all safety net health centers and data from Medicaid to further educate ourselves on the potential threat the carveout has on NYC as a whole. Although social media is an excellent avenue to educate the general public with short video clips, our content reached a majority of users (83.3%) who identify as female within the 25-34 age range (66.4%). In the future, we plan to produce posts and reels that will reach men too.

Another challenge that we have faced while researching the 340B carveout is the lack of legitimate resources. A lot of our information was obtained through resources on the Community Health Care Association of New York State's Website and subsidized that information with the Department of Health website.

Resources:

1. Safety-Net Health Care Facilities -

<https://www.nyc.gov/assets/manhattan/cb3/downloads/fellowship/Safety-Net-Providersin-CB-3-Final.pdf>

2. 340B Simplified - <https://www.youtube.com/watch?v=SpeqIW7ALr8>

3. NY State Watch - https://nystatewatch.net/htbin/web_emmaster.com?NY23RSB05136

Resident/Fellow/Student Quality

4. [Don't "Carve Out" New York's Most Vulnerable. – Repeal the Medicaid Pharmacy Carve Out](https://www.savenysafetynet.com/in-the-news/dont-carve-out-new-yorks-most-vulnerable-repeal-the-medicaid-pharmacycarve-out) -
<https://www.savenysafetynet.com/in-the-news/dont-carve-out-new-yorks-most-vulnerable-repeal-the-medicaid-pharmacycarve-out>
5. [New York's Community Health Centers Depend on the 340B Drug Discount Program](https://static1.squarespace.com/static/5f7ddc1bee4dd8763921c00e/t/5f984cb85c84ae4a56ec267f/1603816632723/CHCA+NYS+Overview_Final.pdf) -
https://static1.squarespace.com/static/5f7ddc1bee4dd8763921c00e/t/5f984cb85c84ae4a56ec267f/1603816632723/CHCA+NYS+Overview_Final.pdf
6. [Joint SNP Pharmacy Impact](https://static1.squarespace.com/static/5f7ddc1bee4dd8763921c00e/t/5f973050989b9964b2a3da97/1603743826733/Joint+SNP+Pharmacy+Impact-3+Pgs-9.10.20.pdf) -
<https://static1.squarespace.com/static/5f7ddc1bee4dd8763921c00e/t/5f973050989b9964b2a3da97/1603743826733/Joint+SNP+Pharmacy+Impact-3+Pgs-9.10.20.pdf>