

New York



New York Chapter
American College of Physicians

Resident/Fellow and Medical Student
Forum

Poster Presentations

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660 Albany-Shaker Road
Albany, NY



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American College of Physicians

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Forum

Medical Student Clinical Vignette

Medical Student Clinical Vignette

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Bronx Care

"The Iron Lady": A Case of Hyperferritinemia in Alcohol Use Disorder

High serum ferritin level (hyperferritinemia) is commonly detected incidentally, or purposely, when ferritin is ordered to screen for microcytic anemia, or iron overload in patients. It remains a concern to clinicians because of its possible varied etiologies and serious complications involving multiple organs. A high ferritin level does not accurately reflect iron stores hence a systematic approach in evaluation is needed.

34-year-old black female with past medical history of anemia, dyslipidemia, alcohol use disorder (AUD) with multiple history of intoxication and emergency room visits since her twenties admitted for severe alcohol withdrawal presenting with cravings, tremors, irritability, tachycardia and a CIWA of 16. Social history pertinent for using over 2 pints of liquor daily and 10-pack years of smoking. BMI was 22, BP 130/90mmHg, pulse 115/min, and patient afebrile. Lab results showed initial alcohol level of 372mg/dL, Hb 11g/dL, WBC 6200/mL, ALT 24U/L, AST 100U/L, GGT 713U/L, total bilirubin 0.3mg/dL, iron 131mcg/dL, TIBC 20mcg/dL, ferritin 906mcg/L, total cholesterol 295mg/dL. Urine toxicology revealed cannabis and alcohol. Serum vitamin B-12, folate, thyroid-function test, basic metabolic profile and HbA1c were normal. HIV, RPR, Hepatitis B and C, serologies, as well as antinuclear, antimitochondrial, smooth-muscle antibodies were negative. Liver-kidney microsomal assay was negative. EKG Normal-Sinus-Rhythm 89/min, liver sonogram showed diffuse increased hepatic echogenicity likely due to fatty infiltration and normal common bile duct diameter. Patient initiated on alcohol detox protocol and subsequently followed by intensive inpatient-rehab, Alcohol-Anonymous meetings, and placed on monthly intramuscular Naltrexone injection to reduce alcohol cravings and enhance abstinence with improvement clinically.

Case illustrates hyperferritinemia (serum ferritin above 200ng/mL in women and 300 ng/mL in men, with East Asian values 1.5-2x higher than reference norms report) from AUD. In studies on large multiethnic population, the most common causes are likely obesity, Metabolic syndrome/NAFLD, systemic inflammation, daily alcohol consumption, and malignancy. Significant end-organ damage is rare with a ferritin value < 600 µg/L but patients with ferritin > 1,000 g/L should have liver function tests and sonogram because of the increased risk of cirrhosis and hepatoma. Testing for HFE-associated hereditary hemochromatosis is not recommended in patients of non-European ancestry because its prevalence is very rare. Hemochromatosis is over diagnosed in patients who do not have the disease due to the common misinterpretation that an elevated serum ferritin level represents iron overload and a lack of awareness that many other types of liver disease (alcoholic liver disease, hepatitis B, hepatitis C, fatty liver), renal disease can be associated with mild-to-moderate iron-overload and are commonly associated with an elevated serum ferritin level. Ferritin is an intracellular protein that stores iron in many types of cells including liver, spleen, skeletal muscles, and bone marrow. With cellular damage as in alcoholism, ferritin leaks into the blood.

Medical Student Clinical Vignette

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Albany Medical Center

Over-The-Counter Overdose: Toxicity Secondary to an Herbal Pain Supplement

Purpose: To describe an acute presentation of Kratom toxicity and the risks of this over-the-counter supplement.

Introduction:

The leaves of *Mitragyna speciosa*, a tree native to Southeast Asia, make Kratom. With active substrates mitragynine and 7-hydroxymitragynine (7-HMG), Kratom acts as an atypical opioid via opioid receptor agonism and alpha-2 adrenoceptor effects. It inhibits hepatic cytochrome P450 isoforms and cellular transport proteins. Kratom is sold as a supplement energy booster, mood enhancer, pain reliever, and antidote for opioid withdrawal. It has a complicated legal history due to analgesic disuse and its potentially lethal side effect profile, including arrhythmias, hepatotoxicity, and seizures. Kratom is illegal in six states and listed as a "drug of concern"¹, but remains legal in New York as restrictive legislature failed to pass.

Case Presentation:

A 33-year-old male with history of chronic low back pain, marijuana use, opioid disuse on methadone and depression treated with quetiapine and hydroxyzine presented for three-days worsening bilateral lower extremity weakness and bilateral upper extremity tremors. The patient reported worsening lower extremity weakness such that he had to crawl. His upper extremities' tremors were present at rest and with activity, and improved with sleep. The patient additionally reported vertigo and falls, intermittent blurred vision, confusion, fatigue, nausea, heart palpitations and headaches. He described taking Kratom daily for the past week at triple its recommended dose for back pain.

Upon presentation his heart rate was 140 beats per minute, other vital signs were stable. Physical examination revealed horizontal nystagmus, brisk patellar reflexes (2+), bilateral upper extremity tremors and mild weakness (4/5) in all four extremities with easy fatigability. The comprehensive metabolic panel, inflammatory markers, HIV, RPR, and complete blood count were within normal limits. Urine toxicology was positive for cannabinoids and methadone. EKG demonstrated sinus tachycardia. Head CT and Brain MRI were unremarkable.

Upon review of his medications and cannabis use, it was identified that simultaneous use of cannabinoids and atypical antipsychotics with Kratom may lead to significant biochemical interactions. Poison control was contacted for possible Kratom toxicity. Quetiapine was held and he was advised on Kratom cessation and its aforementioned interactions. His tremors improved with low dose Lorazepam. His tachycardia resolved and he was discharged two days after admission.

Discussion:

Kratom toxicity may present with a variety of atypical neurologic, musculoskeletal, and cardiac symptoms, including seizures, psychosis, and encephalopathy. Reported annual deaths due to disuse, particularly in the setting of polydrug use, have been increasing. Further investigation into Kratom's biochemical mechanism and clinical effects is required to assess its risk-benefit profile. This case also highlights the critical need to obtain a comprehensive supplement history for all patients.

Medical Student Clinical Vignette

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EXTRAMEDULLARY SPLENIC PLASMACYTOMA: A RARE PRESENTATION OF MULTIPLE MYELOMA

Introduction: Multiple myeloma (MM) arises from neoplastic proliferation of plasma cells whose survival is potentiated by the bone marrow (BM) microenvironment. Extramedullary plasmacytomas (EMP) may be solitary or associated with systemic MM, can occur in nearly any organ, and are most common in the upper aerodigestive tract.(1)

Methods: We report a case of symptomatic MM presenting with splenic EMP discovered in a patient with ipsilateral renal cell carcinoma (RCC).

Results: A 75-year-old Caucasian male never-smoker with a history of hypertension, hyperlipidemia, and benign prostate hypertrophy presented with four-months of painless hematuria. His brother had prostate and kidney cancers, but he had no family history of hematologic malignancy. Laboratory studies showed a normal CBC and metabolic panel with a reduced creatinine clearance (CrCl) of 31 mL/min/1.73m² (creatinine 2.0 mg/dL). CT imaging revealed two left lower pole renal masses: one 5.2 x 4.4 cm and another 3 x 2.3 cm superiorly, and in addition several splenic lesions were identified, the largest of which was 3.8 x 3.6 cm. He underwent nephrectomy showing a clear cell RCC, and splenectomy showing monoclonal plasma cells that were CD38(+),kappa(+), and CD19(-), CD20(-) CD138(-), and lambda(-), consistent with myelomatous involvement. An SPEP showed a 0.95 g/dL IgM-kappa M-spike (normal IgA and IgG), and free light chain ratio 2.96 (Kappa 101.6 mg/L). His BM biopsy was hypercellular (50-60%) with 25% CD138(+) monoclonal kappa-restricted plasma cells with normal cytogenetics. PET imaging showed non-avid subcentimeter lytic lesions in the scapulae, left 9th rib, and right iliac bone. After diagnosis of symptomatic MM, R-ISS stage 2, he was fit to receive 4-drug induction with daratumumab, cyclophosphamide, bortezomib, dexamethasone (D-CyBorD). Following 2 cycles his CrCl improved to 58 and cyclophosphamide was replaced with lenalidomide (D-RVD) for 2 additional cycles, achieving complete remission. He remains on DRD maintenance with monthly daratumumab and is in stringent complete remission 1 year from diagnosis.

Discussion: To our knowledge, there are few reports of symptomatic MM presenting with splenic EMP, the majority of cases having been described as solitary splenic EMP.(2) While EMP may be enriched in higher-risk patients,(3) our patient had standard risk disease. He achieved a complete response to initial treatment despite presenting with acute renal failure, which reinforces data showing high overall response rates with modern quadruplet anti-myeloma induction regimens.(4, 5) This case also highlights the variable presentation of MM and the importance of investigating suspected metastatic sites in a patient with synchronous carcinoma.

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Medical Student Clinical Vignette

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Carfilzomib Induced Pneumonitis in the Treatment of Multiple Myeloma

Introduction:

Drug induced pneumonitis and more broadly drug induced interstitial lung disease (DILD) are a potentially fatal adverse effect of numerous drugs spanning multiple therapeutic classes. Carfilzomib is a protease inhibitor used in the treatment of multiple myeloma with only sparsely reported cases of DILD previously reported in association with its use. Previously phase two trials for carfilzomib had only reported pneumonitis in 0.4% of patients. Here we present a case of women in her late 40s with newly diagnosed multiple myeloma who developed drug induced pneumonitis requiring ICU admission.

Case presentation:

The patient presented to the emergency department with complaints of inability to ambulate that through oncologic workup was determined to be newly diagnosed multiple myeloma. decision was made to start chemotherapy with systemic carfilzomib during same admission. Less than 24 hours after receiving her second dose of the carfilzomib the patient developed acute hypoxic respiratory failure. She suddenly declined, saturating in the 78-80% range on 15 liters of oxygen via nasal cannula. Examination revealed a patient in acute distress who was tachycardic to the 120s with bilateral crackles to lung auscultation. She required BiPAP due to continued desaturation. Persistent hypoxia resulted in ICU admission with supplemental oxygen. Chest x-ray and CT angiography of the thorax performed the same day demonstrated evidence of interstitial lung disease, atelectasis, and pleural effusion. Through extensive workup other potential causes of decompensation such as acute onset CHF, pulmonary embolism, pneumonia, and pneumothorax were ruled out. Treated successfully with 60 mg of IV methylprednisolone twice daily as well as lasix and piperacillin-tazobactam.

Discussion:

Based on the timing of drug administration, clinical picture, and radiographic evidence the diagnosis of drug induced pneumonitis was made. With above treatment she was successfully weaned off of supplemental oxygen with less than 48 hours of therapy and transferred to the medicine floors. A literature review of the phase two drug trials for carfilzomib showed drug induced pneumonitis is a rare side effect. Steroid therapy has been used as a mainstay of treatment. However, there is no data about its efficacy or safety. No data exists regarding how patient's do after carfilzomib induced pneumonitis nor is there data for the safety of rechallenging the medication.

Conclusion:

Our case brings attention to the importance of quickly recognizing drug induced pneumonitis, cessation of the offending drug, and prompt administration of steroid therapy. We have through our case demonstrated full recovery from a potentially fatal drug side effect with these steps. Further research is required to determine the incidence, other possible CT-scan patterns, determine the role of bronchoscopy, the prognosis, optimal treatment and whether patients can be rechallenged with the medication

Medical Student Clinical Vignette

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DESMOGLEIN ANTIBODY-NEGATIVE PEMPHIGUS VULGARIS

History & Physical: A 63-year-old male with a history of psoriasis well-controlled on adalimumab presented complaining of oral lesions of several months' duration. The associated pain and dysphagia resulted in a 50-pound weight loss over six months. Physical examination showed erosions and ulcerations along the buccal mucosa bilaterally without evidence of skin involvement.

Biopsies: Punch biopsy of two lesions, one from the right lower cheek and one on the lower lip, was performed with histology revealing intraepidermal acantholysis with suprabasilar acantholysis and focal inflammation of intact squamous epithelium composed of scattered neutrophils and eosinophils with subepithelial connective tissue showing chronic inflammation composed of lymphocytes suggestive of microscopic pemphigus vulgaris (PV).

Lab Data: Anti-nuclear antibody (ANA) was positive. Antibodies to both double-stranded DNA (dsDNA) and chromatin were elevated. Herpes simplex virus (HSV) antibody testing was positive for HSV-1. Desmoglein (Dsg) 1 and 3 IgG antibodies were negative.

Referrals: He was referred to gastrointestinal services to rule out Crohn's disease, where both colonoscopy and upper endoscopy were unremarkable, with duodenal biopsy negative for significant pathology. Ophthalmology evaluation was requested, which revealed mild bilateral blepharitis but no evidence of ocular pemphigus. Due to positive ANA titers, the patient was referred to rheumatology, where adalimumab was discontinued for concern of drug-induced lupus.

Diagnosis: Antibody-negative pemphigus vulgaris.

Treatment: Various therapies were trialed over 12 months, including prednisone, colchicine, dapsone, dexamethasone oral wash, valacyclovir, and nystatin, with overall poor response of oral lesions. A combination of hydroxychloroquine and methotrexate was initiated to replace adalimumab for psoriasis control. The most effective treatment for this patient's oral lesions to date has been oral prednisone but has been reasonably controlled on mycophenolate mofetil with plans to discontinue methotrexate and taper off prednisone.

Discussion: Pemphigus vulgaris is a rare, blistering, autoimmune disease that causes cutaneous and mucosal blisters. Autoantibodies to keratinocyte transmembrane glycoproteins desmoglein 1 and 3 are the hallmark of the disease. In most cases, disease progression begins with ulceration of the oral mucosa, followed by the development of flaccid bullae on the skin. Interestingly, this patient never developed characteristic skin lesions of the disease, and we postulate this could be from his chronic treatment with adalimumab for psoriasis. This is a peculiar case with clinical and microscopic findings suggesting PV but lacking characteristic IgG antibodies against Dsg 1/3. This patient has had a positive response to combination immunosuppression strategy, although he still has clinical evidence of disease.

Medical Student Clinical Vignette

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Profound Refractory Anemia in the Setting of Beta-Thalassemia

Beta-thalassemia is a genetic blood disorder that decreases production of the beta-subunits of hemoglobin. Resulting unpaired alpha-subunits accumulate inside red blood cells (RBCs) and cause ineffective erythropoiesis and hemolysis of mature RBCs in circulation, leading to anemia. Although non-immune-mediated hemolysis is characteristic, autoimmune hemolysis is much less common. We report an unusual case of severe autoimmune hemolytic anemia (AIHA) in beta-thalassemia intermedia refractory to transfusions and corticosteroid therapy.

A 31-year-old African American woman with a past medical history of beta thalassemia intermedia managed with recurrent blood transfusions (baseline 7 g/dL) and remote splenectomy presented to the ED from the hematology clinic after she was found to have a hemoglobin level of 4.9 g/dL (last transfused 3 months ago). She endorsed exertional chest tightness, shortness of breath, palpitations, and dizziness. She denied having any loss of consciousness, melena, hematochezia, or hematemesis.

On admission, vital signs were within normal limits. Exam showed icteric skin and conjunctiva. Initial laboratory analysis was remarkable for severe microcytic anemia with Hgb of 4.9 g/dL and MCV of 78.1 fL.

She received 2 units of pRBCs, which transiently increased her hemoglobin, but she also became febrile and received antibiotics. Within 2 days, her anemia no longer responded to transfusions, dropped to as low as 3.1 g/dL with hypotension and hypoxia to 66% during a severe episode of hemolysis. Further workup initially showed continued hemolytic markers, Hep C Ab positivity with negative viral load, and a negative Coombs test. However, the Coombs test was repeated due to high suspicion of AIHA in light of her continued refractory anemia and showed a positive result (IgG 1+, C3-), confirming the diagnosis of AIHA.

The patient's AIHA was treated with increasing doses of prednisone, IVIG, and transfusions. However, her hemoglobin continued to fall. The patient was started on weekly Rituximab 375mg for 4 doses, and her hemoglobin started responding after week 2. The patient was discharged when her hemoglobin stabilized at 4.1 g/dL.

Even though anemia in beta-thalassemia intermedia is not uncommon, it is usually sufficiently managed by intermittent or as-needed transfusions. Hemolytic anemia resulting in necessitating urgent transfusion is less common and is usually due to a stressor. However, in a patient with anemia refractory to transfusions and multiple predisposing factors, such as history of HCV antibodies and transfusions, more serious causes for hemolytic anemia should be considered. AIHA is a rare occurrence in non-transfusion-dependent beta-thalassemia and requires immediate treatment to prevent complications. Glucocorticoids and/or rituximab are the treatments of choice for a first episode of AIHA, and IVIG may be added as an adjunct to improve RBC survival. Even after resolution of the initial episode of AIHA, patients should be routinely monitored to prevent a relapse of the disease.



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Medical Student Research

Medical Student Research

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Albany Medical Center

Narrative Dance Medicine: Improving Learner Awareness of Cultural Communication

Narrative medicine, a form of storytelling that communicates ideas on health with cultural and personal nuance, improves patient-physician communication by integrating the humanities with clinical experiences. A persisting issue in medical training involves educating providers on cultural awareness and nuanced cultural behaviors during patient-physician communication, as lack of proper culturally responsive education leads to disparate care outcomes for minorities in the United States. One possible solution of an educational intervention is a variation on narrative medicine " narrative dance medicine " which conveys health experiences through diverse traditional dances, offering presentations of medical care through cultural contexts that can improve clinical cultural awareness. To investigate the impact of narrative traditional dance on medical student cultural awareness, we conducted an online IRB approved pilot study at a single academic institution, Albany Medical College in New York, USA. Medical students were sent an online video of a traditional narrative dance performance on ICU clinical communication. The video was followed by an adapted survey containing Likert scale responses to basic cultural awareness questions followed by semi-structured open-ended questions for grounded theory analysis. Of the twelve total respondents thus far in this ongoing study, 67% (n=12) agreed that narrative medicine was helpful for doctor-patient relationships and 100% (n=12) of respondents agreed that dance narratives would be effective tools for educating healthcare trainees on cultural competency. Open-ended responses contained themes of increased attention to diverse, nonverbal communication in the ICU and the importance of patient culture in shared decision making. These pilot study results suggest that narrative dance medicine should be further investigated as a promising tool for enhancing cultural awareness and equity in medical education. This research will be continued with another cohort of students and additional future surveys.

Medical Student Research

Matthew Wang

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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: 55 smokers from 1/1/22-8/22/22 were followed out to 6 months. The 7-day point prevalence quit rates for the as-treated group were 50% (14/28), 42% (8/19), and 44% (8/18) at 4 weeks, 3 months, and 6 months, respectively. For the intent-to-treat group the quit rates were 25% (14/55), 15% (8/55), and 15% (8/55). 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 ($p = 1, 0.97, 0.59$) and the intent-to-treat ($p = 0.70, 0.73, 0.92$) 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.



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Resident/Fellow Clinical Vignette Category

Resident/Fellow Clinical Vignette

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RENAL CELL CARCINOMA PRESENTING AS A LARGE MULTINODULAR GOITER

CASE PRESENTATION:

A 68-year-old female presented to a primary care clinic for a painless mass in her neck. The mass was associated with hoarseness, dysphagia and increasing difficulty breathing while lying flat. She first developed thyroid nodules two years ago that had now grown in size; prior FNA showed benign follicular cells.

Patient had a remote history of left nephrectomy for donation. She developed renal cell carcinoma in her solitary kidney 11 years ago, that was managed with radical nephrectomy. She subsequently required renal transplantation and was maintained on immunosuppressive medications. 5 years after the initial diagnosis of RCC, metastasis was found in the pancreatic head and she received the Whipple procedure. Subsequent surveillance imaging showed no recurrence. Social history was notable for a 50 pack-year smoking history.

She had been undergoing evaluation for her neck mass with endocrinology and ENT. CT neck with contrast showed a predominantly hypodense mass in the right thyroid gland measuring 4.8 X 4.8 X 6.2 cm, and a 2.4 X 2.1 cm hypodense nodule in the left thyroid gland. There was a mass effect on the larynx, lateral deviation of the right carotid and jugular vasculature and narrowing of the subglottic trachea. No cervical lymphadenopathy was seen.

Repeat FNA revealed benign follicular cells and lymphocytes bilaterally. A diagnosis of multinodular goiter was considered- and she was scheduled for a complete thyroidectomy for the indication of multinodular goiter with increasingly compressive symptoms.

Surgical pathology of the right thyroid lobe revealed metastatic RCC with clear cell features. On follow-up, her dysphagia and dyspnea had improved. She was referred to oncology for recurrence of stage IV renal cell carcinoma, and was started on axitinib and pembrolizumab. Repeat PET scan 6 months later revealed her RCC to be in remission.

DISCUSSION:

Metastatic thyroid nodules comprise only 2-3% of all thyroid malignancies[i]. Among all metastatic thyroid nodules, RCC is the most common, representing 12 to 34% of all secondary thyroid tumors[ii]. A case series reported thyroid metastases with RCC at a median of 12 years after nephrectomy[iii], similar to this case. However, it was a unique presentation that FNAs repeated over many years showed benign follicular cells, which made this case a diagnostic challenge. According to a systematic review, median survival after thyroid metastasis was 3.8 years[iv], and overall survival of metastatic RCC has improved with immune checkpoint and tyrosine kinase inhibitors[v].

CONCLUSION:

Rapidly growing neck masses with compressive symptoms in patients with prior history of malignancy should alarm providers for concern of metastatic disease. Metastatic RCC should be included in the differential of a new thyroid mass. Treatment directed at thyroid metastasis results in prolonged survival in some cases.

Resident/Fellow Clinical Vignette

Comfort Anim-Koranteng

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A THROMBOTIC STORM IN HIV: CONFUSION AMID AUTOIMMUNE OCCLUSIONS

Learning Objectives:

1. To recognize HIV as a risk for thrombosis in patients with HIV
2. To recognize the significance of positive autoantibodies as a risk factor for arterial and venous thrombosis in patients with HIV.

A 40-year-old man with HIV, PSA, was brought to the hospital after two weeks of depressed mood and altered sensorium. On presentation, the patient was afebrile and hemodynamically stable but tachycardic to 140s. He was only oriented to self and place, appeared cachectic, pale, and with a flat affect. Lumbar puncture revealed increased protein levels and pleocytosis with lymphocyte predominance with serologic workup confirming the presence of Neurosyphilis. CT Angiography of the chest was significant for bilateral segmental pulmonary emboli. MRI brain revealed the presence of multiple acute infarcts. Doppler studies confirmed the presence of deep vein thrombosis in the left popliteal vein. Considering this extensive thromboembolic state, a hypercoagulable workup was pursued, and results were positive for anticardiolipin, lipoprotein a, and beta-2 glycoprotein antibodies. The patient received therapeutic low molecular weight heparin for autoimmune-related venous and arterial thrombosis, Penicillin G IV for two weeks for neurosyphilis, and continued antiviral therapy for HIV. The patient's cognition improved, and he was discharged into a supportive environment.

Discussion:

HIV infection is associated with a two to tenfold increased risk of venous and arterial thrombosis compared to the general population of the same age. High-risk prothrombotic factors are a low cluster of differentiation (CD) 4 cell count and acquired protein S and C deficiency. Other risk factors for thrombosis include protease inhibitor therapy, concomitant opportunistic infections, and increased odds of being positive for antiphospholipid antibodies. The incidence of thrombotic stroke in patients with HIV is 50% higher than in patients without HIV. Of the thrombotic presentation (peripheral thrombosis, strokes, and pulmonary embolism) in HIV, occurrence in multiple anatomic locations at diagnosis can occur, like the case presented with three anatomic sites of thrombosis.

Antiphospholipid antibodies are more prevalent in patients with HIV as compared to the general population. Positive antiphospholipid antibodies, such as lupus anticoagulant, anticardiolipin, and anti-beta 2 glycoprotein1 antibodies, are reported in close to 40% of patients with HIV; however, the incidence of thrombosis in HIV patients is reported only in 10-30% of patients indicating increased risk but no direct correlation between the presence of autoantibodies and thrombosis. Additional risk factors for thrombosis include very low CD4 counts and concomitant infections. In the patient described in the vignette, the presence of Neurosyphilis could have contributed to the patient's prothrombotic state.

Conclusion:

Clinicians should have a high index of suspicion in patients with HIV for thromboembolism on both outpatient and inpatient bases.

Resident/Fellow Clinical Vignette

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A CASE OF PLASMA CELL LEUKEMIA COMPLICATED BY TUMOR LYSIS SYNDROME

Introduction:

Leukocytosis is often attributed to an infectious etiology. We present an interesting case of plasma cell leukemia which was diagnosed after an apparent discrepancy between manual and automated WBC differential counts.

Case Presentation:

An 86-year-old female presented with headaches, multiple falls, and functional decline for one week. The head CT showed a subdural hematoma with a 5 mm midline shift. The neurosurgery team recommended no intervention as this was likely chronic. Labs showed WBC of 28.2 K/uL (neutrophils 5%, lymphocytes 85%), hemoglobin 9.2 g/dL, platelets 60 k/uL, BUN 70 mg/dL, creatinine 5.3 mg/dL, and potassium 5.2 mEq/L. All baseline labs were within normal limits nine months ago. Initially, leukocytosis was attributed to urinary tract infection and was treated with antibiotics. Despite hydration, creatinine worsened from 5.3 to 6.5 mg/dL, with proteinuria of 6.1 g/day. Automated differential showed 59% basophils and 30% lymphocytes. However, the manual differential count showed 1% basophils, 10% neutrophils, and 85% lymphocytes. This discrepancy and worsening renal failure prompted further investigation.

Serum protein electrophoresis showed a possible restricted band (M-Spike). The peripheral blood smear revealed normal red blood cells, increased plasmacytoid lymphocytes, decreased platelets, and no blasts. Serum immunofixation revealed a free monoclonal kappa band, and urine immunofixation revealed abnormal free kappa light chains. Flow cytometry from the peripheral blood showed clonal plasma cells with expression of CD38 co-expressing cytoplasmic kappa light chain, comprising 62% of WBCs (Kappa 99%, lambda 1%) confirming the diagnosis of plasma cell leukemia. She was started on dexamethasone and bortezomib. Shortly thereafter the patient developed tumor lysis syndrome (uric acid 13.3 mg/dL, potassium 5.9) which was treated with IV hydration, rasburicase, and hemodialysis. Unfortunately, the patient's condition deteriorated, and she expired.

Discussion:

Plasma cell leukemia is a rare and aggressive subtype of multiple myeloma with an incidence of only 4 cases per 10 million per year. It is characterized by high levels of circulating plasma cells in the blood (>5%), which are usually confined to the bone marrow in typical multiple myeloma. Although the automated differential count is faster and is not subject to observer variation, it is important to be cognizant of some of its limitations. In this patient, the automated differential mistook the highly basophilic mature plasma cells to be basophils and reported 59% basophils and 30% lymphocytes. The manual differential count provided a more accurate picture of 1% basophils and 85% lymphocytes, which enabled us to make the correct diagnosis. Treatment is usually challenging given the high tumor burden and the risk of tumor lysis syndrome. It has a very poor prognosis with an average survival of only 6-11 months after diagnosis.

Resident/Fellow Clinical Vignette

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A CASE OF CONTRAST INDUCED THYROTOXICOSIS IN A PATIENT NEWLY DIAGNOSED WITH HYPERTHYROIDISM

Background:

It is quite uncommon for thyrotoxicosis to manifest itself after the administration of iodinated contrast. Although the actual prevalence has not yet been identified, estimates showed that the prevalence in areas with iodine deficiency is 0.25 to 0.5% and 0.025% in non-iodine-deficient areas with higher risk in elderly patients.

Clinical Case:

A 68-year-old female presented to the emergency department for 2 weeks of intermittent substernal chest pain associated with diaphoresis. She was diagnosed with hyperthyroidism by an outside clinic approximately one week prior to her presentation and was prescribed methimazole but did not start it. She was not taking any medications. Her physical examination was significant for mild exophthalmos. EKG showed ST depression in anterolateral leads. Laboratory data showed a troponin of 0.328 ng/ml (0.0015-0.45) which trended up to 4.830 after 3 hours and TSH of <0.005 mIU/L (0.358-3.74), otherwise BMP and CBC were within normal limits. Patient was started on aspirin, statin and heparin infusion along with methimazole. Patient was transferred to tertiary hospital for urgent cardiac catheterization that showed 90 % stenosis of left anterior descending artery (LAD) and 95 % stenosis in distal right coronary artery (RCA). A successful drug eluting stent was deployed in LAD with a plan of staged PCI in RCA. An hour after the procedure, Patient complained of palpitations and diaphoresis. Laboratory findings at that time revealed Free T4 of 17.5 ng/dl (0.9-1.8), Free T3 of 12.3 pg/ml (1.8-4.6) with positive Thyroperoxidase antibody, TSI and TSH Receptor Antibody. Thyroid ultrasound revealed diffusely heterogeneous thyroid gland with increased vascularity, consistent with Graves' disease. The patient was diagnosed with thyrotoxicosis secondary to contrast administration. She was treated with methimazole 20 mg TID, metoprolol tartrate 25mg BID and hydrocortisone 25 mg BID. Decision was made to postpone the second procedure until trending down of thyroid hormones and improvement of symptoms. A successful staged RCA PCI was performed eight days later and patient did not experience any complications despite exposure to the same dose of iodinated contrast.

Conclusion:

Iodine-induced thyrotoxicosis was first known when iodine supplementation was given to patients in regions of endemic deficiency of iodine. In the US, it is typically iatrogenic. Rarely, hyperthyroid patients may experience chest discomfort and EKG abnormalities that are consistent with cardiac ischemia. This usually happens in older patients with known underlying coronary artery disease in response to the rise in cardiac contractility and strain caused by thyrotoxicosis. Our case did not have any history or risk factors of coronary artery disease other than hyperthyroidism. This case highlights how recognition of hyperthyroidism may alter management, because the use of some procedures or treatments may acutely exacerbate the condition of the patient.

Resident/Fellow Clinical Vignette

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New Onset Graves' Thyrotoxicosis Complicated by Hypokalemic Periodic Paralysis: A Late Sequela of COVID- 19 Infection.

Background:

Thyrotoxic periodic paralysis (TPP) is a rare endocrine emergency identified by hypokalemia and ascending symmetrical paralysis of extremities. If left untreated, it can lead to cardiopulmonary collapse. There are cases in the literature highlighting that Covid-19 infection or Covid vaccination can cause hypokalemic periodic paralysis with or without thyroid dysfunction. To our knowledge, four cases of Covid induced TPP and three cases of TPP after Covid vaccination have been reported in the literature. In all cases, the patients developed TPP soon after (within two months) Covid-19 infection or vaccination. However, we describe a case of a young, healthy euthyroid male who developed TPP as an initial manifestation of new-onset Graves' disease after five months of Covid infection. Even though Covid-19 infection has been known to cause thyroid dysfunction, especially subacute thyroiditis, there have only been a few case reports of Covid induced Graves' disease presenting as TPP at initial diagnosis.

Clinical Case:

A 37-year-old Asian male with no past medical history presented to the emergency department with lower extremity paralysis, palpitations, tremors and diaphoresis one day prior to presentation. He was diagnosed with mild COVID 19 infection, five months prior to presentation. Since then, he has been having intermittent palpitations but did not have any other symptoms. Vital signs on admission revealed heart rate of 100 beats/min, respiratory rate of 16 breaths/min, blood pressure of 131/66 mmHg, temperature of 97.5°F and oxygen saturation of 98% on room air. Physical examination was significant for an anxious young male with extremely tender enlarged thyroid gland. There was positive thyroid bruit. Pemberton sign was negative. Muscle strength of 1/5 in bilateral lower extremities with brisk deep tendon reflexes and tremors in both hands were noticed. Laboratory studies showed white blood cell count of 13.07 (3.80-10.50 x 10⁹/L), serum potassium of 1.4 mmol/L (3.5-5.3) and thyroid stimulating hormone of <0.01 mIU/L (0.358-3.74), free thyroxine of 5.5 ng/dl (0.9-1.8), total Triiodothyronine of 438 ng/dl (80-200) and positive thyroid stimulating immunoglobulin of 4.22 IU/l (0.00-0.55) confirming Graves' disease as a diagnosis causing thyrotoxicosis with periodic paralysis. Patient was admitted to intensive care unit. Judicious repletion of potassium was done and he was started on propranolol 40 mg daily and methimazole 30 mg daily that lead to resolution of his paralysis and hyperthyroid symptoms.

Discussion:

Possible mechanisms by which COVID 19 can induce Graves' disease are host immune system dysfunction as well as the fact that autoantigens and viral spike proteins might exhibit molecular mimicry. Here we report a case of new onset Graves' disease with periodic paralysis after COVID 19. More studies are required to identify the mechanism and to confirm if the relationship is causal.

Resident/Fellow Clinical Vignette

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Carotid Ultrasound Use in Patients with Simple Syncope

Background

The most common cause of syncope in the general population is neurocardiogenic, followed by primary arrhythmia. Among the workup for patients with simple syncope, carotid ultrasound is commonly ordered by healthcare providers. However, the study done by Choosing Wisely initiative suggested that routine carotid ultrasonography for syncope was common nationwide and was of low value. In addition, the American Academy of Neurology recommends against routine performance of carotid ultrasound for patients with simple syncope without other neurologic symptoms.

Methods

We conducted a retrospective study of adult patients with simple syncope admitted to a teaching hospital in central Brooklyn during the study period from 10/1/2021 to 7/31/2022. Patients with age less than 18 years, seizure disorders, traumatic brain injury, intoxications, mechanical falls, and conversion disorders were excluded. The primary objective of the study was to describe the characteristics of hospitalized patients with simple syncope at our hospital. The secondary objective of the study was to analyze the contribution of carotid ultrasound in diagnosis of simple syncope among hospitalized patients.

Results

The mean age of patients was 74 years (range: 29 - 100 years). Female patients consisted of 51% of the patients. The patients' races were African American (80%), Hispanic (14%), Caucasians (3.7%), Arabic (1.2%), and Asian (1.2%). The average body mass index was 27 kg/m² (range: 16 - 50 kg/m²). Ten patients (12%) had reflex syncope, 10 patients (12%) had orthostatic hypotension, 5 patients (6%) had cardiac arrhythmia, 10 patients (12%) had structural cardiac or cardiopulmonary disease, 4 patients (5%) had known coronary artery disease, 5 patients (6%) had known peripheral artery disease, 19 patients (23%) had tobacco use history, and 24 patients (30%) had dyslipidemia. None of the patient had a family history of stroke. Carotid ultrasound was ordered for 55 patients (67.9%) but only 41 patients (50.6%) underwent carotid ultrasound. Among patients who received a carotid ultrasound testing, 37 patients (45.7%) had normal results, 2 patients had stenosis (2.5%) and 2 patients (2.5%) had limited studies. Among those patients with carotid artery stenosis, one patient had left internal carotid artery 50-69% stenosis and the other patient had bilateral internal carotid artery 50-69% stenosis. None of the patients included in the study was recommended carotid artery stenting or carotid endarterectomy.

Conclusions

Our study did not show a significant contribution of carotid ultrasound in diagnosis of simple syncope among hospitalized patients.

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Tuberculosis of the Prostate in a Patient with Recent COVID-19

Tuberculosis (TB) of the prostate is a rare presentation of extrapulmonary mycobacterial infection. Genitourinary tuberculosis (GUTB) is the third most common presentation of tuberculosis. TB of the prostate is seen in 2.6% of GUTB cases. Symptoms can range from dysuria, urinary frequency to asymptomatic. The PSA is usually elevated. It is often misdiagnosed as BPH or prostate cancer, even with histopathology. Due to the nonspecific symptoms and laboratory findings with low prevalence, the diagnosis of prostate TB is challenging.

We report a case of a 62-year-old man who presented with a sudden increase in his PSA levels. His medical history was significant for BPH confirmed with biopsy, treated with tamsulosin for irritable voiding symptoms and antibiotics for chronic prostatitis, and COVID-19 pneumonia treated with monoclonal antibodies and a prolonged course of steroids one year prior. The patient frequently traveled throughout Asia on business over the past 40 years. He immigrated to the US from Uzbekistan 33 years ago. He did not have respiratory symptoms, weight loss, night sweats, sick contacts, or a previous diagnosis of tuberculosis. A recent chest X-ray was normal. A prostate biopsy from eight months prior showed a low-volume non-high-grade prostate cancer. The patient elected not to proceed with treatment at the time. Six months later, PSA levels increased to 10.1 ng/mL. An MRI of the prostate showed a 1.7 cm lesion on the left posterolateral peripheral zone at the gland base and mid-gland, suspicious for extracapsular disease extension, and a 2 cm lesion in the bilateral posteromedial peripheral zone spanning from the gland base to gland apex. A prostate biopsy was negative for malignancy but showed necrotizing and non-necrotizing granulomata with acid-fast bacilli, consistent with *Mycobacterium* sp. Tissue sample PCR was negative for *M. tuberculosis*. However, studies show that histopathological examination of the tissue is the gold standard for diagnosis as a negative tissue PCR does not exclude *M. tuberculosis*. Based on the pathology, *Mycobacterium tuberculosis* of the prostate was presumed as nontuberculous mycobacterial GU infections are extremely rare. The patient was started on RIPE therapy. A repeat prostate biopsy with microbiological culture and stains is planned.

This case emphasizes the importance of a high index of clinical suspicion for prostate tuberculosis for early diagnosis to prevent comorbidities such as infertility. Histopathology remains the gold standard for diagnosis, and its sensitivity and specificity can increase with tests such as cultures and stains. Our case raises the concern that latent TB dissemination may have been triggered by COVID-19 disease, prolonged steroid therapy for COVID-19 or both, leading to immunosuppression. With the COVID-19 pandemic and the rise of steroids use, increasing number of cases with activated TB of prostate may be reported.

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Watch out for Immune-Related Adverse Events(iRAEs) with Checkpoint Inhibitors.

Introduction:

Immune checkpoint Inhibitors (ICIs) for Cytotoxic T lymphocyte-associated antigen 4 (CTLA-4), Programmed cell death receptor 1 (PD-1), and Programmed Cell Death Ligand 1 (PD-L1) pathways have been used to treat various solid cancers. We present a case of iRAEs in a patient who presented to the hospital due to shortness of breath.

Case presentation:

A 76-year-old male with a history of coronary artery disease, hypertension, diabetes mellitus, and melanoma (on immunotherapy with Nivolumab & Ipilimumab) presented to the hospital with shortness of breath. At the presentation, his vitals and physical examination were unremarkable. Lab studies revealed cardiac troponin of 3.60. CXR did not show any cardiopulmonary pathology. EKG showed a right bundle branch. He was admitted and was treated as per Non- ST Elevation Myocardial Infarction protocol. Due to the worsening respiratory status (tachypnea and hypoxia), he was upgraded to Cardiac Intensive Care Unit. A formal echocardiogram was performed, which showed an EF of 71-75% without wall motion/valvular abnormalities. Given respiratory distress and underlying melanoma, a CT angiogram of the chest was performed, which was negative for pulmonary embolism. He underwent cardiac catheterization, which showed a left anterior descending coronary artery lesion which was intervened. Despite the intervention, his dyspnea worsened and was complicated by Wide Complex Tachycardia (WCT). His physical examination revealed diffuse weakness involving extraocular muscles, facial muscles, respiratory muscles, and muscles of the extremities. CT head was negative for intracranial pathology. Neurology was consulted and suspected an autoimmune neuromuscular process (Myasthenia Gravis (MG) and myocarditis) secondary to the immunotherapy. Lumbar puncture ruled out meningitis and Guillain Barre Syndrome (GBS). He was electively intubated and was treated with glucocorticoids and plasmapheresis. Despite the treatment, he could not be liberated from a ventilator, continued to have WCT, and developed Acute Kidney Injury (AKI). Renal Replacement Therapy (RRT) was started for AKI. However, hemodynamics and renal indices worsened, and he went into asystole. He underwent cardiac resuscitation without return of spontaneous circulation and ultimately succumbed to the illness. Posthumously his workup of MG was positive for striational antibody.

Discussion

The exact mechanism for iRAEs includes reduced T-cell tolerance, increased levels of preexisting autoantibodies, and inflammatory cytokines. Hence, activated T-cells attack healthy tissue, resulting in iRAEs. The most common iRAEs include thyroid dysfunction(hyperthyroidism/hypothyroidism), pneumonitis, hepatitis, colitis, nephritis, and rash. Other rare iRAEs include myocarditis, aseptic meningitis, autonomic neuropathy, GBS, MG, and transverse myelitis. Our patient had a clinical picture concerning myocarditis, MG, and nephritis. Systemic steroids are the cornerstone against iRAEs, and ICI should be permanently discontinued for moderate to severe toxicity. Refractory toxicity is managed with additional immunosuppressive agents (e.g., infliximab).

Conclusion:

The cognizance of iRAEs is essential, given the frequent use of ICIs for treating solid cancer.

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Granulomatosis with Polyangiitis masquerading as COVID-19 Pneumonia.

Introduction:

Granulomatosis with Polyangiitis (GPA) is a small-medium vessel necrotizing vasculitis and is a component of Anti-Neutrophil Cytoplasmic Antibody (ANCA) Associated Vasculitides (AAV). It has a peak incidence at 64 to 75 years of age and is commonly reported in Whites without sex predilection. We present a case of GPA in a 26-year-old Asian female who presented as a transfer from an outside hospital for the management of shortness of breath thought to stem from COVID-19 pneumonia.

Case Presentation:

A 26-year-old Asian female with a medical history of migraine presents as a transfer from a nearby hospital, where she was being managed for COVID-19 pneumonia. She was transferred to our center for worsening shortness of breath, which was associated with cough and hemoptysis. On presentation, the patient was tachycardic and required a high-flow nasal cannula to maintain oxygen saturation >92%. Physical examination revealed diffuse bilateral crackles on lung auscultation, nodular non-blanching violaceous skin lesions on bilateral legs, and paresthesia on the dorsal aspect of the left foot. Lab results were significant for leukocytosis, elevated LDH, ESR, and CRP. Urinalysis revealed hematuria and proteinuria without casts. Chest X-Ray (CXR) showed extensive right lung opacity and left mid to lower lung opacity. Computed Tomography (CT) chest revealed dense consolidation of the entire right lung and peripheral infiltrates in the left lung. The patient was admitted to the intensive care unit and was treated for COVID-19 and healthcare-associated pneumonia. Additional workup was done due to hemoptysis, skin lesion, and neurologic findings in the left foot, which was significant for positive C-ANCA and PR-3 antibodies. Right lower lobe Video-assisted thoracoscopic surgery (VATS) - guided biopsy was performed, which revealed diffuse alveolar hemorrhage, scattered parenchymal micro-abscesses, and foci of necrotizing vasculitis. The patient was diagnosed with GPA and was treated with glucocorticoids and rituximab. Following medical stabilization, she was discharged home with outpatient rheumatology follow-up.

Discussion:

Diagnosis of GPA should be suspected in a patient who presents with constitutional symptoms (fever, malaise, anorexia, weight loss, myalgias, and arthralgias), symptoms concerning upper/lower respiratory tract involvement, glomerulonephritis, and multiple mononeuropathies. Diagnostic ACR criteria for GPA include urinary sediment showing red blood cell casts or more than five red blood cells per high power field, abnormal findings on CXR, oral ulcer or nasal discharge, and granulomatous inflammation on biopsy. Two or more of the four mentioned criteria have been associated with a 92% specificity and 88% sensitivity for GPA. Treatment of GPA involves using immunosuppressive agents (cyclophosphamide, glucocorticoids, rituximab, azathioprine, and methotrexate) in various combinations and is classified into the induction and maintenance phases.

Conclusion:

GPA can mimic infectious respiratory processes; hence a high index of suspicion is necessary for the diagnosis in an atypical case like ours.

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LEECH THERAPY FOR VENOUS CONGESTION AFTER COMPARTMENT SYNDROME IN A PATIENT WITH SYSTEMIC SCLEROSIS

Background: Fasciotomy is the definitive treatment for most cases of acute compartment syndrome. However, this surgical intervention does not come without risk. If venous congestion occurs, medicinal leeches can be applied for effective treatment relief (1).

Objective: To report a case of leech therapy used for venous congestion after fasciotomy for compartment syndrome of the hand in a patient with systemic sclerosis and secondary antiphospholipid syndrome

Case Report: A 64-year-old woman was admitted to the hospital for right lower extremity deep venous thrombosis (DVT). The patient was diagnosed with systemic sclerosis more than forty years ago after she presented with skin thickening and the Raynaud phenomenon for which she took nifedipine. Four years before this admission, she started oral methotrexate, sulfasalazine, and then adalimumab for arthritis. Two years prior, a left foot skin biopsy revealed thrombotic vasculopathy. The patient had no prior pulmonary embolism or pregnancy loss. So, she did not start anticoagulation at that time despite positive anticardiolipin antibodies, anti-beta 2 glycoprotein I, and lupus anticoagulant. She never smoked tobacco. After a flight of 4 hours duration, she developed right leg swelling. On examination, the temperature was 37.2°C and the blood pressure was 145/76 mm Hg. She had skin thickening on her fingers and right leg edema. An ultrasound showed DVT involving the right popliteal vein. Enoxaparin was initiated. The next day, her temperature increased to 38.7°C and her blood pressure dropped to 92/54 mm Hg. Empiric treatment was started with intravenous azithromycin, piperacillin, tazobactam, and boluses of lactated ringers. Unfortunately, she developed left-hand pain and swelling due to intravenous (IV) fluid infiltration. Her left hand had ecchymoses over the dorsal aspect. For compartment syndrome, she underwent fasciotomies through all finger and thumb incisions. A carpal tunnel release was also performed. Starting postoperative day 2, medicinal leeches were applied to the left hand for venous congestion. The swelling slightly improved but on hospital day 11, the limb was cold. The arteriogram from a right femoral retrograde approach revealed occluded/spastic non-opacification of the left-hand digital arteries. The catheter-directed thrombolytic regimen consisted of Alteplase 2 mg, heparin 2000 IU, verapamil 2.5 mg, and nitroglycerin 200 mcg. This led to significant improvement in the arterial outflow. Her repeat antiphospholipid antibodies were positive on this admission. She was transferred to another hospital for surgical intervention of limb ischemia.

Discussion: This patient with systemic sclerosis may have been at higher risk of compartment syndrome after IV infiltration and congested fingers given her skin thickening. A leech can suck 5 to 10 ml of stagnant venous blood and excrete the anticoagulant hirudin from its salivary glands (2). Despite the improvement in venous congestion, the patient's underlying antiphospholipid syndrome may have led to arterial occlusion.

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A CASE OF THROMBOCYTOPENIA AFTER COVID 19 VACCINATION

INTRODUCTION:

Amegakaryocytic thrombocytopenia is a severe form of thrombocytopenia with reduced or absent megakaryocytes in the bone marrow. It can be congenital or acquired. We present a case of acquired amegakaryocytic thrombocytopenia (AAMT) in a patient who received the third booster of the COVID-19 vaccine.

CASE:

A 57-year-old female with no significant medical history except for a brain aneurysm that was clipped four years ago in Ukraine presented to the ED with a bruise over her left forehead and eyelids, purpura, and two episodes of syncope in the past week. She has been feeling weak, having shortness of breath, dry mouth, and petechiae over her extremities since receiving the third dose of the Pfizer booster. No acute intracranial hemorrhage nor any acute facial bone fractures were seen on imaging. Blood tests showed a hemoglobin of 7.7%g/dL, a normal WBC, and a significantly low platelet count of 2K. A peripheral blood smear showed macrocytic RBCs along with Pelger Huet cells, with atypical lymphocytes without any platelet clumping, schistocytes, or blasts. The coagulation panel was normal. Hematology was consulted and the patient was admitted to the ICU for close monitoring. Differentials included ITP vs hematologic malignancy (myeloma vs MDS vs Leukemia vs Lymphoma) vs B12 deficiency. Laboratory tests for Vitamin B12/folate level, hepatitis B, C, and HIV all came back negative.

Unfortunately, the patient did not have an adequate platelet response post platelet transfusions with platelet counts continuing to fall below 10K. Furthermore, she experienced failed treatment with steroids, IVIG, and eltrombopag. A bone marrow biopsy was performed showing a normocellular for age Bone Marrow with Maturing Trilineage hematopoiesis, significant megakaryocytic hypoplasia, with cytologic atypia, foci of degenerative stromal changes ("serous fat atrophy"), and no increase in blasts. Mast cells were not increased with no evidence of acute leukemia or lymphoma. No significant plasma cell infiltrate was noted. Marrow Cellularity: 30-40%. Marrow Fibrosis absent. Iron storage was adequate and flow cytometry was negative. Small lymphoid aggregate was present and composed of a mixture of small-sized B and T-cells with no overt CD5 coexpression by B-cells, favor reactive.

DISCUSSION:

Amegakaryocytic thrombocytopenia is a severe adverse effect of the COVID-19 vaccine. The exact mechanism remains unclear; it is suspected to be an immune-mediated process. Patients present with severe bleeding and thrombocytopenia, which is usually refractory to high-dose corticosteroids.

CONCLUSION:

Multiple studies continue to show that COVID vaccines are safe yet life-threatening adverse effects still occur. All platelet disorders should be considered a severe adverse effect of the COVID-19 vaccine. Knowing the early signs and symptoms of thrombocytopenia will become increasingly important as more of the population receives the vaccine. Quick diagnosis and management are essential to avoid life-threatening hemorrhage.

Resident/Fellow Clinical Vignette

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Extensive splanchnic vein thrombosis associated with combined oral contraceptive use

Introduction: Combined oral contraceptives (COCs) are a widely used form of hormonal contraception associated with an increased incidence of venous thrombosis. The individual risk is determined by the type and concentration of the contained estrogen, duration of use, age, and the presence of other thrombogenic factors, such as smoking or hereditary predisposition. While deep vein leg thrombosis, pulmonary embolism, and femoral vein thrombosis represent the most frequent sites of thrombotic events in connection with COCs, other venous systems can be affected.

Case description: A 35-year-old woman presented to the emergency department with nine days of epigastric pain, exacerbated by food intake, associated with nausea and vomiting. The intensity of her abdominal pain gradually progressed to severe and constant on the day of admission. Past medical and surgical history was only relevant for appendicitis with uncomplicated appendectomy, no prior pregnancy, never smoker, occasional alcohol intake. The only active medication was a COC (norgestimate and ethinyl estradiol), which she had been taking for the past ten years without complications. No personal or family history of thromboembolic events was recognized. She was overweight with a BMI of 27 kg/m² and had moderate generalized abdominal tenderness more pronounced over the right upper quadrant. Laboratory results, including hepatic function testing, were unremarkable, except for leukocytosis of 12,200 WBC per microliter. Abdominal ultrasound and computed tomography venogram of the abdomen revealed a main portal vein thrombus with extension to the right and left portal veins, splenic vein, and superior mesenteric vein. COCs were discontinued, and anticoagulation with apixaban was started with the eventual resolution of pain. Repeat imaging after three months of uninterrupted anticoagulation demonstrated chronic portal vein and superior mesenteric vein thrombosis with cavernous transformation and development of epigastric and mesenteric varices. She had an extensive thrombophilia evaluation that was negative, including antiphospholipid syndrome, paroxysmal nocturnal hemoglobinuria, JAK2V617F, and a negative genetic myeloid disorders panel.

Discussion: This case highlights a rare case of extensive splanchnic vein thrombosis with long-term use of COCs as the only identified risk factor. Splanchnic veins, including porto-mesenteric and splenic veins, have been reported as unusual sites of thrombosis associated with COCs. The initial presentation is nonspecific, with nausea, vomiting, and abdominal pain as the most common symptoms, however, imaging studies are recommended in cases of worsening or unresolved abdominal pain in patients receiving COCs. Early recognition and subsequent anticoagulation are critical, as untreated thrombosis can result in mesenteric ischemia, development of portal hypertension, ascites, and variceal bleeding. In this case, progression to chronic portal vein thrombosis, superior mesenteric vein thrombosis, with development of epigastric and mesenteric varices occurred despite discontinuation of COCs and anticoagulation with apixaban.

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Interesting Case of Invasive Fungal Sinusitis in GPA- Granulomatosis with Polyangiitis

We present a case of a 34 yo female with no pmh who presented with recurrent episodes of sore throat, facial pain, nasal discharge and hoarse voice. She denied use of cocaine or other inhaled illicit substances. She was treated with antibiotics at numerous other hospitals, but her symptoms recurred. She had nasal crusting and a saddle nose deformity on exam. She underwent flexible nasolaryngoscopy which demonstrated ulceration of nasal sill, total septal cartilage perforation, and purulent sinusitis. CT Thorax noted scattered bilateral centrilobular semisolid and ground glass nodules. CT sinus confirmed extensive osseous deficiency involving nasal septum and adjacent structures, as well as extensive mucosal thickening of paranasal sinuses. Labs were positive for c-ANCA and PR-3, confirming diagnosis of GPA; ANA was negative. The patient was started on prednisone and was briefly given mycophenolate mofetil. Her symptoms did not improve and she was given rituximab induction.

She did not follow up in outpatient clinic but presented again to our hospital approximately five months later with worsening nasal and throat pain, difficulty speaking, cough and shortness of breath. Her scope showed white growth involving the nasal vestibule and posterior nasopharynx. Pharyngeal biopsies detected invasive fungal organisms, spores. Fungal cultures grew aspergillus, candida krusei and candida bracarensis. She was treated with a prolonged course of antifungal agents with some improvement in her symptoms.

DISCUSSION:

Granulomatosis with polyangiitis (GPA) is an ANCA associated systemic small vessel vasculitis. It typically presents sub-acutely-- with initial complaints of a benign prodrome such as nasal stuffiness, sinusitis, decreasing in hearing. Typically presentation includes upper (sinusitis, crusting rhinitis, saddle nose deformity, otitis media, mastoiditis, hearing loss) and lower respiratory tract (lung nodules, alveolar hemorrhage). Kidney involvement including focal necrotizing glomerulonephritis can often be seen. Neurological, cutaneous ophthalmic and orbital involvement can also be seen. Diagnosis can be confirmed on biopsy-- requiring a careful integration of pathological findings with clinical, laboratory and radiological data even when the three pathological hallmarks are present (granulomatous inflammation, vasculitis, and necrosis).

Treatment is based on disease severity. Severe disease treated with either rituximab or cyclophosphamide and high doses of glucocorticoids. Limited disease may respond to a combination of methotrexate and glucocorticoids (thus sparing potential side effects of cyclophosphamide). Avacopan (c5a receptor antagonist) has been shown to be noninferior but not superior to tapered prednisone with respect to sustained remission. Remission maintenance therapy with b-cell depletion via rituximab may be recommended in some patients, particularly those with frequent flares.

Infections are frequent in vasculitis due to immunosuppression and ischemic damage to tissues, infectious agents may also trigger vasculitis and stimulate the progression of the disease. Patient with GPA and other vasculitis should be monitored closely for superimposed infection.

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Stress Cardiomyopathy Secondary to Albuterol Use

Introduction

Stress cardiomyopathy is often associated with physical or emotional stressors. The prevalence of this phenomenon due to chemical stressors may be clinically underrecognized.

Case Description

A 59-year-old woman presented with acute-onset shortness of breath over two hours, associated with diffuse wheezing not eliminated by use of her albuterol inhaler. EMS was called and her oxygen saturation was 68% on a NRB mask. She had a medical history of asthma diagnosed at age 50. Upon ED arrival, BiPAP was initiated. On exam, she was in severe distress and lethargic. She was afebrile, with BP = 93/60 mmHg, P = 138 bpm and RR = 36 bpm, with shallow respirations and accessory muscle use. Coarse breath sounds and prolonged expiratory wheezes were bilaterally audible. Labs revealed a WBC of 12.9 k/ μ L (ULN < 10.5 k/ μ L) and hs-troponin of 150 ng/L (ULN < 14 ng/L). ABG: pH = 7.07, pCO₂ = 79 mmHg, HCO₃ = 22.9, and PaO₂ = 97 mmHg, with O₂ saturation 97.8%. EKG showed sinus tachycardia with nonspecific ST-T wave changes and T wave inversion in the lateral leads. The SOB resolved with BiPAP treatment, and follow-up ABG after 2.5 hours confirmed resolution of hypercapnia. However, the troponin rose from 150 ng/L to 789 ng/L. Bedside ultrasound demonstrated severely reduced LV function with preserved basal segments. Urgent left heart catheterization with ventriculogram for NSTEMI evaluation revealed patency of all coronary arteries, LVEF of 10-15%, and LVEDP of 25-30 mmHg. The ventriculogram demonstrated preserved basal function, mid-ventricular akinesia, and apical hypokinesia. She was promptly started on GDMT. A follow-up contrast echocardiogram performed 17 hours post-catheterization showed significant improvement in the LVEF (40-45%) and her clinical symptoms dramatically improved. Ten days following discharge the patient felt well and planned to repeat a TTE three months later.

Conclusion

We present a case of stress cardiomyopathy likely induced by beta-2 agonist stimulation. Our case adds to the sparse published reports on this complication of adrenergic agonists and serves to heighten awareness of this rare adverse event.

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Hashimoto's Encephalopathy: A rare presentation of Hashimoto Thyroiditis

Introduction

Hashimoto's encephalopathy (HE) is a rare subtype of autoimmune encephalitis (AE). Here we present a patient with catatonia and psychosis as initial symptoms of HE who remarkably improved after treatment with steroids and IVIG.

Clinical case

A 58-year-old female was brought to the emergency room with symptoms of being withdrawn, disorganized, and internally preoccupied for a day. She had no significant psychiatric history but had hypothyroidism diagnosed five years ago. Vital signs were stable. On examination, the patient was nonverbal, unable to follow commands, but there were no focal neurological deficits. She was initially given risperidone and escitalopram without improvement. On the first day of admission, she developed generalized tonic-clonic seizures. Initial CT head and MRI brain showed a chronic right occipital stroke and chronic vertex SDH but without acute findings. EEG showed myoclonic spikes and diffuse cerebral dysfunction. Laboratory findings were significant for elevated TSH 6.34uIU/mL, anti-TPO 981IU/ml, and anti-TG 88IU/ml, ESR 48mm/hr, CRP 17.5mg/L. Sodium valproate was given for seizure prophylaxis. Over time, new symptoms of unsteady gait and auditory hallucinations were developed.

Thyroid ultrasound showed a left solid nodule measuring 2.5cm which later biopsy confirmed benign. The repeat CT Head was unchanged, however, a repeat MRI Brain showed additional mild diffuse dural enhancement. CSF analysis demonstrated normal opening pressure, cytology, and protein with no pleocytosis. CSF PCR panel for common pathogens, gram stain, AFB, culture, and Toxoplasma gondii PCR resulted in negative. Encephalitis panel for common antibodies and 14-3-3 was negative. Work-up for malignancy was negative including serological tests and imaging.

During the hospitalization, Seizures were well-controlled with sodium valproate and eventually switched to levetiracetam. Patient was empirically treated with IVIG and steroids. Hashimoto's thyroiditis was treated with levothyroxine. On discharge, patient was fully alert and oriented. Her psychiatric symptoms including psychosis and catatonia along with seizures markedly improved.

Discussion

Given high serum anti-thyroid autoantibodies, clinical response to empiric steroids, and the exclusion of other potential etiologies, our patient was diagnosed HE. HE is an autoimmune encephalopathy more common in women. Patients can present with neuropsychiatric symptoms including seizures, psychosis, catatonia, and cognitive decline. Differential diagnoses include rapidly progressive dementias, infection, malignancy, autoimmune AE, and paraneoplastic AE. The pathogenesis is unknown and high anti-thyroid autoantibody concentrations lack evidence for a role in pathogenesis because it is also present similarly in multiple sclerosis, neuromyelitis optica, and AE as those in HE patients.

Resident/Fellow Clinical Vignette

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An Unusual Case of Shoulder Septic Arthritis

Bone and joint tuberculosis (TB) have been discovered in human bone samples dating back to 9000 BC. About 10% of all extrapulmonary TB cases in the US are musculoskeletal TB. The most common type of musculoskeletal TB involves the vertebrae, also known as Pott's Disease, and represents half of musculoskeletal cases. Soft tissue involvement is an uncommon form of musculoskeletal TB. Patients often present with nonspecific symptoms including localized pain and swelling, and hence, are often misdiagnosed. One study showed that the average time to diagnosis of skeletal TB is more than one year.

This is a case of a 62-year-old male who presented with increasing right shoulder pain and an enlarging shoulder mass for four months. Past medical history is significant for prostate cancer on leuprolide and for cocaine use. There was no fever, chills, cough, weight change, night sweats, or recent travel. He was born in Manhattan and has lived in NYC for all his life. He works in an office. On examination, there was an indurated, non-tender right shoulder mass with a 2x2cm area of skin necrosis with surrounding erythema and purulent discharge. There was limited range of motion with active right shoulder abduction and active forward flexion secondary to pain. CXR was unremarkable. An MRI of the shoulder showed a multiloculated cystic mass infiltrating the subcutaneous muscles, tendons, and right chest wall. Irrigation and debridement and placement of antibiotic beads was done. Vancomycin and cefepime were started empirically, and shoulder tissue cultures grew *Pseudomonas aeruginosa*. The patient was discharged on hospital day seven with piperacillin/tazobactam for eight weeks followed by levofloxacin for four weeks. Pathology showed fibroadipose tissue and cartilage with inflamed granulation tissue, foreign body giant cells, and necrosis. Shoulder tissue culture and humerus bone culture showed *Mycobacterium tuberculosis* complex via MALDI-TOF three weeks later. A chest CT done after hospital discharge showed several irregular shaped nodules in both upper lobes. Treatment with isoniazid, rifampin, ethambutol, and pyrazinamide was started.

The presence of a typical bacterial pathogen may mask the diagnosis of musculoskeletal TB as it is rare to have tissue cultures positive for both TB and another bacterial pathogen. High suspicion of bone and soft tissue TB is required to order the appropriate diagnostic tests such as AFB culture of tissue in order to provide a prompt diagnosis.

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SILENT BUT DEADLY: FROM FATTY LIVER DISEASE TO INFILTRATIVE HEPATOCELLULAR CARCINOMA

Introduction

Fueled by the obesity epidemic, there has been a rapid increase in patients diagnosed with nonalcoholic fatty liver disease (NAFLD). With no validated biomarkers of severity, the disease burden silently increases, with patients unknowingly progressing to nonalcoholic steatohepatitis (NASH) via cumulative fibrogenic remodeling. Patients with NAFLD are at increased risk of developing hepatocellular carcinoma (HCC) with or without cirrhosis, highlighting its unique pathway for carcinogenesis. These patients often present with advanced malignancy, as surveillance is not widely performed in the absence of cirrhosis. NAFLD now represents the second leading cause of HCC in the United States, emphasizing the importance of effective comorbidity management for disease mitigation and prevention. Here we highlight a case of silent progression from nonalcoholic fatty liver disease to multifocal infiltrative hepatocellular carcinoma in the absence of cirrhosis.

Case Presentation

An 82-year-old man with a past medical history of obesity, hypertension, type 2 diabetes mellitus, and nonalcoholic fatty liver disease presented with abdominal discomfort and melena for two weeks. He denied nausea, vomiting, constipation, diarrhea, or hematochezia. Physical examination noted temporal wasting, orbital hollowing, sarcopenia, and visible peri-umbilical veins with a moderately distended abdomen and positive fluid wave. His hospital course was complicated by large-volume hematemesis with esophagogastroduodenoscopy revealing large esophageal varices requiring band ligation. He received blood transfusions, completed intravenous octreotide therapy, and was started on empiric ceftriaxone for spontaneous bacterial peritonitis (SBP) prophylaxis. His alpha-fetoprotein was elevated with MRI abdomen revealing portal hypertension and innumerable liver masses involving all hepatic segments with tumor extension into the main, right, and left portal veins, compatible with multifocal infiltrative hepatocellular carcinoma (LI-RADS 5V). His extensive multi-vessel infiltration precluded liver transplantation or resection. After an interdisciplinary discussion involving hepatology, oncology, and radiology, systemic therapy was deemed the treatment of choice. He was started on carvedilol for esophageal varices prophylaxis and discharged on dual Tremelimumab and Durvalumab immunotherapy, with outpatient hepatology, oncology, and palliative care follow-up.

Discussion

With suboptimal management of underlying metabolic syndrome, patients with nonalcoholic fatty liver disease undergo gradual fibrosis, progressing to nonalcoholic steatohepatitis and even cirrhosis. Due to its silent advancement, many patients present later in their disease course, having advanced hepatocellular carcinoma irrespective of fibrotic stage or cirrhosis. As no curative therapies are currently available, effective management of comorbid conditions, specifically insulin resistance and obesity, is key to primary, secondary, and tertiary disease prevention. Patients with nonalcoholic fatty liver disease should be referred to a hepatologist, as the initiation and modality of HCC screening may vary pending fibrotic stage and comorbidities. Further studies are needed to establish risk factors and biomarkers that may identify non-cirrhotic NAFLD patients at increased risk for HCC.

Resident/Fellow Clinical Vignette

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Bronx Care Health System

An Unusual Case of Ovarian Neoplasm Presenting as Endobronchial Lesion

Introduction

Ovarian malignancy is the second most common gynecologic malignancy in developed countries and is associated with an overall five-year survival rate of less than 50% in the more advanced stages. The primary histologic subtype is epithelial, whereas the others include germ cell and sex cord-stromal tumors. Pulmonary metastases are commonly associated with colon, renal, and breast cancer but less commonly with ovarian malignancy. Tracheobronchial metastasis of ovarian cancer is very rare.¹⁻²

Case Presentation

Our patient is a 27-year-old woman who presented to us for an incidental finding of a right middle lobe mass in the surveillance CT Scan of the chest. Eight years ago, she was diagnosed with mucinous cystadenocarcinoma stage IA grade 2 of the right ovary. She underwent right salpingo-oophorectomy, partial omentectomy, and appendectomy in 2014, followed by adjuvant chemotherapy with carboplatin and paclitaxel for six cycles as scheduled by oncology. Since then, the patient has been asymptomatic.

Her Chest X ray (Fig 1A) showing right lung pulmonary nodule and CT chest (Fig1B) showed a masslike lesion of mixed density in the right middle lobe, some new nodules in the right lower lobe measuring up to 1.3 cm. The PET Scan was performed, which showed elevated metabolic activity in the right middle lobe. The patient underwent fiberoptic bronchoscopy with bronchoalveolar lavage with an endobronchial biopsy. The bronchoscopy revealed an endobronchial lesion in the right middle lobe. A biopsy of the right middle lobe growth on histopathology revealed metastatic adenocarcinoma of ovarian origin (Fig 3A,B,C,D). After which, the patient underwent wedge resection of the right middle lobe by thoracic surgery. She now follows pulmonary and oncology clinic for surveillance.

Discussion

Endobronchial metastases associated with ovarian malignancy are rare. Patients are usually symptomatic and present with dyspnea, hemoptysis or cough. The endobronchial lesion can present between 11 months to 26 years, with a median time of 7 years from the time of diagnosis of ovarian cancer.³ Our patient was, though, asymptomatic, and it was an incidental finding in the surveillance CAT scan. This case provides a rare example of endobronchial ovarian cancer, likely spread through direct invasion from mediastinal lymph nodes into the airway.

Conclusion

We describe one such case of metastatic endobronchial lesion of ovarian cancer. It highlights the importance of surveillance in patients with a history of ovarian malignancy

Resident/Fellow Clinical Vignette

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Bronx Care Health System

A Case of Severe Ovarian Hyperstimulation Syndrome Causing Pleural Effusion by Ovulation Inducing Treatment

Introduction:

Ovarian hyperstimulation syndrome is one of the complications of treating infertility by ovarian hyperstimulation. As a result of hyperstimulation, there is a shift of serum from the intravascular space to the third space, leading to complications like ascites and pleural effusion.

Case Presentation:

A 29-year-old Hispanic female with a past medical history of hypertension was treated for polycystic ovarian syndrome-associated (PCOS) infertility with Follistim/Gonal-F, Menopur Cetrotide/Ganirelix, and leuprolide in-vitro fertilization (IVF) before transvaginal egg retrieval. She presented with shortness of breath. Her urine pregnancy test was negative. CXR (Fig 1) and CT Chest (Fig 2) revealed a large right pleural effusion and a small left pleural effusion, with associated airspace disease of atelectasis or pneumonia. Ultrasound-guided thoracentesis was performed on the patient's right-sided pleural effusion on the day of admission. The procedure yielded 1000ml of hazy, dark, straw-colored fluid. Pelvic ultrasound findings were consistent with ovarian hyperstimulation syndrome. The right ovary contained multiple enlarged follicles and a simple cyst 3.5cm in diameter (Fig.3). Similarly, the left ovary had multiple enlarged follicles and a simple cyst measuring 4.3cm in diameter (Fig.4). After complete resolution of pleural effusion, she was discharged home with Pulmonary and Obstetrics and Gynecology.

Discussion:

Ovarian hyperstimulation syndrome (OHSS) can be precipitated by procedures such as in vitro Fertilization (IVF) or oocyte retrieval (1). The incidence of OHSS before modern assisted reproductive technology (ART) was significantly more significant, at least when considering mild disease (6). OHSS presents more commonly in younger females with lower BMIs, especially those with PCOS, as in this patient. OHSS is further linked to an increase in vascular permeability, regulated by the renin-angiotensin-aldosterone system (RAAS) and with the release of vascular endothelial growth factor (VEGF) and interleukins (ILs), which modulate the permeability of vascular beds. The pathophysiology of OHSS is not fully understood. However, a leading hypothesis of the pathogenesis of the fluid accumulation delineates that fluid flows from the peritoneal cavity into the pleural space, caused by the pressure differential across the thoracic duct and diaphragmatic defects - which are more commonly found on the right side. OHSS is still a rare complication of IVF.

Conclusion

With the anticipated sustained rise in the use of in vitro fertilization and other assisted reproductive technologies, ovarian hyperstimulation syndrome must be a topic of continued research.

Resident/Fellow Clinical Vignette

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Pheochromocytoma Presenting as a Case of Worsening Diabetes Mellitus (DM)

Introduction: Pheochromocytoma is often diagnosed incidentally during unrelated abdominal imaging, in patients with a family history of known disease, or in patients presenting with the classic triad of symptoms: episodic headache, sweating, and tachycardia. We describe an atypical case of pheochromocytoma presenting as acute decompensation of DM.

Case presentation: A 79 year old woman with DM previously well-controlled on glimepiride for 4 years presented with an acute worsening of symptoms notable for abdominal fullness, weakness and weight loss. Laboratory results revealed an increase in HbA1c from 6% to 14% (nl <5.7%) since 3 months prior. Metformin and basal insulin were added to her regimen with a subsequent improvement in HbA1c. An abdominal CT scan was done given the acuity of progression in her DM, which revealed a 5.8cm adrenal mass. The patient denied easy bruising, striae, mood changes, dizziness, or hypertension. Biochemical evaluation demonstrated normal potassium level 3.7 (3.5-5.3 mmol/dL) and aldosterone 8ng/mL (<28), non-suppressed cortisol 7.8mcg/dL after dexamethasone 1mg given the night prior, but Cushing's Disease was ruled out by normal salivary cortisol 0.08 mcg/dL (nl 0.04-0.56 mcg/dL) and urine free cortisol 22.8 mcg/ 24h (nl 4-50 mcg/24h), and further testing revealed elevated metanephrines and catecholamines during 24 hour urine collection, Epinephrine 129 mcg/24h (nl 2-24 mcg/24h), Metanephrine 7121 mcg/24h (nl 90-315 mcg/24h) and Normetanephrine 2078 mcg/ 24h (nl 122-676 mcg/24h). Repeat CT scan again showed an indeterminate 5.4 x 3.8 x 5.5 cm right adrenal mass, a 6.9mm lipid-rich left adrenal adenoma, and left adrenal gland hyperplasia. Consequently, the patient underwent laparoscopic right adrenalectomy with pathology revealing a diagnosis of pheochromocytoma. Post-op plasma fractionated metanephrines normalized and have remained normal. Immediately post-op, all diabetes medications (including insulin, glimepiride, and metformin) were stopped and she has had resolution of diabetes with HbA1c 6 on no medications when 1-year post-op.

Discussion: Excess catecholamines are known to cause disruption of glucose and insulin homeostasis from desensitization of the beta-adrenergic receptor and increased insulin resistance¹. Despite this, less than a handful of pheochromocytoma cases have been reported to be presenting as an acute glycemic derangement as in our patient.

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A Case of Rapidly Progressive Cushing's Disease, still a diagnostic challenge.

Introduction:

Cushing's syndrome occurs as a result of prolonged exposure to excess glucocorticoids with majority of cases resulting secondary to hypersecretion of ACTH from the pituitary gland, thereby referred to as Cushing's Disease. Incidence of Cushing's Disease is variable by sex and age. Symptom presentation can vary widely, ranging from subclinical to overt disease depending on both the duration and intensity of glucocorticoid exposure. The average time between symptom onset and diagnosis ranges approximately between 3 to 5 years. We report the case of a 29 year-old male who presented with a 1 month history of rapid weight gain and swelling prior to being diagnosed with Cushing's Disease, a rare disease that females are 3-8 times more likely to develop than males.

Case Presentation:

A 29 year-old previously healthy man was sent to the emergency room by his primary care physician for evaluation of a suspected renal mass on ultrasound. He endorsed a new diagnosis of hypertension as well as a 1 month history of diffuse swelling associated with weight gain and development of abdominal striae. Upon examination, he displayed clinical stigmata of Cushing's syndrome including hypogonadism, facial plethora and presence of dorsal fat pad prompting biochemical workup. Severity of symptoms coupled with the accelerated timeline of symptoms and smoking history led to high clinical suspicion of an ectopic source of ACTH. Initial low-dose dexamethasone suppression tests showed elevated AM cortisol 30.2 ug/dl (nl 6.7-27.6 ug/dl) and ACTH 112 pg/ml (nl 7.2-63.3 pg/ml). The high-dose dexamethasone suppression test was inconclusive at first; repeat testing revealed >50% suppression of AM cortisol suggestive of a pituitary etiology. Pituitary MRI illustrated a prominent pituitary gland with an ill-defined 9x8x7 mm area of relative hypoenhancement in the left aspect suspicious for a microadenoma. Inferior petrosal sinus sampling confirmed the diagnosis of Cushing's Disease. Approximately 4 months after initial presentation, the patient underwent transsphenoidal resection of the pituitary adenoma without complication and started maintenance hydrocortisone. During following visits, he was noted to have significant weight loss and improvements in blood pressure.

Discussion:

The clinical presentation of Cushing syndrome is well studied however, very few symptoms of Cushing's are considered to be pathognomonic in isolation. Common features such as hypertension, glucose intolerance and obesity are often seen independent of adrenal hyperfunction. More so, determining the etiology of Cushing's syndrome can also be difficult when faced with inconclusive results. Cushing's Disease is a female predominant disease with an insidious onset and older age of onset. While diagnostic challenges remain, the atypical presentation of this case highlights the need for providers to maintain high clinical suspicion when encountering male patients due to the increased clinical severity of disease.

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HEERFORT-WALDENSTROM SYNDROM, A RARE SUBACUTE VARIANT OF SARCOIDOSIS

Case:

A 29-year-old African-American female with recent complaints of blurry vision seen by an ophthalmologist was found to have bilateral pan uveitis and was given topical steroid therapy. She was referred to the ED for worsening of her symptoms and new-onset Bell's palsy. Working diagnosis of systemic sarcoidosis was started. Physical examination revealed right facial palsy and submandibular swelling. Inflammatory and immunological markers including ESR, CRP, interferon gamma release assay TB, rheumatic factor, CCP, and ANA were reported negative. Electrocardiogram showed first degree AV block. Vitamin D was depleted and ACE level and lysosome enzymes were elevated. Imaging studies revealed bilateral hilar adenopathy and bronchoscopy with biopsy confirmed granulomatous inflammatory process in the hilar lymph nodes. The patient symptoms continued to improve with high-dose steroid therapy.

Discussion:

Patients with bilateral pan uveitis and Bell's palsy, despite being two symptoms, constitutes Heerfort-Waldenström syndrome (HWS). HWS is exceedingly rare but highly indicative of sarcoidosis. There are two types of HWS. Complete HWS (cHWS) is a tetrad of fever, parotid gland enlargement, uveitis, and Bell's palsy, while incomplete HWS (iHWS) needs only two non-fever symptoms. Our patient had iHWS, although slightly less rare than cHWS. The paucity of symptoms makes it harder to recognize, as these isolated presentations could be the initial presentation of sarcoidosis. Patients with a triad of uveitis, parotid gland enlargement, or facial nerve palsy, are immediately evaluated for the other two symptoms. If two are positive, this is HWS, and requires immediate sarcoidosis workup. Since it can progress rapidly and both c/i HWS will have at least two of the aforementioned symptoms, applying this guideline would capture all HWS cases, which could be the only hint of sarcoidosis, as seen in our case.

Conclusion:

Finally, we saw a unique and rapid progression of sarcoidosis leading to very rare ocular manifestations of pan uveitis with papilledema. Even rarer still is the relative lack of other systemic symptoms. This case highlights, that although rare, sarcoidosis can present almost exclusively as complicated ophthalmologic/neurosarcoidosis without any other symptoms first.

Learning Objectives:

- 1.—Diagnose and recognize sarcoidosis in the setting of an unusual initial neurological or ophthalmologic manifestation and the absence of typical systemic symptoms of sarcoidosis.
- 2.—Screen patients with uveitis, parotid gland enlargement, or facial nerve palsy for possible HWS and sarcoidosis. Sarcoidosis can be present almost exclusively as complicated ophthalmologic and neurosarcoidosis without any other symptoms first.

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Membranoproliferative Glomerulonephritis Associated with Haemophilus parainfluenzae Endocarditis "A Rare Presentation

BACKGROUND:

The HACEK group of bacteria are fastidious gram-negative organisms, that are part of the normal oral and upper respiratory flora in humans. They are responsible for 1-3% of all infective endocarditis and mostly affect patients with underlying heart disease or prosthetic valves. Endocarditis caused by Haemophilus species is even rarer, about 0.8% to 1.3% of all cases in adults, and is characterized by an insidious course, with a mean diagnostic delay of 1-3 months.

H parainfluenzae is related to the pathogenesis of IgA nephropathy as studies have shown H parainfluenzae antigens in the glomerular mesangium of patients with IgA nephropathy. However, the association between H parainfluenzae and membranoproliferative glomerulonephritis (MPGN) is rare and only one case has been reported in the present literature.

CASE PRESENTATION: A 56-year-old male without significant past medical history presented with fever, night sweats, dyspnea, diarrhea, and dark urine to a local hospital where he was found to have a hemoglobin of 4 g/dL requiring transfusion. CT chest showed bilateral pleural effusion and pulmonary edema. Stool studies were negative for infectious diarrhea. Endoscopy and colonoscopy were unremarkable for a source of bleeding. He developed worsening renal failure within a few days and was transferred to our hospital for further management.

Initial labs showed Hb 7 g/dL, WBC $29.1 \times 10^3/\mu\text{L}$, and platelet count $71 \times 10^3/\mu\text{L}$. He had elevated creatinine of 5.28 mg/dL, and low eGFR of 12. Urinalysis identified 3+ proteinuria, 2+ leukocyte esterase, 3+ urine hemoglobin, 20-50 urine WBCs, and 50-100 RBCs. Complement levels - C3 38.4 mg/dL and C4 <8 mg/dL levels were low. Autoimmune workup was negative. Blood cultures revealed Haemophilus parainfluenzae.

Echocardiogram demonstrated mitral valve vegetations with mild to moderate regurgitation. MRI brain showed multiple septic emboli. He was initially started on broad-spectrum antibiotics which were narrowed to ceftriaxone. CRRT (continuous renal replacement therapy) was initiated in the setting of acute uremic encephalopathy and septic shock. Renal biopsy showed diffuse proliferative immune-mediated glomerulonephritis with strong C3 and IgM positivity.

He continued to have worsening pulmonary edema, and repeat echocardiogram revealed a perforated mitral valve leaflet with severe regurgitation. Patient underwent urgent mitral valve repair. Hospital course was further complicated by the development of hemopericardium requiring pericardial window with conversion to full redo-sternotomy for the evacuation of right atrial thrombus. He completed his antibiotic course and had gradual improvement in renal function. Postoperative echocardiogram showed improved ejection fraction and resolution of pericardial effusion. He was weaned off hemodialysis, started on goal-directed medical therapy for congestive heart failure, and discharged with follow-up as an outpatient.

CONCLUSION:

We present a rare case of Haemophilus parainfluenzae endocarditis associated with MPGN in a patient requiring complex medical care.

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Cardiac Arrest in the setting of Catastrophic Antiphospholipid Like Syndrome in young patient with history of Covid infection and polyglandular disorder in a community hospital

Antiphospholipid syndrome (APS) is an autoimmune disorder characterized by arterial and venous thrombosis and recurrent spontaneous abortions due to the presence of antiphospholipid antibodies (aPL). Catastrophic antiphospholipid-like syndrome (CAPS-like syndrome) is a life-threatening presentation of APS which manifests as intravascular thrombosis, leading to rapid onset of symptoms and involvement of multiple organ systems. We present a case of a 28 year old woman with a history of polyglandular autoimmune syndrome, bilateral deep vein thrombosis (DVT) in the setting of SARS-CoV-2 infection 2 years prior, and hypothyroidism who presents with a cardiac arrest in the setting of an acute ST-elevation myocardial infarction (STEMI) due to thromboembolic occlusion of two coronary arteries simultaneously in the setting of non-compliance with anticoagulation for the past one week. Her presentation was further complicated by acute hypoxic respiratory failure due to diffuse alveolar hemorrhage, progressive multiorgan failure and eventual death. Due to the high morbidity and mortality associated with CAPS, a timely diagnosis and multidisciplinary approach to management is needed for evaluation and management. We describe here a case of CAPS-like syndrome in a young woman with an extreme presentation of cardiac arrest and double vessel STEMI with rapid and progressive multiorgan failure and death.

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Submassive pulmonary embolism in a COVID patient presenting with syncope and low Wells score

Introduction"

Pulmonary embolism (PE) is a life-threatening condition typically presenting with chest pain, tachycardia, tachypnea, and reduced arterial oxygen saturation. Less commonly, PE has been associated with an episode of syncope with the absence of the more typical symptoms described above." Recent studies have demonstrated a strong association between moderate to severe COVID-19 and thromboembolic disease including PE."

Case Presentation"

An 82-year-old gentleman with diabetes mellitus type 2, hypertension and SARS-CoV-2 infection confirmed by PCR 4 weeks prior, presented after a syncopal episode. While ambulating at home, the patient became lightheaded, and after sitting down, lost consciousness. 911 was called and EMS found the patient unconscious, with labored breathing and an oxygen saturation of 76%. Patient did not improve with intra-nasal naloxone and a non-rebreather at 15L/min was placed. Patient's clinical status improved during transport and in the ED was found to be alert and oriented x 3 but amnesic to the syncopal event. Patient was hemodynamically stable with an oxygen saturation of 97% on room air." The physical exam was unremarkable. Labs were significant for elevated troponin, maximum 112ng/L. D-dimer was elevated at 7,618ng/mL. SARS-CoV-2 PCR was positive and urine toxicology negative. Wells Criteria indicated a low risk for PE. CT angiogram revealed saddle pulmonary embolus with extension into segmental arteries. The patient was started on a heparin infusion after bolus and was admitted. He underwent IR-guided thrombectomy on hospital day #2 and was subsequently discharged on apixaban."

Discussion

Thromboembolic disease related to COVID-19 is caused by interactions of acute inflammatory processes and the coagulation system. The presence of SARS-CoV-2 results in direct platelet activation. Viral trauma results in intense inflammation mediated through IL-6, which along with leukocyte and endothelial cell activation, and inflammatory mediator release, results in elevations of fibrinogen. Activation of the coagulation cascade further enhances a pro-thrombotic state, increasing thromboembolic complications of COVID-19."

Syncope as an initial presentation occurs in approximately 10% of patients diagnosed with PE. Large emboli likely result in RV outflow obstruction resulting in acute RV failure with impaired left ventricular filling. The reduction in cardiac output causes reduced cerebral blood flow and syncope." Alternately, acute RV pressure overload may lead to RV dysrhythmia and hemodynamic collapse." Finally, PE may result in neurogenic syncope by triggering the vaso-vagal reflex. Obstructive emboli may then spontaneously dislodge to distal pulmonary arteries resulting in return of RV outflow and restoration of hemodynamics. A 30-day mortality has been found among PE patients with syncope versus those without. This case illustrates that while PE needs to be considered in all patients presenting with syncope, those with recent COVID-19 may have a higher risk of PE not recognized by risk assessment tools such as the Wells Criteria.

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A case of Bortezomib induced colonic perforation

A 64-year-old female with history of recently diagnosed IgG lambda multiple myeloma presented with complaints of back pain, constipation, and lethargy for two days. She recently completed her second course of Bortezomib along with Lenalidamide chemotherapy. On presentation she was noted to be febrile, minimally responsive, and with clinical signs concerning of an acute abdomen. Initial laboratory workup revealed neutropenia, lactic acidosis, and elevated inflammatory markers. Blood cultures were positive for methicillin sensitive *Staphylococcus aureus* for which broad spectrum antibiotics were started. A computed tomography (CT) angiography of the chest and abdomen revealed diffuse colonic distention extending from the ascending colon to the sigmoid colon, with irregular wall thickening at the point of transition in the sigmoid colon. Within hours the patient became hemodynamically unstable requiring intubation and pressor support. Emergent laparotomy revealed a massively enlarged colon without evidence of ischemia, perforation, or obstruction suggestive of toxic megacolon. A total colectomy with end ileostomy was performed. Post-operatively patient was managed in the intensive care unit with an extended course of broad-spectrum antibiotics. Surgical pathology revealed no malignancy, negative CMV immunostaining, no evidence of pseudo-membrane, absence of septic emboli, benign lymph nodes, and no chronic inflammatory changes. Patient required a percutaneous tracheostomy, but was eventually decannulated and clinically improved.

Bortezomib is a protease inhibitor which prevents degradation of pro-apoptotic proteins, the accumulation of which results in the death of malignant plasma cells (1). It has been a mainstay for management of Multiple Myeloma for over a decade with significant improvement in overall survival (2). Common adverse events are well documented and include peripheral neuropathy, headache, diarrhea, constipation, vomiting, and rash. Many more adverse events have been reported, with case reports since the advent of Bortezomib use showing rare occurrence of paralytic ileus (3-5), likely secondary to autonomic neuropathy. These events are typically managed with discontinuation of the offending medication and medical management with complete reversal of symptoms. Unfortunately, this was not enough in our patient, so we present a rare case of Bortezomib induced colonic perforation requiring colectomy.

Our patient was on a subcutaneous dose of Bortezomib given twice weekly, which is a common dosing mechanism. One approach that has been explored is once weekly dosing which was shown in a small study to decrease the rate of paralytic ileus without compromising efficacy (6). This may be an option for patients at higher risk for paralytic ileus such as those with renal insufficiency or on long term opioids (7) which are both common scenarios for our Multiple Myeloma patients. It is important to recognize these rare but life-threatening complications, as it was critical to our patient to appreciate the complicated bowel obstruction and promptly get her to the operating theatre.

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QRS Morphology and the Risk of Ventricular Tachyarrhythmia in Cardiac Resynchronization Therapy Recipients

Background: There are conflicting data on the effect of cardiac resynchronization therapy with a defibrillator (CRT-D) on the risk of life threatening ventricular tachyarrhythmia in heart failure patients.

Methods: The study population comprised 2,862 patients implanted with ICD /CRT-D for primary prevention who were enrolled in five landmark primary prevention ICD trials (MADIT-II, MADIT-CRT, MADIT-RIT, MADIT-RISK, and RAID). Patients with QRS duration ≥ 130 ms were divided into two groups: those implanted with an ICD-only vs. CRT-D. The primary endpoint was Fast-VT/VF (defined as VT ≥ 200 bpm or VF), accounting for the competing risk of death. Secondary endpoints included appropriate shocks, any sustained VT or VF and the burden of fast VT/VF, assessed in a recurrent event analysis.

Results: Among patients with left bundle branch block (LBBB) (N=1792), those with CRT-D (N=1112) experienced a significant 44% ($p < 0.001$) reduction in the risk of Fast-VT/VF compared to ICD-only patients (N=680), a significantly lower burden of Fast-VT/VF (HR=0.55; $p = 0.001$), with a reduced burden of appropriate shocks (HR=0.44; $p < 0.001$). In contrast, among patients with non-LBBB (NLBBB) (N=1,070), CRT-D was not associated with reduction in Fast-VT/VF (HR=1.33; $p = 0.195$). Furthermore, non-LBBB patients with CRT-D experienced a statistically significant increase in the burden of Fast-VT/VF events compared with ICD-only patients (HR=1.90; $p = 0.013$).

Conclusion: Our data suggest a potential proarrhythmic effect of CRT among patients with NLBBB. These data should be considered in patient selection for treatment with cardiac resynchronization therapy.

Resident/Fellow Clinical Vignette

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A RARE CASE OF NATIVE-AORTIC VALVE INFECTIVE ENDOCARDITIS CAUSED BY CARDIOBACTERIUM VALVARUM

Background: HACEK organisms—Haemophilus parainfluenzae, Aggregatibacter species, Cardiobacterium hominis and valvarum, Eikenella corrodens, Kingella kingae, and denitrificans are responsible for causing only 1-3% of infective endocarditis (IE). In 2004, the first case of Cardiobacter valvarum- a novel species of the HACEK group- was reported as a cause of IE. Since its initial recognition, only 16 cases have been reported, 15 of which affected previously damaged or prosthetic heart valves. We report a rare case of native-aortic valve Cardiobacterium valvarum IE.

Case Report: A 46-year-old Caucasian, previously healthy male presented with a 3-week history of progressive exertional shortness of breath, lower-extremity swelling, and cough productive of frothy-pink sputum. He denied fevers, chills, chest pain, recent dental caries or procedures, exposure to pets, and use of intravenous drugs. He was afebrile on admission, and his physical examination revealed a grade 2 diastolic murmur at the 3rd intercostal space. On three separate occasions, two sets (aerobic and anaerobic) of blood cultures grew gram-negative bacilli of unidentified species. A transthoracic and subsequent transesophageal echocardiogram showed two globular, mobile masses along the aortic cusp, consistent with aortic valve vegetations and severe aortic regurgitation. These findings suggested a diagnosis of IE caused by an unknown organism. A multi-disciplinary team (cardiologists, cardiothoracic surgeons, and infectious disease specialists) jointly agreed to aortic valve replacement and broad-spectrum antimicrobials: gentamicin, doxycycline, and meropenem. Blood and tissue cultures were sent to an intra-state microbiology laboratory, and after weeks, Cardiobacterium valvarum was identified as the causative organism via genomic sequencing. The antibiotic regimen was de-escalated to ceftriaxone, and the patient recovered without residual symptoms at his follow-up office visits.

Discussion: Cardiobacterium valvarum, a member of the HACEK group, is primarily colonized in the oropharyngeal tract. The organism, rarely, through dental infection and/or manipulation, can enter the bloodstream and infect predisposed heart valves (congenital cardiac disease or prosthetic valves), resulting in IE. Similar to our case, its presentation is indolent and without typical symptoms of fever and chills, making risk factors a vital clue. However, it can rarely affect native/unaffected heart valves without prior evidence of risk factors, posing a diagnostic dilemma. Furthermore, C. valvarum is not cultured on conventional growth media and requires genomic sequencing for identification. Bacterial identification is paramount, as most cases of Cardiobacterium valvarum-IE require prolonged antibiotics and surgical valve replacement. Thus, the growth of unidentified gram-negative bacilli and echocardiogram demonstrating vegetative valves can suggest endocarditis caused by Cardiobacterium valvarum.

Conclusion: This case report highlights a rare but emerging HACEK organism, Cardiobacterium valvarum, as a cause of infective endocarditis, particularly in unidentified gram-negative bacilli cultures. Its timely diagnosis and treatment planning requires a high degree of suspicion irrespective of the presence or absence of risk factors.

Resident/Fellow Clinical Vignette

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Westchester Medical Center

Reducing time to colonoscopy; a quality improvement project

Resident continuity clinics often serve as a valuable resource for the local underserved and largely uninsured patient populations. Patients often return to WMCs clinic for visits without having completed colonoscopies. Most colonoscopies requested are for a screening indication. A smaller fraction of colonoscopy referrals is made for evaluation of abdominal pain, rectal pain, intractable diarrhea, bleeding, and cancer - these were defined as "diagnostic colonoscopies."² One retrospective analysis showed that time to diagnostic colonoscopy in 125,866 patients in the Veterans Health Administration was 52 days in 2015. The source of this delay in colonoscopy completion in the WMC clinic needed to be investigated and addressed to optimize patient care.

To ensure 75% of diagnostic colonoscopies are completed within 45 days of referral.

79 patients aged 31-78 who presented to our outpatient medicine clinic between May 2022 and December 2022 requiring colonoscopies were identified. Data extracted from their charts included indication for colonoscopy as well as the dates of colonoscopy referral and completion. Before implementing any intervention, patients who successfully completed colonoscopy and patients who did not complete colonoscopy were interviewed. Two problematic barriers were identified - pre-operative Covid testing and poor understanding of the bowel preparation instructions. We engaged the stakeholders, facilitating communication between the Internal Medicine clinic, schedulers, Gastroenterology department, nurses, social workers, and patients. Together we created a standardized procedure in which a specific endoscopy suite scheduler was directly contacted by Internal Medicine residents at the time of order placement to prioritize patients requiring diagnostic colonoscopies. This endoscopy suite scheduler contacted patients at time of referral to schedule the colonoscopy and a few days before colonoscopy to answer questions and ensure compliance. A standardized bowel preparation protocol was also created in which patients purchased the bowel prep from an onsite pharmacy prior to leaving their appointment. This process was disseminated throughout the Internal Medicine clinic.

Pre-intervention, from May 2022 to September 2022, the average time to colonoscopy was 65 days and only 32/58 (55%) patients received screening colonoscopies. During the same period, 7/12 (59%) of diagnostic colonoscopies were completed. Post-intervention, from September 2022 to December 2022, the average time to diagnostic colonoscopy was 35 days and 8/9 (89%) patients completed these colonoscopies.

We learned that there was minimal difference in time or rate of completion of screening and diagnostic colonoscopies. Through collaboration and communication with all stakeholders, specific barriers to timely colonoscopy were identified. Our targeted intervention aimed to prioritize patients with high clinical suspicion for pathology. We successfully decreased time to diagnostic colonoscopy and increased rate of completion. Next, we seek to further understand the causes of poor bowel preparation, and target a new intervention to improve the rate of completion of screening colonoscopies.

Resident/Fellow Clinical Vignette

Hanish Jain

Garima Singh, Elizabeth Asiago-Reddy

SUNY Upstate Medical University

Syphilis-associated proteinuria and hepatitis in the setting of HIV co-infection

The rate of syphilis continues to rise, despite effective anti-treponemal therapy, essentially due to the increasing incidence of primary and secondary syphilis among men who have sex with men (MSM). Clinical manifestations of syphilis can vary greatly because it can involve almost every organ. The variability in the clinical presentation seen in syphilis can make the diagnosis challenging. A 52-year-old man (MSM) with a history of Gilbert's disease, HIV for 18 years well controlled on emtricitabine-rilpivirine-tenofovir alafenamide (Odefsey) presented to PCP with a constellation of unusual symptoms of low-grade fevers, fatigue, muscle aches, joint stiffness, bilateral red eyes with tearing, rash, and dark urine for 2 months. The patient stated he initially noticed low-grade fevers followed by fatigue, muscle aches, and joint stiffness that responded to as-needed pain medications. He scheduled an urgent visit when he started noticing bilateral red eyes with tearing but no visual disturbances, a rash that started on his right leg with no associated pain or itching, and dark urine gradually worsening over the last week. The patient had no other significant medical history, alcohol intake, illicit drug use, herbal supplement intake, or family history of autoimmune disorders. The patient worked outside and often had contact with ticks and frequently picked ticks off his body when he was out in the woods. The patient did not recall having a bull eye rash at the time. The patient was sexually active and did have unprotected sex with a single partner since the last STI screen 3 months ago. The patient was otherwise healthy. On examination, the patient was hemodynamically stable, afebrile, and appeared well, with a nickel and dime lesion on his right leg. His lab work showed elevated liver biochemical tests with an alanine aminotransferase 128 U/L, aspartate aminotransferase 68 U/L, alkaline phosphatase 1193 U/L, total bilirubin 2.7 mg/dL, ESR 114, CRP 28.7, urine analysis with protein > 500. HIV viral load remained undetectable and CD4 count was normal. Lyme antibodies came back negative. Syphilis IgG/IgM screen resulted reactive with RPR reactive titer of 256. The patient was recommended to have an admission for lumbar puncture and IV Penicillin but declined and instead preferred treatment with weekly penicillin g benzathine injections x 3 doses. The patient had significant improvement in his symptoms and labs normalized after 1 month. RPR Titer came back at 16 after 3 months. This case emphasizes the importance of early recognition of rare presenting characteristics of syphilis and the importance of a high index of suspicion, especially when evaluating proteinuria, glomerulonephritis, hepatitis, rash, or conjunctivitis in HIV coinfecting patients. It is important to consider secondary syphilis in the differential diagnosis in individuals infected with HIV presenting with systemic disease.

Resident/Fellow Clinical Vignette

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SECUKINUMAB-INDUCED LEUKOCYTOCLASTIC VASCULITIS IN A PATIENT WITH PSORIATIC ARTHRITIS

History & Physical: A 59-year-old male with a history of longstanding psoriasis and psoriatic arthritis refractory to most first- and second-line agents, including topical and oral steroids, UV light therapy, infliximab, and abatacept, presented for a worsening course of the disease. He was started on secukinumab, but two years after treatment initiation he presented back to clinic with complaints of new-onset skin lesions. Physical examination revealed scattered palpable purpura from 0.3 " " 2.0 centimeters of the bilateral lower extremities, most notably circumferentially around the ankles.

Biopsy: 4-mm punch biopsy was performed on a discreet lesion of the ankle with histology revealing polynuclear perivascular dermal infiltrates, fibrinoid necrosis in the blood vessels walls, and thrombosis consistent. Direct immunofluorescence (DIF) revealed patchy perivascular granular deposition of IgA, C3 and fibrinogen. These findings suggested a diagnosis histologic diagnosis of leukocytoclastic vasculitis.

Laboratory Data: Hematological and biochemical blood results were within normal limits. Further rheumatologic workup including rheumatoid factor, cryoglobulin, ANCA, ANA, hepatitis C, MPO, ANA specificity, anti-CCP, ESR, CRP, complements, and PPD test were within normal limit. PR-3 was mildly elevated at 4.9 U/mL. Immunoglobulin assay showed elevated serum IgA. Urinalysis was negative for proteinuria or erythrocyturia. Invitae panel results showed heterozygous mutation of IL-17 RA.

Treatment: The decision was made to stop secukinumab and start treatment with dapsone 100 mg daily. Follow-up visits were arranged at 4-month intervals. After eight months of dapsone therapy, the patient's lower extremity findings had completely resolved and dapsone was discontinued. To date, he remains free from recurrence and has been transitioned to tildrakizumab 100 mg every 12 weeks for ongoing treatment of his psoriasis.

Discussion: Secukinumab is the first human monoclonal antibody approved for psoriasis and psoriatic arthritis which acts by targeting IL-17A, a key cytokine involved in psoriatic pathogenesis. Most common side effects reported with secukinumab are rhinopharyngitis, headache, and upper respiratory tract infections.

Leukocytoclastic vasculitis has not been previously described in clinical trials. The pathophysiology of vasculitis after secukinumab is unclear, but several studies suggest these medications can induce the production of antigens which lead to the formation of antibodies; these immune complexes are deposited within vessels, resulting in complement activation and the inflammatory process resulting in cutaneous manifestations. Removal of the causative agent in leukocytoclastic vasculitis results in improvement in about 90% of cases.

Resident/Fellow Clinical Vignette

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Rochester General Hospital Gastroenterology Fellowship Program

AUTOIMMUNE HEPATITIS FIRST PRESENTING IN POST PARTUM PERIOD

Introduction:

Autoimmune hepatitis (AIH) is an autoinflammatory disease, characterized by self-reacting antibodies & increased gamma globulins. It is more common in women who are at four times increased risk of contracting the disease as compared to men. There have been reports of AIH flaring up after pregnancy but a new diagnosis or onset of disease after pregnancy is an uncommon occurrence and can be challenging to diagnose.

Case:

Our patient was a 32 year old female with no known history of liver disease. She had an uneventful second pregnancy followed by spontaneous vaginal delivery. Immediate post partum course was complicated by sustained high blood pressure, thrombocytopenia and mild elevation of liver enzymes. She was diagnosed as a case of pre-eclampsia with severe features and was treated with IV Magnesium. She was discharged home three days later with improvement in her numbers. After discharge, patient experienced ongoing fatigue, nausea, and intermittent non-radiating, sharp right upper quadrant pain which was unrelated to food intake. Her symptoms progressively worsened over a period of one month and she developed jaundice. This prompted her to come to emergency department. At the time of admission, patient was hemodynamically stable and afebrile. She had right upper quadrant tenderness, scleral icterus and intact mental status. Work up showed thrombocytopenia, mild anemia and severely deranged LFTs in hepatocellular pattern raising suspicion of HELLP syndrome but peripheral blood smear was normal & hemolysis panel was negative. Further testing revealed elevated IgG, ASMA, AMA and negative ANA, anti-LKM & acute viral hepatitis panel. CT abdomen showed nodular liver contour with periportal edema, recanalized umbilical vein, and splenomegaly. Liver biopsy showed chronic hepatitis with dense portal lympho-plasmocytic infiltrate, interface hepatitis and moderate to severe lobular activity, compatible with AIH. Pathology did not favor overlap syndrome. Patient was treated with prednisone with a plan to start Azathioprine on outpatient basis. Three weeks later, patient was seen in clinic. Her symptoms had resolved and her liver function tests were trending down.

Discussion:

Similar to majority of other autoimmune diseases, AIH has shown to undergo remission during pregnancy and flare-up after or near delivery. The underlying mechanism for this is explained by increase in estrogen levels & decrease in Th-1 type cytokines during pregnancy leading to disease remission. Post partum or near-delivery, a state of broad immune reactivation occurs which increases the susceptibility of AIH. The symptoms of AIH are often confused with those of HELLP Syndrome and Acute Liver Failure which also present with deranged liver functions. An increasing number of cases prompts that AIH should be actively considered among the differential diagnosis if liver dysfunction is observed after delivery. The outlook for patients with AIH who are well-managed and closely monitored is positive.

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DYSPHAGIA FROM LYME DISEASE -AN UNUSUAL PRESENTATION

Introduction:

Lyme disease is an infectious disease which is spread by ticks. It is a multisystem illness with potential involvement of cardiac, rheumatological, neurological, ophthalmological and dermatological systems. Due to wide spectrum of presentation, diagnosis can sometimes be challenging.

Case:

77 y.o. male with type 2 diabetes, hyperlipidemia, and hypothyroidism presented to the hospital with two weeks history of progressive dysphagia for both solids and liquids, limiting his oral intake to the extent that he had lost 25 pounds over two weeks. On further interview he reported fatigue, night sweats, hoarseness of voice and generalized headache but no fever, nuchal rigidity, respiratory symptoms or joint pain. Patient was afebrile and hemodynamically stable. Physical exam was unremarkable. Blood work showed no leukocytosis or metabolic derangements. Blood cultures were negative. CT head/neck/chest were negative except for thickened uvula. Fiberoptic laryngoscopy showed decrease in vocal fold adduction and abduction but no evidence of mass, lesion or infection. Video swallow evaluation revealed no penetration or aspiration for thin or pureed consistency. There was delayed clearance of barium through the upper esophageal sphincter. Upper endoscopic exam was normal. During hospital stay patient developed new facial nerve palsy manifesting as mild left eye ptosis, facial weakness and absence of palate/uvula elevation. MRI brain showed small focus of restricted diffusion involving the cortex of the dorsal right temporal lobe consistent with a small acute/subacute infarct, not felt to be the reason for his cranial neuropathies. MRI C spine showed chronic moderate multilevel degenerative disc disease but no significant finding to explain his symptoms. Serum testing was positive for Lyme IgG and IgM Ab and negative for treponema pallidum. Lumbar puncture was then performed for CSF analysis. Results were notable for pleocytosis, elevated protein and negative gram stains and cultures. Lyme CSF:Serum antibody index was positive indicating nervous system infection (as opposed to passive diffusion of Borrelia antibodies into the CSF). Patient was diagnosed with Lyme's neuroborreliosis. PICC line was placed and IV Ceftriaxone was started with a plan to continue it for 28 days at home. Prior to discharge percutaneous gastrostomy (PEG) tube was placed for nutrition. Four weeks later patient was seen in clinic. His symptoms had resolved and he was able to tolerate diet. Subsequently PEG tube was removed.

Discussion:

Lyme disease is a common infectious illness in upper Midwestern, Northeastern, and Mid-Atlantic states. It is usually characterized with a pathognomonic bull's eye rash. The rash has often resolved by the time patient seeks medical care and may also be missed during history taking. Most common neurologic symptoms include meningitis, facial nerve palsy and peripheral neuropathy. This case emphasizes the importance of increased index of suspicion of Lyme disease in patients presenting with neurological symptoms.

Resident/Fellow Clinical Vignette

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Maimonides Medical Center

Stuck (in Bed): An Unusual Case of Toxic Myositis.

Introduction:

Millions of people receive the influenza vaccination yearly. Myositis triggered by a flu shot has been rarely reported. We present an unusual case of progressive paraspinal and proximal leg myositis starting shortly after an influenza vaccine.

Case presentation:

A 77-year-old gentleman presented to the emergency department with 4 weeks of progressive lower extremity weakness leading to the patient becoming bedbound. The patient had no functional limitations prior to symptom onset. There was associated pain in both thighs as well as anorexia, fatigue, and a 10-pound weight loss. The symptoms started a few days following his annual inactivated influenza vaccine (Fluad Quadrivalent). His review of systems was otherwise unremarkable. Positive exam findings showed normal strength in the upper extremities, but 3/5 and 4/5 power with right and left hip flexion, respectively, with normal reflexes. Lab work including CPK and aldolase was normal. His ESR and CRP were elevated to 100 mm/hr and 27mg/dL, respectively. Extensive autoimmune workup revealed negative serologies. Stroke and acute spinal trauma were ruled out. EMG was declined inpatient and MRI of the thigh and spine showed myositis with extensive edema involving bilateral thigh muscles as well as paraspinal and psoas muscles. A thigh muscle biopsy revealed non-specific inflammation with differentials including toxic, metabolic, ischemic, or traumatic myositis. The diagnosis of flu-vaccine-induced toxic myositis was made. The patient was started on high-dose steroids and discharged to rehab. On two follow-up visits, the patient returned to baseline functioning and had normalized ESR/CRP on his steroid taper.

Discussion:

Hypersensitivity reactions and serum sickness have been reported as immune-mediated responses to the influenza vaccine. Flu shot-triggered autoimmune poly- and dermatomyositis have been reported, as well as a case report of localized toxic myositis at the site of influenza vaccination. However, to the best of our knowledge, this is the first reported case of suspected toxic myositis involving the paraspinal muscles. Given the benefits of the influenza vaccine, we encourage ongoing seasonal influenza immunization. However, ongoing surveillance is required to evaluate the occurrence of rare adverse events.

Resident/Fellow Clinical Vignette

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SUNY Downstate Health Science University

A FATAL CASE OF STAPHYLOCOCCUS LUGDUNENSIS INFECTIVE ENDOCARDITIS: SKIN BREAKDOWN AS A RARE CAUSE

Introduction:

We report a fatal case of *Staphylococcus lugdunensis* (*S. lugdunensis*) infective endocarditis (IE) with perforation of the right coronary cusp of the native aortic valve with skin laceration as an identifiable source of infection.

Case presentation:

A 61-year-old male with multiple comorbidities was admitted for multiple ribs and spine fractures requiring surgeries after an accident and was noted to have multiple skin lacerations. Initial vitals and labs were unremarkable. He subsequently became febrile. After initial blood cultures, empiric Vancomycin was started. Multiple blood cultures were significant for methicillin-resistant *S. lugdunensis*. On hospital day 7, the patient had severe abdominal pain and abdomen distension. Computed tomography of the abdomen and pelvis revealed a wedge-shaped left renal infarct and a renal artery angiogram showed evidence of distal thrombosis of the left renal artery suggestive of embolism without renal artery dissection.

Transthoracic echocardiography (TTE) was suboptimal but Transesophageal echocardiography (TEE) showed mobile echogenic vegetation at the sight of the perforated right coronary cusp and mild aortic regurgitations (AR). Valve replacement surgery was planned but it was deferred as the patient was persistently bacteremic on Vancomycin, leading to switching to Ceftaroline and Daptomycin and the bacteremia resolved. Repeat TTE showed similar vegetation with severe AR, markedly elevated left ventricular end-diastolic pressure, moderate to severe mitral regurgitation, and severely dilated left atrium. The patient was rescheduled for surgery, but it was further delayed as the patient developed acute renal failure requiring urgent daily dialysis. Unfortunately, the patient's hemodynamic status further deteriorated leading to his demise.

Discussion:

S. lugdunensis is a commensal of the perineal region of the human skin. Although coagulase-negative staphylococci are generally regarded as contaminants when *S. lugdunensis* is found in the blood it should not be considered a contaminant. First identified as a causal pathogen of IE in 1988 by Freney et al, *S. lugdunensis* has capabilities to bind vitronectin, extracellular matrix, and fibrinogen proteins resembling that of *Staphylococcus aureus* and other aggressive bacteria. *S. lugdunensis* causes a wide spectrum of diseases including skin and soft tissue infection, bacteremia, osteomyelitis, arthritis, and IE, mostly commonly left-sided. Although the incidence caused by *S. lugdunensis* is low (0.8%), the mortality rate associated with IE caused by *S. lugdunensis* (38%–50%) is higher than that associated with IE caused by *Staphylococcus aureus* (7%–27%) according to literature reviews. With its aggressive and rapidly progressive nature, early surgical intervention is often necessary, in addition to antimicrobial therapy.

Conclusion:

This case emphasizes skin breakdown from trauma as an unusual source of bacteremia causing *S. lugdunensis* IE and early surgical intervention should be considered given the destructive nature of *S. lugdunensis*.

Resident/Fellow Clinical Vignette

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NATIVE LEFT-SIDED INFECTIVE ENDOCARDITIS CAUSED BY PSEUDOMONAS AERUGINOSA WITH AN UNIDENTIFIED SOURCE

Introduction

Pseudomonas aeruginosa infective endocarditis (IE) is rare. It accounts for 3% of all IE cases, has usually been associated with intravenous drug use, prosthetic heart valves, and implanted cardiac devices, and has recently been observed as a nosocomial infection.

We present a rare case of left-sided *P. aeruginosa* IE involving the native mitral valve with an unknown source of infection in the absence of traditional risk factors.

Case presentation

A 68-year-old male with bioprosthetic aortic valve and end-stage renal disease (ESRD) on hemodialysis via a well-matured arteriovenous fistula was admitted for evaluation of fever (initial temperature 102.8 F). Physical examination was unremarkable. Labs were significant for ESRD, but no signs of infection. The patient was empirically started on vancomycin and piperacillin-tazobactam for broad antimicrobial coverage. The patient continued to have episodes of fever and the blood culture from day 5 grew *P. aeruginosa*. The antibiotic was switched to cefepime. Transthoracic echocardiography findings were unremarkable. Transesophageal echocardiography demonstrated small sessile vegetation on the body of the posterior leaflet of the mitral valve without the involvement of the prosthetic aortic valve. The patient remained stable on cefepime and after 1-week the patient was discharged on IV cefepime during dialysis to complete six weeks regimen.

Discussion

Infective endocarditis caused by *P. aeruginosa* is extremely rare with approximately 90% of reported cases associated with intravenous drug users involving the tricuspid valve. More cases now are finding that *P. aeruginosa* is also associated with prosthetic heart valves. Our patient had IE of the mitral valve and the bioprosthetic aortic valve remained unaffected. In immunocompetent patients, *P. aeruginosa* IE is primarily associated with indwelling urinary, central venous catheters, or traumatic or surgical wound infections, none were noted in our patient. Early diagnosis and treatment are essential for optimal outcomes, given the high mortality of *P. aeruginosa* IE. Treatment of IE due to *P. aeruginosa* is often challenging because of this organism's ability to acquire antimicrobial resistance over time. Unlike right-sided IE, left-sided endocarditis is often rapidly complicated by systemic embolization. The treatment of *P. aeruginosa* IE often requires a combination of antibiotics and surgical valve replacement.

Conclusion

This case emphasizes that although rare, *P. aeruginosa* IE can be found in patients without a well-known risk factor. Prompt diagnosis and treatment with antibiotic and/or valve replacement is essential to reduce the mortality related to *P. aeruginosa* endocarditis.

Resident/Fellow Clinical Vignette

Vikash Kumar, MD

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A Case of Multi-Drug-Resistant (MDR) Tuberculosis and HIV Co-Infection

Introduction

Multi-Drug-Resistant (MDR) Tuberculosis (TB) and Human Immunodeficiency Virus (HIV) co-infection present a significant public health challenge. The co-occurrence of MDR-TB and HIV exacerbates the difficulty in treating and controlling the spread of both diseases. Effective management of MDR-TB and HIV co-infection requires a coordinated approach involving early diagnosis, access to antiretroviral therapy, and appropriate TB treatment regimens. We discuss a case of a young man from Venezuela diagnosed with MDR TB, HIV, and syphilis.

Case Presentation:

A 30-year-old male with no reported medical history who recently immigrated from Venezuela presented with complaints of a productive cough, fever, chills, weight loss, and night sweats for two months. Physical exam revealed a cachectic young male with left upper lobe expiratory rhonchi. Chest X-ray showed patchy opacities throughout the left lung, right perihilar opacities, and left upper lobe cavities. He was admitted and placed in isolation for high clinical suspicion of infection with TB. CT of the chest without contrast showed left upper lobe cavities with nodular walls and tree-in-bud opacities involving the entire left lung associated with lingular consolidation. He was found to have a positive acid-fast bacilli (AFB) smear, HIV test, and RPR. He was started on rifabutin, isoniazid (INH), ethambutol, pyrazinamide, and pyridoxine. HIV anti-retroviral therapy (ART) was deferred initially while assessing the tolerability of TB drugs. Repeat AFB smears while on anti-TB therapy continued to be positive. The molecular DNA testing of sputum showed Mycobacterium TB with gene mutations suggestive of rifampin and INH resistance. The New York City Department of Health (DOH) TB division recommended discontinuing rifabutin and adding Amikacin, levofloxacin, and cycloserine to the treatment plan. Once anti-TB drugs were noted to be well tolerated the decision to start HIV anti-retroviral was made, and we added bictegravir, emtricitabine, and tenofovir alafenamide. Repeat AFB smears remained positive after two weeks of starting the new regimen. TB was isolated from the pretreatment sample; susceptibility testing showed resistance to rifampin, INH, ethambutol, pyrazinamide, and susceptibility to amikacin, cycloserine, and fluoroquinolones. These results were discussed with DOH TB specialists, who recommended switching current treatment to bedaquiline, pretomanid, and linezolid (BPaL) for 6-9 months as recommended in the updated 2020 WHO recommendations for the treatment of drug-resistant tuberculosis. At the time of this writing, the patient exhibited clinical improvement. He had three negative AFB smears and mycobacterial cultures five weeks after starting BPaL therapy. He eventually was discharged on biktarvy and BPaL.

Conclusion:

This case highlights the complexity of HIV and pulmonary TB co-infection treatment. The major issues with HIV-TB coinfection are drug-drug interaction, risk of immune reconstitution inflammatory syndrome (IRIS), and timing of initiation of ART.

Resident/Fellow Clinical Vignette

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Extramedullary Plasmacytoma with Progression to Myeloma Presenting as a Malignant Pericardial Effusion

Plasma cell neoplasms are characterized by the neoplastic proliferation of a single clone of plasma cells, typically producing a monoclonal immunoglobulin. Plasma cell neoplasms can present as a single lesion (solitary plasmacytoma) or as multiple lesions (multiple myeloma). Solitary plasmacytomas most frequently occur in bone (plasmacytoma of bone), but can also be found outside bone in soft tissues (extramedullary plasmacytoma). In our case we present a rare case of extramedullary plasmacytoma with progression to myeloma presenting as a malignant pericardial effusion.

A 76 year old female with a past medical history of lung adenocarcinoma, status post radiotherapy and lobectomy in 2011 who was initially found in 2018 to have an extramedullary plasmacytoma found in adrenal gland. At that time, bone marrow biopsy would reveal a normocellular marrow without evidence of a plasma cell neoplasm or cancer. At that time, the patient would undergo radiation therapy and extramedullary plasmacytoma of the adrenal gland was subsequently found to decrease in size and in hypermetabolic activity on follow-up PET/CT scan. However, in March 2022, she would present to the emergency department with worsening shortness of breath and dizziness for one week duration. CTA Chest revealed no pulmonary embolism, small bilateral pleural effusions and a large pericardial effusion. Echocardiogram revealed a normal left ventricular ejection fraction, large pericardial effusion with no tamponade physiology. She underwent pericardiocentesis with drain placement and evacuation of 1 liter of serosanguinous fluid. Serial echocardiogram would reveal no significant accumulation of fluid. Pathologic review of the pericardial fluid confirmed the presence of malignant plasma cells with cytogenetic revealing an IgG Lambda myeloma. As an outpatient she would be started on daratumumab, revlimid, and dexamethasone.

Although solitary extramedullary plasmacytoma can involve any organ, up to 80% of such lesions are found in the head and neck. Less frequent sites include the central nervous system, breast, skin, spleen, liver, testes, and the thyroid or the lymph nodes. Extramedullary plasmacytomas involving the adrenal gland are extremely uncommon. Moreover, pericardial effusions are a rare manifestation of metastatic extramedullary myeloma and are seen in 1% of cases. The progression to an IgG myeloma presenting as a pericardial effusion has been associated with a poor prognosis. This case highlights the importance of including malignancy in the differential diagnosis of pericardial effusion with underlying plasma cell dyscrasia as well a unique progression to extramedullary myeloma involving the pericardium.

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Nuvance Health-Vassar Brothers Medical Center

A Case of Metformin induced Lactic Acidosis Associated With BRASH Syndrome

Metformin prevents hepatic gluconeogenesis by reducing the lactate reuptake. This leads to increases in plasma lactate levels. When metformin concentrations increased in the plasma as occur in patients with AKI or when lactate production or clearance disturbed patients develop a metformin associated lactic acidosis. Symptoms include nausea, emesis, diarrhea, and abdominal pain and weakness. Bradycardia, renal failure, atrioventricular (AV)-nodal blocker medications, shock, and hyperkalemia (BRASH) is a recently described syndrome triggered by risk factors including fever, sepsis, medications, tumor lysis, renal insufficiency, diabetes, and hypovolemia. Our case demonstrates MILA associated with the development of BRASH.

A 79-year-old female with past medical history of diabetes mellitus, hypertension, gout, hyperlipidemia, paroxysmal atrial fibrillation, and neuropathy who presented to the ED with fatigue, and an episode of syncope, diarrhea and vomiting, and poor oral intake for 3 days. EMS noted that the patient's heart rate was 20-30, they had administered atropine, but there was no effect. Initial vitals showed the patient was afebrile, blood pressure 118/68, bradycardic at 34, respiratory rate 21, saturating at 99% on room air. Labs were significant for metabolic acidosis with pH of 7.26, bicarbonate 14, lactic acidosis of 11.3, AKI with creatinine of 7.02, hyperkalemia of 7.7, elevated transaminases with ALT 804 and AST 1050. EKG showed that the patient was in atrial fibrillation with slow ventricular rate of 30. The patient's home medications included metformin, metoprolol succinate, and diltiazem. She was started on epinephrine, and she was admitted to the ICU for emergent CRRT for her AKI, hyperkalemia, and lactic acidosis secondary to metformin toxicity and BRASH syndrome. Her AV nodal agents and metformin were held, and her bradycardia improved as her hyperkalemia resolved. Eventually the patient was weaned off pressors, her lactic acidosis resolved, she was continued on hemodialysis and downgraded to the medical wards. She continued to clinically improve, dialysis was stopped, and she was discharged 8 days after her admission.

In our patient, high dose metformin and the associated high lactic acid level (11.3) may have contributed to the poor oral intake and emesis that our patient had which may have contributed to the positive loop of bradycardia due to AV-nodal blockers and hyperkalemia secondary to renal insufficiency. The prompt treatment towards improving the potassium levels and correcting the volume status as well as emergent dialysis led to a successful outcome in our patient. More studies are needed to better highlight the association between these two emergent phenomenon.

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30-DAY READMISSION PREDICTOR MODEL USING RELATIONSHIP MAPPING FOR HIGH-RISK LIVER CIRRHOSIS PATIENTS

Introduction:

The early hospital readmission of patients with cirrhotic patients is a problem in every inpatient hospital facility. Patients with cirrhosis have 1-month rates of readmission as high as 20-35%. Therefore, early identification of high-risk patients could permit interventions to reduce readmission. Our study aimed to construct an automated 30-day readmission risk model for cirrhotic patients using electronic medical record (EMR) data available early during hospitalization. The parameters we are reviewing in this study include Socioeconomic status- Medicare/Medicaid, gender, number of prior admissions in the prior year, Ascites, Thrombocytopenia, low level of alanine aminotransferase, hyponatremia, anemia, and Model for End-stage liver disease score.

Methods:

The Nationwide Readmission Database (HCUP) was queried for 2019-2022. We collected data on hospital readmissions of 1,748,576 adults readmitted within 30 days. Our study first applied standard logistic regression and decision trees to obtain influential variables and derive meaningful decision rules. We then stratified the original data set and applied logistic regression to each data stratum. Finally, using Area under the curve and Odds ratio, we further explored the risk and accuracy of interacting variables in the logistic regression modeling.

Results:

A total of 1,748,576 patients were readmitted between 2019-2022. Of these 24,988 (Mean age 57.4 \pm 12.4, 54% women), patients were included after the propensity score matching. 11,444 (45%) patients with liver cirrhosis patient were compared to 13,544 (54%) Patients without Liver cirrhosis. Multiple logistic regression of the independent variable showed a readmission probability of 7.2% in the Insurance group ($p < 0.01$), CAD 4.2% ($p = 0.01$), HLD 4.8% ($p < 0.01$), Lower median Income quartile (25k-35K) showed increased readmission 7.2% ($p = 0.02$). The odds of readmission were increased in patients with a history of HLD requiring medication (2.4 $p < 0.01$), Median household income (OR 2.19, $p < 0.01$), and Insurance status (OR=1.53 $P < 0.01$) showed an increased incidence of readmission. In addition, the female sex was associated with higher odds of readmission (OR 1.21, $P < 0.01$). Accuracy of gender and Insurance status was also significant. Gender AU ROC (0.550, $p < 0.01$), Insurance status AU ROC (0.641, $p < 0.01$) as compared to the logistic regression.

Conclusion:

Our results suggest that patients with comorbid medical conditions, Insurance status, gender, and Second Quartile pay showed an increased risk for readmission. Research is needed to determine if targeted interventions for high-risk patients decrease readmissions.

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Development of Wernicke's Encephalopathy Precipitated by Pyelonephritis in a 32-Year-Old Female Who Received Gastric Bypass

Obesity is a worldwide epidemic with the use of therapeutic bariatric procedures becoming increasingly common. One potentially devastating, yet easily overlooked complication of bariatric surgery, is thiamine deficiency, which if left untreated may progress to Wernicke's encephalopathy and the irreversible Korsakoff syndrome. Many patients, up to 30%, develop subclinical thiamine deficiency following bariatric surgery. Wernicke's encephalopathy may be precipitated in such patients by hypermetabolic states including sepsis.

Here we present a case of a 32-year-old female who originally presented with sepsis secondary to pyelonephritis three months following bariatric surgery. Shortly after her initial presentation, she developed a constellation of neurologic symptoms including mental status changes, visual impairment, and lower extremity paresthesia. Physical examination findings were notable for ptosis, horizontal and vertical ophthalmoplegia, horizontal gaze nystagmus, difficulty ambulating, and confusion. Thiamine level was low at 48.8. MRI brain with and without contrast revealed symmetrically increased T2 and DWI without restricted diffusion in medial bilateral thalami and mammillary bodies. These findings are consistent with the classical radiologic appearance Wernicke's encephalopathy and confirmed the diagnosis. The patient was started on IV thiamine. The patient's confusion subsequently improved, however her visual and gait symptoms did not fully resolve during the acute stay and patient was subsequently admitted to inpatient rehab following hospitalization.

This case highlights the importance of early recognition of thiamine deficiency in bariatric surgery patients, particularly in patients with sepsis for whom Wernicke's encephalopathy may rapidly develop.

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Cerebral Salt Wasting Syndrome Post Right Occipital Craniotomy

Background: Cerebral salt wasting syndrome (CSW) is characterized by hypotonic hyponatremia because of an inappropriate loss of sodium by the kidneys. It is often seen following injury to the central nervous system and has been reported in patients with subarachnoid hemorrhage, neuro-meningeal tuberculosis, and metastatic carcinoma.

Two hypotheses that have been suggested to explain sodium loss are:

- 1) A decrease in activation of the sympathetic nervous system stimulating the juxtaglomerular apparatus causing a decrease in renin and aldosterone production.
- 2) An increase in brain natriuretic and atrial natriuretic peptides leads to excessive sodium loss by the kidneys.

We present a rare case of CSW in a 59-year-old female following a right occipital craniotomy.

Case Presentation: A 59-year-old female with a history of metastatic lung cancer to the left hip post chemotherapy and radiotherapy presented to the emergency department (ED) with a headache for 3 weeks unresponsive to acetaminophen. On admission, her vitals were a blood pressure (BP) of 123/74 mmHg, a respiratory rate of 18 breaths/minute, a heart rate of 104 beats/minute, and a saturation of 99% on room air. Her neurological examination was unremarkable. A computed tomography (CT) of the head showed diffuse edema within the white matter of the right temporal, posterior parietal, and occipital lobes with slight compression of the right lateral ventricle along with a midline shift of 4.9 mm. In addition, a magnetic resonance imaging of the head revealed a large peripherally enhancing mass in the posterior parietal and occipital lobes with solid and chronic components consistent with a neoplasm.

The Neurosurgery and Hematology/Oncology teams were consulted. She underwent a right occipital craniotomy to resect her mass. A biopsy showed metastatic adenocarcinoma and was started on Dexamethasone 8mg post-surgery.

However, on postoperative day (POD) 2, she experienced excessive thirst, excessive urination, and was hypotensive (BP: 95/60 mmHg). Her basic metabolic panel was significant for sodium of 125 mmol/L, a uric acid of 1.4 mg/dL, and urine studies showing osmolality of 877 mOsm/kg. Serum osmolality was recorded as 259 mOsm/kg. The Endocrinology and Nephrology teams were consulted. She was started on 3% normal saline and sodium chloride tablets 2 gm every 12 hours. Her sodium level improved to 133 mmol/L but continued to decline intermittently. On POD 4, Fludrocortisone 0.1 mg every 12 hours was initiated following which her sodium level was consistently above 135 mmol/L. Her presentation was differentiated from a syndrome of inappropriate antidiuretic hormone (SIADH) based on the clinical presentation of hypotension and response to fludrocortisone.

Conclusion: It is important to differentiate SIADH from CSW as both conditions have a similar presentation but completely different management strategies. It is also important to consider CSW/SIADH in patients with hyponatremia post a neurosurgical procedure.

Jannat Malik**Sisters of Charity Hospital, Catholic Health system, University at Buffalo****Myocarditis: A Case Report of a Young Male with Acute Cardiogenic Shock Treated with Left Ventricular Assist Device (LVAD)****INTRODUCTION:**

Myocarditis, an inflammation of the cardiac muscle, can have detrimental effects on the heart function as shown in this case report. A 27-year-old male was diagnosed with viral myocarditis. Despite initial treatment, the patient's condition deteriorated, leading to acute cardiogenic shock. This case highlights the importance of prompt treatment and identifying the underlying cause of myocarditis.

CASE DESCRIPTION:

A 27-year-old male presented to the ER with complaints of cough, malaise, fatigue and shortness of breath. Echocardiogram revealed severe left ventricular dilatation with ejection fraction less than 20%. The patient tested positive for Influenza A Virus. He was discharged from the hospital with goal-directed medical therapy and wearable cardioverter defibrillator.

A month later, the patient was rushed to the ER with complaints of severe chest pain, lightheadedness, dizziness, nausea, and vomiting. He was diagnosed with new-onset of atrial fibrillation and was started on amiodarone. Diuresis was initiated for acute systolic heart failure. The patient's condition deteriorated significantly, highlighted by dyspnea resulting from lactic acidosis (lactic acid level 6.9 mmol/L, pH 7.26). High sensitivity troponins was 10270 pg/ml.

The critical care team was consulted for cardiogenic shock. The patient was electively intubated, underwent cardiac catheterization and right subclavian Impella was placed. Despite Impella, he required high-dose pharmacologic support with dobutamine and norepinephrine. Referral was sent to cardiac transplant center and patient was accepted. Due to increased circulatory support requirements, the patient was started on veno-arterial extracorporeal membrane oxygenation (VA-ECMO) with plans for left ventricular assist device and eventual transplant. VA-ECMO was discontinued, Impella was removed and the patient was placed on LVAD while awaiting transplant.

DISCUSSION:

Myocarditis can result from viral activation of innate immune responses. Cytokine activation leads to protective effects, however, persistent activation can lead to myocarditis, cardiac remodeling and dilated cardiomyopathy. This patient was Influenza A positive and developed dilated cardiomyopathy leading to acute systolic heart failure. He underwent cardiac catheterization which did not reveal evidence of coronary artery disease. Percutaneous LVAD may significantly improve hemodynamics in critically ill patients. This case depicts the consequence of viral illness leading to cardiogenic shock in a healthy, young male. On further review, the patient's mother expired at age 49 from a cardiomyopathy. This may be suggestive of a hereditary predisposition to cardiomyopathy. In mice, various genes have been identified that confer susceptibility to viral-induced myocarditis. One study reported two cases of dilated cardiomyopathy induced by acute myocarditis in the same family rapidly needing cardiac transplantation. The link between genetic susceptibility in viral myocarditis leading to dilated cardiomyopathy has not been proven in humans and still needs further studies.

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A RARE DIAGNOSIS OF PRIMARY PURULENT PERICARDIAL EFFUSION

Introduction:

Purulent pericarditis is rare in the modern antibiotic era and is mostly associated with nosocomial hematogenous spread. We present a rare case of purulent pericardial effusion caused by Methicillin-Sensitive Staphylococcus aureus (MSSA) without an unidentified source.

Clinical Presentation:

A 66-year-old male with end-stage renal disease who missed his most recent hemodialysis (HD) was admitted to the hospital for evaluation of non-specific exertional chest discomfort lasting for a few days. Except for tachycardia, initial vitals and physical exam were unremarkable. Labs demonstrated a high-sensitivity troponin of 24.8 ng/L (Reference: <19.8 ng/L troponins), elevated blood urea nitrogen, and creatinine. An initial electrocardiogram (EKG) revealed sinus tachycardia without any ischemic changes. Subsequent troponin levels plateaued and EKG remained unchanged. Chest x-ray showed cardiomegaly, but was unchanged from prior x-rays. It was thought that fluid overload secondary to missed HD contributed to chest discomfort and elevated troponin. The patient received urgent HD and acetaminophen helped temporarily relieve his chest discomfort.

The chest discomfort reappeared and a transthoracic echocardiogram (TTE) was ordered demonstrating moderate pericardial effusion with normal ejection fraction. Rheumatological and infectious workups including blood cultures were unremarkable. A diagnosis of uremic pericarditis was made and planned to dialyze the patient daily with daily TTE. Soon, the patient developed new-onset atrial fibrillation, which was successfully cardioverted with intravenous metoprolol. A repeat TTE showed moderate to severe circumferential pericardial effusion with a slight increase in effusion size. A 300cc of serosanguinous fluid was removed by pericardiocentesis with the pericardial fluid study being significant for leukocytosis with a neutrophilic predominance with gram-positive cocci in clusters on gram-stain. An empiric Vancomycin was initiated. The pericardial fluid culture grew MSSA and the antibiotic was switched to Nafcillin. Repeat TTE showed re-accumulation of pericardial effusion, a pericardial window with a pericardial drain was placed and the antibiotic was changed to Cefazolin. Eventually, the drain was removed as pericardial effusion resolved and he was discharged on a six-weeks course of cefazolin on HD days.

Discussion:

Purulent pericarditis is a rare, life-threatening infection of the pericardium with an incidence of 1/18,000 hospitalized patients. It is a rapidly progressive disease with a mortality rate of 100% if left untreated and more than half of the cases often being diagnosed via autopsy. The most presenting sign is fever (85%) with only half of cases demonstrating abnormalities on EKG that are consistent with pericarditis, and less than a third present with friction rub on auscultation or chest pain. Early detection and aggressive intervention with source control are key to survival. Diagnosis requires a high degree of suspicion, confirmed by pericardial fluid analysis and early aggressive treatment should be initiated promptly with broad-spectrum antibiotics.

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Prosthetic Aortic Valve Endocarditis due to *Abiotrophia defectiva*

Infective endocarditis (IE) is an infection involving the endocardium and native or prosthetic heart valves or an indwelling cardiac device. *Abiotrophia defectiva* is a nutritional variant streptococcus (NVS), part of the normal flora in the oral cavity, intestinal and urogenital tracts. In streptococcal endocarditis, several cases with fatal complications are caused by *A. defectiva*. This case discusses *A. defectiva* prosthetic valve endocarditis.

An 86-year-old man with history of atrial fibrillation on apixaban, severe aortic stenosis treated with transcatheter aortic valve replacement (TAVR), coronary artery disease, hypertension, hyperlipidemia, and type 2 diabetes presented to another hospital with progressively worsening right foot pain and discoloration for 10 days. CT angiogram showed thromboembolism in the mid right superficial femoral artery, diffuse vascular calcification and thrombus within the transcatheter aortic valve. He was started on IV heparin and transferred urgently to our hospital. On presentation, vitals were within normal limits. Right lower extremity exam revealed nonpalpable right popliteal and pedal pulses with extensive gangrenous changes of right foot. He underwent right lower extremity angiogram, balloon angioplasty of both right femoral and anterior tibial artery, with a stent placement in the right distal femoral artery and intra-arterial administration of tissue plasminogen activator for thrombolysis. Concurrently, blood culture identified *A. defectiva*; hence, antibiotic regimen was changed from piperacillin-tazobactam to ceftriaxone. A transesophageal echocardiogram (TEE) showed a large mobile echodensity on the prosthetic aortic valve. Following cardiothoracic surgery evaluation, he was deemed not a suitable candidate for surgical intervention. He developed septic shock, necessitating transfer to the Intensive Care Unit. Despite high vasopressor requirements and appropriate antibiotic therapy, the shock was refractory. Following a discussion with family regarding the poor prognosis, he was transitioned to comfort measures and passed away on hospital day 7.

Abiotrophia defectiva is an uncommon cause of IE, accounting for 2-6% of IE cases, and even rarer after TAVR. About one-third of cases have systemic embolization. Although most are associated with small vegetation size, the size of the vegetation may correlate with propensity for systemic embolization. This was seen in our patient, as TEE revealed a large vegetation on prosthetic aortic valve; and he presented with acute right foot ischemia from septic embolization. The case fatality rate of *A. defectiva* IE is as high as 17%, higher than the rates for viridans streptococci (12%) and enterococci (9%). Penicillin resistance is seen in up to 90% of *A. defectiva* isolates, while they demonstrate up to 100% sensitivity to ceftriaxone. Even with appropriate antibiotic therapy, many cases of *A. defectiva* IE are complicated by valve destruction, necessitating surgical intervention in about 30-50%.

In conclusion, to mitigate against significant morbidity and mortality, a high index of suspicion is necessary when managing patients with *A. defectiva* endocarditis.

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A case of hypereosinophilic syndrome presenting as an atypical Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS)

Background: Hypereosinophilic syndrome (HES) is a heterogeneous group of disorders with a variety of etiologies characterized by hypereosinophilia (HE) and eosinophilic end organ complications. The first line treatment of choice for patients who present with life-threatening manifestations is high doses of steroids. Second line treatments are determined based on the etiologies of HES. In this case review, we have been treating a patient as possible Drug reaction with Eosinophilia and Systemic Symptoms (DRESS) while undergoing work ups for secondary HES causes given DRESS has high mortality and in order to come up with the individualized next treatment plans based on the subtypes of HES.

Case Presentation: A 39-year-old woman with a past medical history of migraine presented with 3 days of malaise, fever, shortness of breath, chest pain and generalized diffuse maculopapular itchy rashes. Tests revealed leukocytosis with absolute eosinophilia count (AEC) of 6570, elevated troponin with small pericardial effusion on echocardiogram, mild transaminitis and bilateral lung infiltrates on imaging (CT) of chest. On a later hospital course, serum AEC rose up to 15190 and physical exams were noticeable for brownish pigmented multiple macular rashes on the right leg and back, also tender cervical lymphadenopathy. Imaging (CT) of abdomen and neck showed significant lymphadenopathy. She reported amoxicillin use for dental caries for 2 weeks prior to the rash onset. Dermatology was consulted for concern about DRESS although patient didn't present typical rash suggestive of DRESS and RegiSCAR score was only 3-4 portending possible diagnosis of DRESS. In addition, hematology, pulmonology and Infectious disease were consulted for further evaluation of HE, extensive work ups ruling out hematologic malignancy, helminth infections, autoimmune diseases were sent which all came out with inconclusive results, some are still in progress (eg. Next generation sequencing). Meanwhile, high dose IV steroids were given to cover for possible atypical DRESS with concomitant IV ivermectin for possible strongyloidiasis. Patient eosinophil levels dropped dramatically the day after initiation of steroids and normalized 4 days later with improvement subsequent CT chest. Rash and cervical lymphadenopathy also improved. Patient was discharged on oral steroids and follow ups with multidisciplinary departments as above to explore a definitive cause of HE.

Conclusion: HES is a heterogeneous group of disorders with varied etiologies and eosinophilic end organ involvements. When a moderate severity of etiology is suspected like DRESS, it should prompt empirical treatment with high doses of steroids without delay while exploring other secondary causes of HES thoroughly along with close patient follow ups since second treatment choices are further determined by etiologies of HES.

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UNVEILING THE HIDDEN GIANT: Uncovering the link between Acromegaly and uncontrolled Diabetes mellitus

INTRODUCTION

Acromegaly is a syndrome due to excessive growth hormone production most commonly from a pituitary tumor of somatotrophs resulting in multi-organ system clinical manifestations. It's a rare disorder affecting as few as 2-8 people per million annually. The disease is characterized by somatic features including excessive growth of skin, soft tissue and visceral enlargement with metabolic features including insulin resistance, and hypertriglyceridemia.

Insulin resistance and consequently diabetes mellitus is the main metabolic manifestation of the disease.

CASE DESCRIPTION

65y/o African-American female with significant h/o hypertension, uncontrolled diabetes on high dose MDI insulin therapy, dyslipidemia, obesity (BMI>30), OSA, and osteoarthritis was seen in our primary care clinic for management of chronic medical conditions and poorly controlled diabetes.

O/E: coarse skin, macroglossia, enlarged hands and feet. Blood tests significant for elevated HbA1C of 11%. Further pertinent investigations revealed markedly elevated insulin-like growth factor (IGF-1) level (879ng/ml, Reference 41-279 ng/mL) elevated prolactin levels, low TSH but normal free thyroxine levels. MRI brain revealed a pituitary tumor.

She was started on octreotide for her acromegaly, cabergoline for her prolactinoma, and gradually good glycemic control was achieved with metformin, empagliflozin, and dulaglutide. Her insulin therapy was subsequently discontinued. With adherence to therapy, patient continued to show signs of clinical improvement, IGF-1 and HbA1C levels trended down to normal range (248ng/ml and 5.9% respectively).

DISCUSSION

In acromegaly, excess growth hormone (GH) results in constant and chronic increase in GH levels which are non-responsive to negative feedback inhibitors like insulin-like growth factor IGF-1. Hence a constant increase in GH and IGF-1 levels are characteristic of this condition 1.

Excess production of growth hormone (GH) is known to affect insulin metabolism by inducing a state of insulin resistance, resulting in impaired glucose tolerance and uncontrolled diabetes mellitus. Over 50% of patients with acromegaly have been found to have impaired glucose metabolism at the onset of acromegaly with about 20-35% of patients having diabetes mellitus 2,3.

CONCLUSION

Secondary diabetes mellitus is a well-documented complication of acromegaly. In primary care setting, we emphasize the importance of evaluating secondary causes in select uncontrolled diabetic patients. In our case, detailed history and treating acromegaly helped achieve tight glycemic control hence reducing the complications from uncontrolled diabetes and acromegaly.

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COVID-19 INFECTION RELATED THROMBOTIC THROMBOCYTOPENIC PURPURA

Introduction: Thrombotic microangiopathies (TMAs) are conditions characterized by platelet microthrombi formation in small vessels resulting in organ damage. Primary TMA syndromes result from intrinsic deficiency of one or more factors such as ADAMTS13 deficiency in primary thrombotic thrombocytopenia (TTP) or complement protein deficiency in hemolytic uremic syndrome (HUS). Secondary TMAs result from external triggers such as drugs, viruses, autoimmune conditions, pregnancy, chemotherapy, stem cell or solid organ transplant that lead to acquired deficiencies. COVID -19 coagulopathy may present as venous thromboembolisms and TMA. One of the least documented presentations is TMA, in the form of TTP.

Case: 78 year old male with a history of hypertension and diabetes presented after a fall with right hemiparesis, facial droop, and aphasia and acute ischemic stroke was diagnosed. Patient was found to be COVID + on PCR. His platelet count on admission was 63K which subsequently dropped to 9K. Peripheral smear showed evidence of hemolysis and numerous schistocytes per high power field. PLASMIC score for TTP was 7 indicating a high suspicion for a severe ADAMTS13 deficiency. ADAMTS13 activity was less than 2%. Patient subsequently improved with plasma exchange therapy and steroids.

Discussion: TMAs are characterized by microvascular endothelial injury and thrombosis. ADAMTS13 is a protease primarily synthesized in the liver to cleave von Willebrand factor (VWF) multimers bound on endothelial surfaces into small ones. Inherited or acquired deficiency of ADAMTS13 results in VWF multimers binding to platelets and activating coagulation cascade, which may lead to thrombotic manifestations. Recent evidence suggests a significant alteration of the VWF-ADAMTS13 axis in COVID-19 patients, with an elevated activity ratio that was strongly associated with disease severity. Such an imbalance enhances the hypercoagulable state of COVID-19 patients and their risk of microthrombosis.

TTP is characterized by a classic pentad of thrombocytopenia, microangiopathic hemolytic anemia, fever, neurological involvement and renal dysfunction. This is however seen in only about 10% of the cases, therefore TTP is considered as a diagnosis in patients who present with TMA after other causes have been ruled out. The PLASMIC score was created to predict ADAMTS13 deficiency in suspected TTP. The treatment of TTP is an urgent therapeutic plasma exchange which removes the inflammatory cytokines and aggregate molecules and replenishes ADAMTS13 activity.

Conclusion: Our case highlights TTP as a possible complication of COVID-19 with an imbalance in the VWF-ADAMTS13 axis likely responsible for increasing the risk of thrombotic complications.

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PAROXYSMAL NOCTURNAL HEMOGLOBINURIA: A DIAGNOSTIC DILEMMA

Introduction: Paroxysmal Nocturnal Hemoglobinuria (PNH) is a rare hematologic disorder with an estimated 1-2 cases per million people. It is an acquired hematopoietic stem cell defect that causes complement mediated hemolysis which may manifest as hemolytic anemia (HA), bone marrow failure, and thrombosis.

Case: A 39-year-old male with no significant history presented after a 2-week course of Augmentin and ofloxacin drops for an ear infection. Blood work revealed a hemoglobin of 6.3 g/dl and MCV of 76.9 fL. Patient noted some yellowing of his skin with no other symptoms. Further hemolysis labs (such as Lactate dehydrogenase (LDH), Haptoglobin) were positive. Direct antiglobulin test (DAT) was positive for IgG and negative for C3. Given the recent antibiotic use, a presumptive diagnosis of drug-induced HA was made, and he received blood transfusions and steroid therapy. On follow up a few months later, the patient was noted to have acute hemoglobin drop from 12.7 to 8.6 to in the setting of fatigue, dizziness, jaundice, and intermittent self-resolving dark urine. LDH was >3000, Haptoglobin < 20, bone marrow biopsy was negative for hematologic malignancy. Autoimmune hemolytic anemia (AIHA) was considered as a possible diagnosis and he was started on rituximab and concomitant prednisone therapy. Patient developed new onset Diabetes due to steroid therapy. PNH screen was done by flow cytometry which identified significant clonal expansion of glycosylphosphatidylinositol (GPI) anchor deficient blood cells with 39% red cell clone, 85% Granulocytes and 75% Monocyte clone. Repeat DAT test was negative. Patient was started on Ravulizumab with stabilization of hemoglobin and improvement in hemolysis labs.

Discussion: PNH results from a genetic mutation of the X linked phosphatidylinositol Glycan -A class (PIGA), one of the several enzymes needed to make GPI, which serves as an anchor molecule to many cellular membrane proteins such as CD55 and CD59, usually absent on the membrane of PNH cells. This leads to chronic complement mediated hemolysis of GPI deficient erythrocytes, resulting in activation of granulocytes, monocytes and platelets. In PNH, DAT is usually negative. Sudden attacks of hemolysis in PNH are often precipitated by infection, inflammation or surgery. High sensitivity flow cytometry helps to detect small PNH clones and the use of Complement inhibitors has helped reduce anemia, hemolysis, thrombosis, morbidity and mortality from PNH.

Conclusion: The diagnosis of PNH can take a protracted course. Studies show that fewer than 40% of PNH patients receive a diagnosis within 12 months of symptom onset, while 24% of all PNH diagnoses can take more than 5 years to achieve. Diagnostic testing with PNH flow cytometry should be considered in all patients with unexplained DAT-negative HA, unexplained hemolysis with iron deficiency anemia, abdominal pain, thrombosis, hemoglobinuria, aplastic anemia, or myelodysplastic syndrome.

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ELEVATED AMINOTRANSFERASES AS SOLE PRESENTATION OF CELIAC DISEASE

Introduction: Celiac disease (CD) is an immune-mediated inflammatory condition affecting the small bowel, caused by an immune response against ingested gliadin, a protein component of gluten, present in wheat, barley, and rye. The hallmark of CD is chronic inflammation leading to villi atrophy and malabsorption. Classical CD presents with symptoms of diarrhea, steatorrhea, and weight loss. However, CD is a systemic disorder and, less commonly, presents with extraintestinal signs. We describe an atypical case of asymptomatic CD with persistently elevated aminotransferases as sole presentation.

Case description: A 25-year-old female, otherwise healthy, presented to our clinic due to isolated elevated aminotransferases found on routine bloodwork. ALT and AST were found to be 130 U/L and 60 U/L, respectively. She did not routinely use acetaminophen or alcohol, and denied abdominal pain, bloating, diarrhea, steatorrhea, or unexpected weight loss. Hepatitis A, B, and C screening was negative. Abdominal ultrasound demonstrated no abnormalities. Iron profile, ferritin, ceruloplasmin, and alpha-1 antitrypsin levels were normal. Anti-smooth muscle antibody was weakly positive. Liver biopsy was pursued, demonstrating congestion and pericellular fibrosis but no morphologic evidence of autoimmune hepatitis. Her contraceptive medication was suspected, and discontinued, however aminotransferases remained elevated. Tissue transglutaminase IgA (tTG-IgA) level obtained was strongly positive, at 20 U/mL. Esophagogastroduodenoscopy (EGD) demonstrated scalloping of duodenal folds, and duodenal biopsies revealed villous abnormalities and intraepithelial lymphocytosis, consistent with CD. Six months following strict gluten-free diet (GFD), her aminotransferases and tTG-IgA normalized.

Discussion: Elevated aminotransferases are the most sensitive markers of hepatocellular injury. Normal values, while differing marginally between laboratories, are generally accepted as below 30 U/L for men and 19 U/L for women, and elevation warrants clinical investigation. In patients without hepatotoxic medication or alcohol use, and negative viral hepatitis and abdominal ultrasound, silent CD should be considered, among other disorders. Gliadin binds to cell-surface proteins in genetically susceptible individuals with certain human leukocyte antigen (HLA) haplotypes and triggers a CD4+ T-cell response, releasing proinflammatory cytokines, leading to epithelial damage. It is also thought gliadin induces release of zonulin, a protein that increases intestinal tight junction permeability. This promotes the entry of cytokines, toxins, and antigens through portal circulation to the liver, leading to hepatocellular injury. Initial evaluation includes positive serologic testing, commonly tTG-IgA, and EGD revealing scalloping, cobblestoning, or paucity of duodenal folds. Diagnosis is made with duodenal biopsy revealing histological features of CD, including increased intraepithelial lymphocytes, crypt hyperplasia, and villous atrophy. Treatment with GFD is expected to normalize tTG-IgA in 6-12 months.

Conclusion: Our case highlights the importance of CD testing in asymptomatic individuals with isolated elevated aminotransferases. It is imperative for physicians to maintain a high index of suspicion for CD even in the absence of typical gastrointestinal symptoms.

Resident/Fellow Clinical Vignette

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RACE AGAINST TIME: SUSPECTING STEVEN-JOHNSON SYNDROME PRECEDING CUTANEOUS MANIFESTATION

Introduction: Steven-Johnson Syndrome (SJS) and Toxic Epidermal Necrolysis (TEN) are acute, severe, and potentially fatal mucocutaneous conditions. This condition occurs predominantly as a result of drug reactions, with the most common culprits being allopurinol, antibacterial sulfonamides, and anticonvulsant medications. Lesions commonly begin on the face and thorax before spreading to the upper and lower extremities. Ocular involvement is common and can lead to photophobia, redness, burning, and tearing. Respiratory involvement, including laryngeal involvement, is less commonly observed, but can be a preceding sign to cutaneous and other system involvement, and if left untreated, can lead to phonatory, deglutitory, and respiratory complications. We describe an atypical presentation of SJS with initial limited laryngeal involvement and secondary to an uncommon antibiotic trigger of ciprofloxacin.

Case description: A 60-year-old male with history hypertension on lisinopril presented to the emergency department due to dysphagia, angioedema, fever and cough progressive over two weeks duration. He began a ciprofloxacin course for prostatitis preceding this timeframe. Patient also tested COVID-19 positive three days prior to presentation. CT imaging revealed a thickened epiglottis, and direct laryngoscopy demonstrated edematous epiglottis along with pooling secretions in the piriform sinus and vallecula. Patient's home medications other than lisinopril were continued on admission, including ciprofloxacin. He was given dexamethasone with initial differential diagnosis of ACE inhibitor-induced angioedema versus epiglottitis. Over the following days he developed a diffuse petechial rash involving the trunk, extremities and palms, with sparing of the mucous membranes. Painful oral and penile ulcerations began to form thereafter and the development of sloughing of oral mucosal tissue. The rash transitioned from petechial to maculopapular. SJS was clinically suspected, ciprofloxacin was held, and cyclosporine 3mg/kg/day was initiated. Skin biopsy performed confirmed the diagnosis. Patient was also diagnosed with moderate-severe ocular SJS, and was treated with topical cyclosporine, prednisolone, polymyxin/trimethoprim, and cryopreserved amniotic membranes.

Discussion: SJS and TEN classically present as severe, sometimes fatal mucocutaneous reactions with histopathological sampling showing epidermal detachment. Timely identification and initiation of treatment for SJS is critical in predicting outcomes, though protocols for treatment are often institution and even physician specific. Supportive measures and skin-directed therapy are foundational in management, with recommendation for transfer to specialized centers including burn units for those with higher body surface area involvement. Multiple case series and meta-analyses demonstrated significant reduction in mortality with use of cyclosporine, where it was generally well tolerated and now generally accepted as a treatment option at 3-5 mg/kg.

Conclusion: Our case highlights an uncommon presentation of SJS of epiglottitis and mucosal edema provoked by a rare inciting medication. It is imperative for physicians to recognize the spectrum of presentations possible for SJS to prevent adverse or potentially fatal outcomes.

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Tertiary Syphilis: Neurosyphilis and Syphilitic Aortopathy in an Elderly Patient

Background: Approximately one-third of untreated syphilis develop tertiary syphilis.

Case: An 81 year-old man with medical history of hypertension, hyperlipidemia, COPD and advanced cirrhosis was complaining of dizziness and blurry vision. Neurologic exam showed mild neck stiffness. CT head was unremarkable. RPR panel was reactive with a titer of 1:2048. Chest X-ray showed widened mediastinum (Figure A).

Decision-Making: Lumbar puncture was performed which showed mildly elevated CSF protein (42 mg/dl). CSF VDRL was reactive to 1:8. CSF blood culture was negative. Echocardiogram revealed normal LVEF, dilated aortic root and ascending aorta (Figure B) and mild aortic regurgitation (Figure C). Chest CTA confirmed ascending aortic aneurysm (Figure D). Patient received IV penicillin 4 million units IV every 4 hours for 14 days. Follow-up RPR decreased to 1:504 and CSF VDRL decreased to 1:1 with improvement of symptoms. He was maintained on beta-blockers to prevent progression of aortic aneurysm. Follow-up chest CTA showed stable aortic aneurysm and aortic regurgitation.

Conclusion: This case illustrates a rare case of tertiary syphilis presenting as neurosyphilis and syphilitic aortopathy. Neurosyphilis and syphilitic aortopathy can occur together in as many 43% of cases. Careful patient evaluation, timely echocardiographic assessment and high clinical suspicion are fundamental for the diagnosis of this condition. Early medical intervention in the form of penicillin is associated with decreased progression and high survival rates. This case also highlights the importance on testing for syphilis in hospitalized patients especially with nonspecific presentation.

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HEPATIC IRON OVERLOAD: A FREQUENTLY OVERLOOKED CAUSE OF TRANSAMINITIS IN PRIMARY CARE

Introduction:

An annual physical, in primary care setting, includes evaluation of liver enzymes and abnormal serology is incidental and often asymptomatic. Fatty liver is most common etiology for transaminitis. Hepatobiliary imaging studies, viral hepatitis serology, evaluation of metabolic liver disease, and alcohol consumption history should be performed for transaminitis evaluation. In patients with prior history of excessive alcohol consumption, transaminitis is often assumed to be alcohol related. It is prudent to evaluate for other infectious and metabolic etiologies, which can change patient management. Iron studies including ferritin and transferrin saturation are performed to evaluate for Hereditary hemochromatosis (HH).

Case presentation:

A 46-year-old-male presented to our clinic for his annual physical exam. His medical history was significant for hypertension, uncontrolled diabetes mellitus type 2, and hyperlipidemia, obesity (BMI 31.8) and alcohol dependence (more than 20 drinks per week for last 30 years). Physical exam was unremarkable. His review of systems was unremarkable. Laboratory evaluation was significant for elevated hemoglobin of 18 g/dL, with MCV of 104.8 fl and transaminitis with the ALT and AST of 50 and 36 respectively. Family history was negative for any hepatic disorder. His celiac serology and viral hepatitis panel were unrevealing. The anti-Mitochondrial Antibody, smooth muscle antibody and ceruloplasmin level were normal. However, his ferritin was 998 micrograms/mL with transferrin saturation of 69%. His ultrasound of abdomen revealed liver steatosis, normal spleen with no ascites and gallbladder stone. Genetic testing with homozygous H63D confirmed the diagnosis for hereditary hemochromatosis. In view of the transaminitis, patient was offered liver biopsy to evaluate for liver fibrosis. He has been started on therapeutic phlebotomy and encouraged alcohol abstinence.

Discussion:

Hereditary hemochromatosis (HH) is rare and underdiagnosed. In view of diagnostic advances, blood genetic testing is non-invasive and corner stone test in the diagnosis of hepatic hemochromatosis. C282Y and H63D HFE are common mutations associated with HH. Liver biopsy is performed in patients with transaminitis for liver fibrosis evaluation and is not required for diagnosis of hemochromatosis. Phlebotomy is critical for preventing cardio-hepatic dysfunction and increasing life expectancy. Since liver cirrhosis determines prognosis and survival in patients with HH, early diagnosis is prudent. Metabolic liver etiology needs to be further evaluated even in patient with prior alcohol use and obesity.

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Amiodarone Induced Type II Thyrotoxicosis in a Patient with Drug-resistant Atrial tachycardia

Background:

Amiodarone is a class III antiarrhythmic, which is a great option for drug-resistant atrial tachycardia however it can pose some challenges with use given known thyroid toxicity due to its iodine rich content. Thyrotoxicosis is more commonly described in iodine poor countries and only occurs in 3-5 % of patients in the United States. Given its long half life of 50-100 days, amiodarone toxicity can be seen up to 30 months after discontinuation of therapy. The median onset of time thyrotoxicosis for Type I toxicity is 3.5 months and Type 2 toxicity is 30 months despite discontinuation of amiodarone therapy.

Case Presentation/Clinical Case:

A 75 year old male patient presented with chest pressure, palpitations, lightheadedness and elevated heart rate admitted for atrial flutter with rapid ventricular rate. Patient has history of paroxysmal atrial fibrillation and atrial flutter, previously requiring ablation and oral amiodarone therapy. Atrial fibrillation was currently being managed with metoprolol and rivaroxaban. Patient stopped taking amiodarone 5 months ago. Patient denied any other symptoms. He does not have history of thyroid disease. Presenting labs included TSH 0.091 uIU/mL, free T4 3.19 ng/dL, free T3 5.0 pg/mL. ECG showed atrial flutter with rapid ventricular rate of 161. Rate control was attempted with intravenous metoprolol and diltiazem drip however rate continued to be elevated. Echocardiogram showed reduced ejection fraction of 30-35 %, diffuse left ventricular hypokinesis and mild left atrial dilation. Given new onset systolic heart failure, more aggressive rate control was attempted and patient was started on amiodarone drip. Thyroid ultrasound did not show any nodules or lesions, normal appearing thyroid. Additional labs showed thyroid peroxidase antibody level of 2.6 IU/mL and thyroid stimulating immunoglobulin index <1.0. Further history revealed patient had thyrotoxicosis after amiodarone use and it was stopped as an outpatient. Patient was diagnosed with Type II amiodarone induced thyrotoxicosis, amiodarone was discontinued and patient was started on steroids. Patient had successful cardioversion with restoration of sinus rhythm and remained in sinus rhythm at the time of discharge. He was given prednisone taper with plans for outpatient ischemic evaluation as well as consideration for ablation.

Conclusion:

Although less common in the United States, clinicians should have an index of suspicion for Type II amiodarone induced thyrotoxicosis which can happen up to 30 months from discontinuation of amiodarone. Obtaining a thorough history and physical is essential and treatment requires prompt initiation of steroids.

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ATP7B c.3275C>T (p. Thr1092Met) -A Novel Variant Causing Clinical Wilsons Disease

Wilson's Disease is an autosomal recessive disorder of copper metabolism resulting from various ATP7B mutations. Though clinical manifestations are classically hepatic and neurological, there exists a broad spectrum of presentations including renal, endocrinological, and hematological manifestations. In this case report, we present a 49-year-old female presenting due to fatigue who was found to have anemia of chronic disease secondary to elevated urinary copper excretion and hepatic copper congestion consistent with Wilson's Disease. She was treated with chelation therapy and erythropoietin with resolution of anemia and normalization of copper levels.

Genetic testing in our patient revealed isolated heterozygous c.3275C>T (p.Thr1092Met) mutation of uncertain significance not previously described as pathogenic. While heterozygous carriers of Wilson's disease may show mildly elevated hepatic copper levels and urine copper excretion, this has not been associated with phenotypic expression related to copper overload. Given this patient's symptomatic presentation with anemia of chronic disease in the setting of demonstrated copper overload, we believe this variant of uncertain significance likely represents a novel pathogenic mutation resulting in late-onset Wilson's Disease.

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Bilateral Pulmonary Artery Embolization After Massive Hemoptysis

Introduction

Hemoptysis is an adverse complication of pulmonary aspergillosis and can be an indication for invasive procedures. Life-threatening hemoptysis (massive hemoptysis) can alter approach and management for patients needing critical care. We present a case of a male with smear-negative TB who had an acute onset of large volume hemoptysis and decompensated hemodynamically. We focus on the management and the rare case of bilateral pulmonary artery embolization.

Case

A 60-year-old male who was diagnosed with and treated for TB in 2018 presented to the Emergency Department (ED) complaining of a cough for several months. The patient coughed up 550mL of blood at presentation and began decompensating hemodynamically. He was intubated in the ED and then was transferred to the ICU where he was started on vasopressors. CT scan of chest showed cavitory lesions in the upper lobe, which was suspicious for reactivation of TB. The patient also tested positive for aspergillus on sputum culture. The patient received two units of Packed Red Blood Cell transfusion and received broad-spectrum antibiotics during his stay. Interventional radiology was consulted to perform pulmonary artery embolization after a recommendation by cardiothoracic surgery. An incidental finding of pseudoaneurysm in the right upper lobe pulmonary artery was found and later coiled. Additionally, IR performed a right upper lobe embolization to two bronchial arteries. Throughout the admission, the patient remained intubated and vent settings were maintained. Patient was noted to have a slow clinical improvement. He was eventually weaned off vasopressors and was stabilized at room air. Cultures were sent periodically through the hospital stay, which were negative for acid-fast bacilli. During the time of discharge, infectious disease recommended RIPE therapy and recommended follow up. The Health Department was updated regarding the patient's diagnosis and management.

Discussion

Life-threatening hemoptysis is hemoptysis that obstructs the airway, causes hemodynamic instability (as seen in this case), or causes abnormal gas exchange. Hemoptysis is further categorized as life-threatening when a patient expectorates 150 mL of blood in 24 hours, or bleeding at a rate of ≥ 100 mL/hr. Mortality rates are greater than 70% for patients who have hemoptysis ≥ 600 mL/hr. This case exhibits an atypical presentation of how quickly the patient decompensated into hemodynamic instability, needing pulmonary artery embolization by IR. Recognizing life-threatening hemoptysis and intervening in a timely manner are important for mortality outcomes of individuals with massive or life-threatening hemoptysis. Usually when patients need airway protection, intubation with single lumen or dual lumen endotracheal tube is used. However, when the side of life-threatening bleeding is known, a dual lumen endotracheal tube is preferred to isolate and protect the non-bleeding lung which was used in this case. Management with bronchial arterial embolization has significantly reduced mortality rates.

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The crucial role of internists in family planning for patients with End Stage Renal Disease

Pregnancy in patients with End Stage Renal Disease (ESRD) is challenging. Despite the risk of complications, some women still want to conceive naturally and look to their primary care physician (PCP) for support. However, many internists do not receive formal women's health training during residency. We present a case which demonstrates the fragility of pregnant females with ESRD and emphasize the role of internists in identifying and managing complications of a high-risk pregnancy.

A 25 year-old female with ESRD secondary to C3 Glomerulonephritis, on hemodialysis (HD) and idiopathic intracranial hypertension with papilledema presented to primary care reporting she was trying to become pregnant but had not shared her pregnancy plans with her nephrologist or gynecologist (GYN). Her PCP provided education about her high risk for pregnancy complications and the importance of coordinating care with her specialists. She was advised to start folate 5mg daily and follow up with her GYN. One month later, she had a positive home pregnancy test and was urgently referred to maternal-fetal medicine (MFM).

At 21 weeks gestation, she shared with her PCP that she stopped taking folate because it was not mentioned at her specialists' appointments. Her PCP provided additional education on pregnancy complications and the importance of taking prenatal vitamins.

At 23 weeks gestation, the patient presented to the hospital with chest pain, headache, and blood pressures (BP) above 200/100. She appeared restless with bilateral 1+ lower extremity edema, and normal neurological exam. CT head showed bilateral frontal subarachnoid hemorrhage in the frontal lobes and parietal sulci. Labs were significant for Cr 4.97 and Hgb 10.7. Other testing was negative for preeclampsia and HELLP syndrome. She was admitted for hypertensive emergency and received daily hemodialysis, nicardipine infusion, and levetiracetam for seizure prophylaxis. Additional imaging revealed abdominal ascites, moderate pericardial effusion with possible early tamponade, dilated hepatic veins, and hepatomegaly. Given these complications, the patient underwent a C-section and pericardiocentesis with pericardial drain placement at 29 weeks gestation. After these procedures, her BP stabilized and she was transitioned to oral labetalol and nifedipine.

Internists have a unique opportunity to regularly assess a patient's reproductive goals and stress the importance of optimizing medical conditions prior to conception. For pregnant patients with ESRD, higher doses of prenatal folate are recommended due to increased risk for fetal neural tube defects. Internists should also adjust chronic medications to avoid teratogenic agents and closely monitor for signs of hypertensive emergency, preeclampsia, and HELLP syndrome. After a two-month hospital course, mother and baby were discharged home. Nevertheless, earlier family planning counseling and interdisciplinary care coordination may have prevented the aforementioned adverse events. We highlight the crucial role of general internists in recognizing and treating complications related to a high risk pregnancy.

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Levofloxacin-induced SIADH: "When helpful might also mean harmful"

INTRODUCTION

Sodium is the most abundant cation in the body and plays a big role in maintaining serum tonicity. Hyponatremia, defined as serum sodium <135 mEq/L, it is the most common electrolyte disturbance in patients who require hospitalization and affects 15-28% of hospitalized patients. Hyponatremia can be caused by decreased oral intake, increased solute intake, or using certain culprit medications. Medication induced hyponatremia usually manifests as syndrome of inappropriate antidiuretic hormone secretion (SIADH) due to dysregulation of antidiuretic hormone (ADH) leading to absorption of more water than solute, decreasing the osmolality. In this abstract, we present a case of a 66-year-old woman who manifested hyponatremia with use of levofloxacin, that was resolved on stopping the medication. To the best of our knowledge this is the fourth case reported of fluoroquinolone induced SIADH.

CASE PRESENTATION

66-year-old female with history of hypertension, anemia, type 2 diabetes mellitus, chronic obstructive pulmonary disease, and total colectomy, admitted to the hospital due to septic shock secondary to pneumonia, and renal failure. On admission, temperature of 97.7 degrees Fahrenheit, heart rate of 120 beats per minute, blood pressure of 66/51 mmHg, respiratory rate of 20, saturation of 94% on room air and BMI of 29.5. Intravenous fluid (IV) resuscitation, vasopressors and broad-spectrum antibiotics were started. On the second day of hospitalization the septic shock resolved, and the patient was weaned off the vasopressor support. Following blood cultures, antibiotic coverage was narrowed down to Levofloxacin and daptomycin. Three days after starting medications, the patient developed euvolemic hypoosmolar hyponatremia, along with high urine osmolality, pointing towards the diagnosis of SIADH, with serum sodium levels trending down from 132 mEq/L to 119 mEq/L. Further workup and medication review ruled out all other medical causes of SIADH. The patient was also started on fluid restriction and sodium chloride tablets, but sodium levels kept trending down. Hence, as per assumption, levofloxacin was stopped. After 48 hours of stopping levofloxacin, sodium levels started trending up and hyponatremia was resolved without any further intervention. After switching to new antibiotic coverage with minocycline and meropenem patient had an uneventful hospital course.

DISCUSSION

Our case illustrates the challenge of finding the culprit of hyponatremia when the cause is extremely rare like the one seen here as a diagnosis of exclusion, induced by fluoroquinolones, specifically levofloxacin. Therefore, high clinical suspicion must ensue when the common causes have been ruled out. Hyponatremia is one of the leading causes of death and mortality among the elderly population. Precautions in medication administration and close monitoring of electrolytes and serum osmolality are advised, especially in geriatric population.

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A RARE HUMAN PATHOGEN: TISSIERELLA PRAEACUTA

Tissierella praeacuta is a gram positive, rod shaped obligate anaerobe normally found in the human intestinal microbiome and the environment. This bacterium rarely causes human infections, with only seven documented cases in the literature. *Tissierella praeacuta* was found to be one of the causes of a rapidly growing pulmonary cavitory lesion, in association with immunosuppression secondary to lung malignancy.

A 65 year old female with a past medical history of tobacco dependence, chronic obstructive pulmonary disease, hypertension, and thyroid nodules s/p thyroidectomy initially presented for evaluation of a cavitory lesion. The patient reported hemoptysis for one month, with associated fatigue, night sweats, and low grade fevers. Computed tomography (CT) thorax confirmed a 5.1cm x 5.8cm thick walled, irregular, cavitory lesion in the right upper lobe of the lung, with right hilar and mediastinal lymphadenopathy. Work up for *Mycobacterium tuberculosis* and fungal infections were negative. She completed workup as an outpatient and underwent endobronchial ultrasound with transbronchial needle aspiration of lymph nodes with bronchoalveolar lavage (BAL). BAL culture results revealed growth of *E. Coli* and *Streptococcus Pneumonia*. Lymph node cytology was negative for malignancy. BAL cytology contained very few highly atypical epithelial cells suspicious of necrosis or carcinoma. Three days following the procedure, the patient presented to the ED again with acute hypoxic respiratory failure, lethargy, and fever. Repeat CT thorax showed significant interval increase in size of the central cavity within the right upper lobe mass, measuring 10.6 x 9.2 x 8.1 cm with increased hilar and mediastinal adenopathy. The patient was treated with ceftriaxone, doxycycline and prednisone, however, one week later, the patient developed transient fevers and worsening leukocytosis, prompting repeat CT thorax which showed further increase in size of the cavitating mass in the right upper lobe with a new fluid collection. Antibiotics were broadened to piperacillin/tazobactam. Repeat blood cultures remained negative. Due to lack of clinical improvement, a pigtail catheter was placed to drain the right upper lobe abscess, with fluid growing moderate *Tissierella praeacuta*, with pathology report negative for malignancy. Patient showed clinical improvement following the drainage, with resolution of fevers and leukocytosis. She was discharged on Ertapenem to complete a four week course of antibiotic therapy. Imaging was repeated to determine resolution, however a 6cm cavitory lesion persisted, thus bronchoscopy was performed again. Tissue pathology now resulted positive for squamous cell carcinoma of the right upper lobe.

This case illustrates an extremely rare bacteria, *Tissierella praeacuta*, causing human infection as pulmonary disease. The patient's diagnosis of cancer increased her risk of infection due to immunosuppression. It is suspected that the source of this bacteria could have been inoculation from a procedure such as the BAL, since it was not isolated on initial BAL culture.

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Reverse takotsubo heralding as Ventricular Fibrillation

Introduction:

We present a rare case of reverse takotsubo in a female who collapsed while giving a graduation speech.

Case presentation:

A 49-year-old woman, a vice principal at a local school with a history of hypertension, was brought by Emergency Medical Services (EMS) after she collapsed and lost consciousness while giving a graduation speech. Upon EMS arrival, she was found to be in ventricular fibrillation. Cardiopulmonary resuscitation was initiated; she was intubated and was shocked for the underlying rhythm with Return of Spontaneous Circulation (ROSC). However, en route to the hospital, she continued to have ventricular fibrillation and had to be defibrillated eight times with a ROSC each time. At the presentation, her vitals were stable, and her physical examination was unremarkable. Chest X-Ray was negative for acute cardiopulmonary pathology. Electrocardiogram revealed sinus rhythm with non-specific ST segment changes, unchanged from baseline. Lab studies were troponin of 0.03. Urine toxicology was negative. Computed Tomography (CT) scan of the head was negative for acute intracranial pathology. She underwent emergent cardiac catheterization, which revealed clean coronary arteries. A TransThoracic Echocardiogram (TTE) was performed, which showed mild left ventricular dilation, ejection fraction (EF) of 31 %, and hypokinesis of the basal and mid-ventricular segments compared to apical segments, suggestive of an rTTC. She was transferred to a cardiac intensive care unit and was treated with targeted temperature management for cardiac arrest. She was extubated after completing the targeted temperature management and a successful extubation trial. Repeat TTE showed EF of 41-45% with persistent basal hypokinesis. Given cardiac arrest without CAD, ICD was placed, and she was discharged home on goal-directed medical therapy with outpatient cardiology follow-up. A repeat TTE was performed six weeks post-discharge during a follow-up, which showed a normal left ventricular size, wall thickness, and systolic function with an EF of 56 - 60%, and a review of the system was negative for chest pain, shortness of breath, palpitation, and dizziness.

Discussion:

Stress-induced cardiomyopathy is thought to result from catecholamine-induced vascular spasms due to intense emotional or physical stress. rTTC presents in a younger population with a mean age of 36. It is hypothesized that adrenoceptors have their highest density within the apex of the heart in postmenopausal women compared to pre-menopausal, which explains the occurrence of the rTTC in young women. rTTC presents with less shortness of breath, pulmonary edema and cardiogenic shock at presentation. Ejection fraction tends to be lower in the rTTC variant with a paradoxically faster recovery, as seen in our patient.

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Amyloidosis as a cause of anemia in CKD: Rare and rarely considered!

Introduction:

Amyloidosis is a group of disorders in which amyloid fibrils are deposited in the extracellular matrix [1]. Gastrointestinal (GI) involvement in amyloidosis is reported in 3% of cases, mostly in association with multiple myeloma.

Case Presentation:

84-year-old male with past medical history of gastroesophageal reflux disease, coronary artery disease, and chronic kidney disease presented to the hospital after a large melanic bowel movement. On presentation, the patient was tachycardic but normotensive. On examination, the patient was comfortable with pale conjunctivae. The abdomen was soft and non-tender.

Initial investigations revealed anemia with hemoglobin (Hb) of 3.8g/dL and MCV 100fL. The WBC count, platelet count, serum bilirubin, LDH and haptoglobin were normal. Serum iron studies showed normal serum iron and ferritin, decreased transferrin and TIBC, consistent with anemia of chronic disease. Serum folate and Vitamin B12 levels were normal. Furthermore, reticulocyte % was 1.6, absolute reticulocyte count was 0.04 and reticulocyte index was 0.9 indicating hypo proliferative marrow response. CT angiography of the abdomen, pelvis and chest did not reveal active bleeding. Two units packed red blood cells (PRBC) were transfused with improvement in Hb to 7g/dL. Esophagoduodenoscopy (EGD) and colonoscopy were performed with no identifiable source of bleeding. Duodenal biopsy revealed intestinal amyloidosis. The patient was discharged to follow-up outpatient with GI for capsule endoscopy.

However, patient was readmitted within a month for severe anemia (Hb 5.7g/dL). This time after transfusion, patient underwent capsule endoscopy, which was negative for active bleeding, and patient was discharged after post-procedure monitoring.

Patient was admitted a third time for anemia (Hb 4.5g/dL), and was transfused two units of PRBC again. This time, patient was diagnosed with MGUS by protein electrophoresis on Hematology recommendations, and was discharged after stabilization, with recommendations to follow up with GI and Hematology outpatient.

The patient's recurrent anemia was attributed to bleeding from gastrointestinal amyloidosis in addition to ACD due to CKD, and was managed with erythropoietin injections.

Discussion:

GI bleeding is the second most frequent presentation of amyloidosis after weight loss. Amyloid deposition causes ischemia and mucosal damage. Duodenal biopsy is highly sensitive for diagnosing amyloidosis, particularly in CKD patients. There is no specific therapy for GI amyloidosis.

Clinicians should have a high index of suspicion for GI amyloidosis in the presence of GI bleed and visible masses on endoscopy, plasma cell dyscrasias and in obscure GI bleed.

Clinicians should be aware of anchoring bias in CKD patients presenting with anemia. While anemia of chronic disease and GI angioectasias are common causes of anemia in CKD patients, work-up for other causes should be undertaken as well.

Resident/Fellow Clinical Vignette

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Use of intravenous epoprostenol for digital vasculopathy associated with limited cutaneous systemic sclerosis.

Introduction:

A patient with limited cutaneous systemic sclerosis (lcSSc) was treated with epoprostenol intravenous infusion after oral vasodilator medication proved ineffective. Literature suggests PG12 infusions are effective in reducing symptoms of cutaneous vasculopathy secondary to Raynaud's phenomenon.

Case Presentation:

A 56-year-old man with past medical history most significant for lcSSc with positive topoisomerase antibody, swollen hands, skin ulcers, thickening of the skin, discoloration of fingers when exposed to cold and small joint pain was admitted to the hospital for epoprostenol infusions due to lack of improvement on oral therapy and progression of vasculopathy. Previously, he was taking 60 mg nifedipine and 20 mg sildenafil 3 times a day with minimal benefit. On physical examination, the patient's fingers had black eschar and gangrenous necrotic lesions. Doppler study showed a feeble pulse. The first infusion was initiated at a rate of 3 ng/kg/min and gradually increased over 72 hours following the schedule: 3 ng/kg/min for 6 hours, 4 ng/kg/min for the next 6 hours, 6 ng/kg/min for the following 6 hours, and then 8 ng/kg/min for the remaining time. The patient was given oxycodone, gabapentin, and morphine for breakthrough pain. His echocardiogram and PFT did not show any signs of pulmonary hypertension. After the first infusion, his pain, and swelling improved. The second infusion, given a month later, was started and gradually increased over time using the schedule: 2 ng/kg/min for 6 hours, 3 ng/kg/min for the next 6 hours, 4 ng/kg/min for the subsequent 6 hours, 6 ng/kg/min for the following 6 hours, and 8 ng/kg/min for the remaining 6 hours. The patient's gangrene and pain significantly improved after the third infusion, going from a rating of 10/10 to 4/10, which suggests that epoprostenol infusions can be an effective treatment for Raynaud's phenomenon associated with limited cutaneous systemic sclerosis. However, the patient experienced jaw pain as a side effect.

Discussion:

This case involved a patient with lcSSc whose symptoms improved significantly with epoprostenol infusions, a treatment that is rarely used inpatient. A clinical trial in 1982 found that epoprostenol infusions resulted in a significant reduction in symptoms of Raynaud's phenomenon in 21 out of 24 patients, providing pain relief due to increased blood flow. Similar results were found in a study at Boston Medical Center with 29 out of 47 patients showing improvement. However, more research is needed in the form of prospective randomized clinical trials to determine the true effectiveness of this treatment for scleroderma spectrum digital vasculopathy.

Conclusion:

Prostacyclin may be an effective treatment for problematic Raynaud's phenomenon associated with systemic sclerosis. Further controlled trials of prostacyclin are needed to confirm the findings of current studies.

Resident/Fellow Clinical Vignette

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Cryptococcus neoformans Meningitis in an HIV negative Patient

Cryptococcus neoformans is an encapsulated, budding yeast that causes opportunistic infections (e.g. pneumonia and meningitis) in immunocompromised patients, most commonly those with HIV. HIV negative patients can become infected if they are immunocompromised from another condition, such as sarcoidosis, a multi-system non-caseating granulomatous disease of unknown cause. CD4 T-cells are often found sequestered within these granulomas, leading to concomitant findings of lymphopenia even without the use of corticosteroids or immunomodulating treatments. As a result, lymphopenia is a common finding in sarcoidosis patients, but only a small percentage have a CD4 count less than 200 cells/ μ L. Since the primary protection against fungal infections is via T-cell-mediated immunity, patients with sarcoidosis and lymphopenia can be at risk of developing opportunistic fungal infections. However, there are limited documented cases of *Cryptococcus neoformans* meningitis complicating sarcoidosis. This clinical vignette describes a case of a 58-year-old male with underlying treatment-naive sarcoidosis and T-cell lymphopenia who was found to have *Cryptococcus neoformans* meningitis.

The patient presented with nausea and a generalized headache that worsened with lying supine for three weeks. Imaging showed bilateral hyperintensities in the subarachnoid space of the cerebrum and cerebellum. Imaging of his chest showed large discrete areas of scarring in the bilateral upper lobes with traction bronchiectasis, compatible with stage IV sarcoidosis. A lumbar puncture was performed and the CSF culture was positive for *Cryptococcus neoformans* var *grubii*. His absolute CD4 T-cell count was 115 cells/mm³ with negative HIV serology and NAAT. *Cryptococcus* antigen in the CSF was not performed, but serum *Cryptococcus* antigen was > 1:2560. Opening pressure was not obtained, however, the patient reports that his headache improved after the lumbar puncture. Repeat weekly lumbar punctures reveal opening pressure of >22 cmH₂O. Blood cultures were negative for growth. Induction therapy of IV amphotericin B and oral flucytosine were initiated.

Although *Cryptococcus neoformans* meningitis is a known complication in HIV-positive patients, there have been limited cases documenting this complication in patients with sarcoidosis who are HIV negative. This case suggests that fungal infections, especially *Cryptococcus neoformans* meningitis, should always be considered in patients with sarcoidosis that have symptoms of meningitis, regardless of evidence of immunosuppression secondary to treatment with steroids or other immunomodulators. Due to the relatively low incidence of *Cryptococcus neoformans* meningitis in immunocompetent patients, it is an easily overlooked differential diagnosis. However, as roughly 18% of cases result in death and 43% of cases have delayed diagnosis, early recognition of *Cryptococcus neoformans* meningitis is important to ensure adequate treatment and improved mortality.

Resident/Fellow Clinical Vignette

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NON-CIRRHOTIC IDIOPATHIC PORTAL HYPERTENSION AND OBLITERATIVE PORTAL VENOPATHY SECONDARY TO SYSTEMIC LUPUS ERYTHEMATOSUS AND MIXED CONNECTIVE DISEASE

Introduction

Non-cirrhotic portal hypertension (NCPH) categorizes a group of heterogeneous diseases that characteristically increase portal pressure in the absence of cirrhosis. The most common etiologies are extra-hepatic portal vein obstruction (EHPVO), idiopathic portal hypertension (IPH), and Budd-Chiari Syndrome. Proper diagnosis may be challenging, as NCPH can mimic cirrhosis without proper radiographic data. Early differentiation between EHPVO and IPH is imperative, as the latter is frequently complicated by the development of portal vein thrombosis. We present a case of idiopathic portal hypertension secondary to obliterative portal venopathy (OPV) in a patient with systemic lupus erythematosus (SLE) and mixed connective disease (MCTD).

Case Presentation

A 33-year-old female with a past medical history of SLE, MCTD, Sjogren's syndrome, idiopathic thrombocytopenia purpura, and severe pulmonary hypertension (WHO groups 1 and 3) presented with nausea, vomiting, and diffuse abdominal discomfort for one week. She denied recent travel, sick contacts, new foods/medications, bleeding, or family history of gastrointestinal disease. Vital signs were within normal limits, and the physical exam was notable for abdominal tenderness. Lab work revealed severe thrombocytopenia with intact synthetic liver function. Abdominopelvic computed tomography (CT) revealed normal hepatic parenchyma, a small caliber main portal vein, recanalized paraumbilical vein, and large abdominal and gastric varices with a gastro-renal shunt. Esophagogastroduodenoscopy showed esophageal varices, portal hypertensive gastropathy, and large gastric varices. Abdominal ultrasound revealed normal portal veins. Evaluation for autoimmune hepatitis, viral hepatitis, Wilson's disease, hemochromatosis, and alpha-1 antitrypsin deficiency were negative. Her course was complicated by hepatic encephalopathy, prompting liver biopsy with histopathology indicating lymphocytic portal vein inflammation and destruction with few plasma cells, without interface hepatitis or lobular activity, and no evidence of cirrhosis. The presence of portal hypertension in the absence of cirrhosis was consistent with a diagnosis of NCPH. Histology, supported by vasculitis-associated disorders of SLE and MCTD, confirmed the diagnosis of obliterative portal venopathy. Follow-up CT showed portal vein chronic thrombosis with cavernous transformation, characterizing interval development of extra-hepatic portal venous thrombosis. Symptom management was the mainstay of treatment, as she was not a candidate for liver transplantation due to severe pulmonary hypertension nor a candidate for anticoagulation due to severe thrombocytopenia.

Discussion

Non-cirrhotic portal hypertension describes unique diagnoses distinguished by their propensity to increase portal pressure in the absence of cirrhosis. Histopathologic portal vein destruction with the absence of cirrhotic changes provides a definitive diagnosis of obliterative portal venopathy. Clinicians should maintain a high index of suspicion for IPH secondary to OPV in patients with sequelae of portal hypertension without cirrhosis and predisposing vasculitis-associated rheumatologic disorders. Follow-up abdominal imaging should be performed to monitor for common complications, including portal vein thrombosis and subsequent cirrhosis.

Resident/Fellow Clinical Vignette

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INTRAVASCULAR LARGE B-CELL LYMPHOMA PRESENTING AS SIADH IN A PATIENT WITH RHEUMATOID ARTHRITIS

Introduction: Intravascular large B-cell lymphoma (IVLBCL) is a rare and aggressive hematological malignancy with an incidence of 0.5 per 1,000,000 patients per year. This condition often presents with nonspecific signs and symptoms and is frequently missed until after patient demise. Recognition of the various and subtle presentations IVLBCL is essential for prompt diagnosis and therapy in this rapidly progressing lymphoma.

Case Presentation: Our case is about 73-year-old women with a known history of well-controlled Rheumatoid Arthritis who presented with 3 months of progressive fatigue and anorexia. She has had mildly elevated LDH levels with leukopenia for several months before her presentation which was investigated in an out-patient setting with a CT-scan of the chest-abdomen-pelvis which did not show signs of lymphadenopathy or malignancy. On presentation, she had pancytopenia (WBC: 2.4 | Hemoglobin: 9.5 | Platelets: 76) and hyponatremia (125 mEq) with low urinary sodium with no other electrolyte abnormalities and an elevated LDH (2200). Physical examination revealed mild splenomegaly, mild abdominal

distension, and no evidence of lymphadenopathy. Repeat CT of the chest-abdomen-pelvis confirmed a small amount of ascites but showed no signs of masses or lymphadenopathy. Ascites was not sampled due to inadequate volume. Further serology indicated a resolved EBV

infection and no evidence of HIV or CMV. Bone marrow biopsy showed a hypocellular marrow and intermediate to large sized lymphocytes with frequent mitosis within the sinuses. Immunohistochemical staining of intrasinusoidal cells revealed CD20 positive lymphocytes with nuclear atypia most consistent with intravascular large B cell lymphoma. Flow cytometry indicated atypical B-cells with kappa predominance 80 to 1. FISH was performed which detected BCL6 partial deletion and deletion of the long arm of chromosome 6. After the diagnosis, an MRI of the brain and spine was performed and did not indicate any evidence of ischemic insults. The patient underwent one cycle of R-EPOCH chemotherapy before facing vancomycin resistant enterococcus bacteremia. She was ultimately made comfort care and died 30 days after her presentation.

Discussion: Intravascular large B-cell lymphoma is a rare and aggressive malignancy that, due to its nonspecific symptomology, is often missed, potentially resulting in increased patient mortality. In this patient who had leukopenia and an elevated LDH for several months was not further investigated after no evidence of lymphadenopathy was seen on imaging. This case highlights the importance of maintaining a high index of suspicion for hematologic malignancy including this rare entity in cases without clinical or radiographic evidence of lymphadenopathy. Until now, most of the information about the presentation of IVLBCL is based on case studies and case series. We hope that this case further promotes the need for larger studies to investigate trends in risk-factors and presentations to further guide physicians in making this diagnosis.

Resident/Fellow Clinical Vignette

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Hydralazine-induced antineutrophil cytoplasmic antibody-associated vasculitis with pauci immune glomerulonephritis.

Hydralazine is an arterial vasodilator that has been associated with the development of autoimmune conditions, most commonly drug induced lupus, but also antineutrophil cytoplasmic antibody (ANCA) positive vasculitis (1).

A 72-year-old male with a history of JAK2+ essential thrombocythemia and hypertension on hydralazine 100 mg 3 times per day for over one year presented with two months of arthralgias, 20 lb. weight loss, night sweats, and an AKI. Over the course of 4 months his creatinine went from 1.3 to 2.8. A urinalysis was positive for blood and >50 RBCs with no casts. FENa was suggestive of intrinsic renal disease. Urine protein/creatinine ratio was 1556. He had no palpable synovitis or joint effusions and no skin lesions. A serologic workup was positive for ANA (1:1280), anti-dsDNA (176), anti-histone (7.2), and anti-MPO (6.6). He also was found to have weakly positive beta-2 glycoprotein IgM (26.9) and phospholipid antibody IgM (20.9). Notably, his anti-glomerular basement membrane, hepatitis serologies, and HIV test were negative. His complement levels were normal. A kidney biopsy showed focal acute, subacute, and chronic crescentic pauci immune glomerulonephritis, along with tubular injury and interstitial disease. Hydralazine was discontinued and he was treated with pulse dose steroids with subsequent complete resolution of his arthralgias. He then transitioned to daily prednisone and started on rituximab.

Hydralazine-associated vasculitis is a drug-associated autoimmune syndrome with variable organ involvement including kidney, lung, joint, and skin (2). Serologically, patients with hydralazine induced vasculitis typically have a positive anti-histone antibody and a positive MPO (3,4). Patients frequently have positive dsDNA antibodies and antiphospholipid antibodies which are more commonly associated with primary systemic lupus erythematosus rather than drug induced lupus (3,4). Most patients also have hypocomplementemia, although complement levels in our patient were normal (3). The biologic mechanism by which hydralazine leads to the development of autoimmunity has yet to be elucidated, however, it has been hypothesized that it alters neutrophil and lymphocyte function to promote exposure of sequestered antigens and decrease immune tolerance leading to the development of ANA and ANCA (3). Typically, the mainstay of treatment is withdrawal of hydralazine, which is often sufficient, however, other patients also require additional immunosuppression (3). Patients requiring immunosuppressive therapy are typically treated like patients with primary ANCA vasculitis, usually glucocorticoids with cyclophosphamide or rituximab. There remains a paucity of data to help clinicians understand and identify hydralazine induced ANCA vasculitis, and due to its rare nature, the relevant literature has been limited to case reports and case series. However, it is critical for clinicians to be aware of this clinical entity and maintain a high degree of clinical suspicion especially in the setting of multiple autoantibodies, as it can have a subtle presentation and be life threatening.

Resident/Fellow Clinical Vignette

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Macrolide Mediated Hepatocytic Havoc

Introduction:

Macrolides carry a side effect risk most commonly GI disturbance. Critical adverse events involve drug interactions that can lead to an increase in cardiovascular stress, ototoxicity, and cholestatic hepatitis. Azithromycin has the potential to cause serious hepatic destruction with hepatic encephalopathy; of which has been infrequently documented. This type of liver injury occurs 1 to 3 weeks after drug initiation independent of dosage, route, or duration of administration. Azithromycin likely leads to a hepatocellular pattern of injury marked by a considerable elevation of AST and ALT.

Case Presentation:

A 71-year-old woman with primary hyperparathyroidism presented to the hospital with several days of jaundice and altered mental status. As per the patient's daughter, she was recently treated at an outpatient facility with a 5-day course of azithromycin for community-acquired pneumonia. Approximately 14 days after starting the medication, the patient observed yellowing of the eyes and acute memory loss; which progressed to profound lethargy and confusion. Physical examination was notable for partial attentiveness, marked disorientation, jaundice, and hepatomegaly. Lab findings were remarkable for AST 1,250 U/L, AST 508 U/L, ALP 213 U/L, and normal total bilirubin. The patient also was found to have an elevated ammonia level, normal GGT, normal PT/INR, negative hepatitis panel, negative urine toxicology, normal CK level, and negative blood and urine cultures. A RUQ ultrasound showed significant hepatic steatosis and hepatomegaly; and further imaging did not reveal portal vein, gallbladder, or splenic abnormalities. The patient's symptoms were treated conservatively and her LFTs were monitored closely. Within 7 days, her mental status had returned to baseline, and her lethargy, jaundice, and transaminitis had greatly improved.

Discussion:

Azithromycin-induced liver injury is uncommon, but a potentially severe cause of acute hepatitis. This type of liver injury occurs within 1 to 3 weeks after initiation of the drug and may lead to jaundice, abdominal pain, weakness, and fatigue. Azithromycin-induced liver injury is likely hepatocellular which is suggested by our patient's symptoms of profound lethargy and weakness coupled with a striking elevation of AST and ALT; with only a modest increase of ALP and GGT; that which differentiates it from cholestatic injury. Preliminary evaluation should involve liver function testing to categorize the severity of the acute liver injury, coagulation studies to determine the liver's ability to create clotting factors, albumin and ammonia to ascertain the synthetic function of the liver, metabolic testing which may specify malnutrition or hypovolemia, a CBC to evaluate for coexisting etiologies, and viral hepatitis serologies. A RUQ ultrasound or CT of the abdomen may be helpful in identifying mechanical obstruction for patients with jaundice. Management of Azithromycin-induced liver toxicity primarily involves early removal of the offending agent, monitoring LFTs, and symptom-specific supportive treatment options.

Resident/Fellow Clinical Vignette

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Unraveling the Diagnostic Challenge of Peripheral T Cell Lymphoma Presenting as Acute Pancreatitis.

Introduction:

Peripheral T-cell lymphoma (PTCL) is a rare type of non-Hodgkin's lymphoma (NHL) that stems from mature T-cells. Peripheral T-cell lymphoma, not otherwise specified (PTCL-NOS), is the most common subtype of PTCL, and it tends to have a poor prognosis. Diagnosis and treatment of PTCL can be challenging, as it is often diagnosed in advanced stages and tends to be resistant to standard chemotherapy regimens. In this case, we report an atypical presentation of primary PTCL-NOS involving the liver and pancreas and mimicking acute pancreatitis.

Case-Presentation:

A 55-year-old male presented to the emergency department with abdominal pain, nausea, vomiting, satiety, jaundice, and weight loss (10 lbs) in a month. Physical examination was remarkable for scleral icterus, yellow skin discoloration from head to toe, and epigastric tenderness. The laboratory workup revealed alanine aminotransferase 85 U/L, aspartate aminotransferase 146 U/L, alkaline phosphatase 225 U/L, total bilirubin 31 mg/dl, direct bilirubin 24 mg/dl, lipase 876 U/L, lactate dehydrogenase 805 U/L, white blood cell 1.09/nl, absolute neutrophil count 0.58/nl, absolute lymphocyte counts 0.29/nl, platelet count 9/nl, hemoglobin 13 g/dl. Computed tomography scan with contrast was consistent with acute pancreatitis. Magnetic resonance cholangiopancreatography (MRCP) showed retroperitoneal mass involving the pancreatic body and para-aortic lymphadenopathy (LAD), suggesting pancreatic adenocarcinoma. However, the cause of bicytopenia remained a mystery; hence immune thrombocytopenic purpura (ITP) and immunoglobulin G4 (IgG4)-related pancreatitis were being considered. Subsequently, the patient was treated with steroids and platelet transfusion for the ITP; however, thrombocytopenia persisted, and the patient's IgG4 levels were within normal limits, which excluded the diagnosis of IgG4-related pancreatitis. A bone marrow biopsy demonstrated hypercellular marrow with atypical lymphoid infiltration, and a liver biopsy was consistent with mature T-cell lymphoma. These T-cells were only CD30, CD4, and FOXP-3 positive. Therefore, the diagnosis of PTCL-NOS was supported.

Discussion:

In this case, we report an atypical presentation of PTCL-NOS involving the liver and pancreas and mimicking acute pancreatitis with pseudocyst. This case highlights the importance of considering PTCL-NOS in the differential diagnosis and the need for a thorough diagnostic approach in patients with pancreatitis without known conventional triggers. Moreover, most PTCL has been associated with immunosuppression; interestingly, our patient's immunocompetent status further made it a challenging diagnosis. Literature reports PTCL presenting as rhabdomyolysis and subacute demyelinating polyradiculoneuropathy. In all of these cases, the diagnosis was a clinical conundrum due to the atypical presentation of a notoriously heterogeneous disease. Given the aggressive clinical nature, if PTCL is suspected, invasive biopsy procedures should not be delayed as prompt recognition and treatment is crucial to induce remission, followed by early stem cell transplantation.

Conclusion:

This case report highlights the need for a meticulous diagnostic approach and the consideration of PTCL-NOS for patients with pancreatitis without known conventional triggers.

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Association between INR and anti-Xa activity: Insights from a Retrospective Study

Background:

The chromogenic anti-Xa assay is the most sensitive for detecting factor Xa (FXa) inhibition. The time-consuming nature of this test is a constraint to its routine implementation. International Normalized Ratio (INR), a widely available lab test, is usually marginally affected by FXa inhibitors, which act at the culmination of the extrinsic pathway and lead to variable elevation of INR. We aimed to conduct a retrospective study evaluating the association between INR and Anti-Xa activity levels and determining if an INR cut-off value could signify supra-therapeutic or excessive anticoagulation.

Methods:

All patients presenting to New York City Health + Hospital/Jacobi between 2019-2021 with documented use of the FXa inhibitor, who underwent measurement of both anti-Xa activity and INR simultaneously during any visit, were included in the present study. Primary outcomes were the association of INR levels with corresponding anti-Xa activity levels and INR cut-off value associated with supra-therapeutic anti-Xa activity levels. Descriptive statistics and linear Pearson correlation coefficient were utilized. A correlation coefficient of $r < 0.4$ was considered weak. The threshold of statistical significance was $p < 0.05$. All analyses were performed using the Stata 14 software.

Results:

A total of 25 patients were included in the analysis (median age: 73 years, 60% men, median weight: 78 kg, and median BMI: 28.7 kg/m²). The median INR was 1.3, and the median anti-Xa activity was 0.60 IU/ml. A weak positive correlation between INR and anti-Xa activity was observed ($r = 0.369$). Significant differences were found in various relevant variables between patients with INR ≥ 1.5 compared to patients with INR < 1.5 . Specifically, patients with INR ≥ 1.5 had significantly higher anti-Xa activity (1.35 vs. 0.44 IU/ml; $p = 0.015$), significantly higher median age (76.5 vs. 69 years; $p = 0.002$), significantly lower weight (73.5 vs. 86.2 kg; $p = 0.037$), and lower eGFR (estimated glomerular filtration rate) at the verge of statistical significance (30.6 vs. 73 ml/min/1.73 m²; $p = 0.06$) as compared to patients with INR < 1.5 .

Conclusions:

A weak positive correlation between INR and anti-Xa activity was observed. However, there were significant differences in anti-Xa activity, age, weight, and kidney function between patients with INR ≥ 1.5 and those with INR < 1.5 . More extensive studies are needed to assess whether an INR cut-off of 1.5 can be used as an indicator of excessive anticoagulation in patients on FXa inhibitors that could trigger measurement of anti-Xa activity, particularly in patients of older age, lower weight, or reduced eGFR.

Key takeaway:

INR ≥ 1.5 has the potential to order anti-Xa activity in selected patient groups, particularly the elderly, low-weight, and with reduced eGFR.

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A Polymicrobial Scrotal Abscess: The Unlikely Journey of a AAA battery

Polymicrobial infections are especially challenging to treat when multidrug resistant organisms are involved. Multidrug resistant bacteria include Extended-Spectrum-Beta-Lactamase (ESBL) Escherichia coli, ESBL Klebsiella species, Vancomycin-Resistant Enterococcus (VRE), and Methicillin-Resistant Staphylococcus aureus (MRSA).

CASE DESCRIPTION:

A 71-year-old male with a history of severe protein calorie malnutrition was admitted for sepsis secondary to urinary tract infection with positive blood culture for Proteus mirabilis, initially treated with intravenous Piperacillin/Tazobactam. Shortly after admission, he was found to have urinary retention with unsuccessful straight catheterization. CT abdomen/pelvis demonstrated an extremely distended bladder with an ovoid metallic device in the proximal penile urethra. Patient was taken to the operating room by Urology for cystoscopy, removal of urethral foreign body, and foley catheter placement. During the procedure, a cylindrical metal object was visualized but extraction was unsuccessful and the object was instead displaced into the bladder without subsequent visualization. Foley catheter was placed and patient was to follow up with Urology upon discharge for removal of the foreign body. Nine days later, patient developed right testicular swelling with purulent drainage from the foley catheter. A 5.6cm abscess in the anterior right hemiscrotum and 5.2cm complex right hydrocele with multiple loculations were identified on scrotum ultrasound. Urology performed incision and drainage with removal of 50cc of pus and the foreign object, which was later confirmed as 4.2x 1.0x 1.0cm AAA battery. It was suspected that the battery had eroded through the bladder and into the scrotum with the subsequent development of an abscess. The scrotal abscess culture was found to be positive for ESBL Klebsiella pneumoniae and VRE Enterococcus faecium, treated with intravenous Ertapenem and oral Linezolid for total 10 days.

The significance of this case is the presence of both ESBL Klebsiella and VRE Enterococcus. Both organisms are common nosocomial infections but are very uncommon in the scrotum. This patient may have been predisposed due to the presence of a foreign body and history of failure to thrive. Upon further investigation, it was presumed the patient placed the battery in his own urethra. Psychiatry was consulted and determined the patient suffered from depression and was otherwise with capacity and without psychiatric illness. Patient remained in the hospital for completion of his intravenous antibiotic course as there was concern regarding Peripherally Inserted Central Catheter (PICC) line placement due to his history of foreign body insertion.

Resident/Fellow Clinical Vignette

Qi Wang

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DEVELOPMENT OF RIGHT RENAL ARTERY THROMBOSIS IN A YOUNG MALE WHILE BEING ON ANTICOAGULATION FOR LEFT RENAL ARTERY THROMBOSIS: A CASE REPORT

BACKGROUND

Renal artery thrombosis is a rare cause of abdominal or flank pain. Risk factors include atherosclerosis, trauma, aortic interventions, previous thromboembolic events, and atrial fibrillation. Thrombosis and renal infarction could also be caused by vasculitis for which management could be challenging.

CASE

A 35-year-old male with no significant past medical history presented with an acute onset of left-sided abdominal pain radiating to the left flank. Physical examination was positive for left upper quadrant abdominal tenderness and left costovertebral angle tenderness. Laboratory findings showed mild leukocytosis but otherwise normal urinalysis and kidney function test. A computed tomography (CT) abdomen/pelvis with intravenous contrast showed left renal infarction with probable thrombus within the anterior division of the left renal artery. CT angiography showed absent perfusion of a portion of the lower aspect of the left kidney. Electrocardiogram and transthoracic echocardiography with bubble study were unremarkable. Further hypercoagulable workup was negative except for an elevated antinuclear antibody titer and elevated inflammatory markers. He received a tissue plasminogen activator with minimal improvement. He was then managed with heparin infusion and discharged on warfarin. He returned to the hospital one week after discharge with new onset right flank pain and was found to have a new right renal artery thrombosis with infarction. He was being bridged from enoxaparin to warfarin and was yet to reach a therapeutic INR, though he had not missed any doses of warfarin. A repeat CT angiogram showed probable vasculitis involving the left common iliac artery.

MANAGEMENT

The patient was restarted on heparin infusion and warfarin and was discharged on warfarin. He was also placed on corticosteroids to be tapered over a couple of months. He followed up with rheumatology and hematology at outpatient and was maintained on azathioprine and warfarin without any recurrent episodes over the next two years.

DISCUSSION

Bilateral renal infarction is rare, yet this patient developed right renal artery thrombosis while on anticoagulation for left renal artery thrombosis. Different types of vasculitis can involve the renal artery. Given the patient's age and renal vessel involvement without the involvement of other arteries or systems, the patient likely has Takayasu arteritis (TA). For TA diagnosis, no specific serologic test is available; some non-specific markers of inflammation can support the diagnosis. In addition, imaging studies allow for earlier and more accurate diagnosis of TA. Early investigations along with subsequent immunosuppressant therapy in patients with low suspicion of other causes are crucial for a better outcome given limited benefits with anticoagulants alone.

CONCLUSION Vasculitis could be considered in patients with no risk factors of atrial fibrillation or atherosclerotic disease who present with thrombotic disease. A high index of suspicion, investigations with imaging studies, and immunosuppressant therapy are required in these patients.

Resident/Fellow Clinical Vignette

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INDEX CASE OF CARDIAC ARREST SECONDARY TO MYOCARDITIS FOLLOWING COVID-19 VACCINATION

Introduction: Myocarditis is a known adverse event associated with COVID-19 vaccination. We report the index case of cardiac arrest secondary to myocarditis following the first dose of Pfizer-BioNTech mRNA COVID-19 vaccination.

Case Presentation: A 23-year-old male with no significant medical history presented after a resuscitated cardiac arrest secondary to ventricular fibrillation. He had received the first dose of COVID-19 vaccine (Pfizer-BioNTech mRNA vaccine) 3 weeks before. He had no known COVID-19 exposure and SARS-CoV-2 PCR was negative on nasopharyngeal swab testing on admission. EKG showed normal sinus rhythm and troponin I was elevated at 0.5 ng/ml (reference range 0.0-0.04 ng/ml). Echocardiogram showed normal ejection fraction with no other abnormalities. Cardiac MRI showed subepicardial enhancement along the lateral wall of left ventricular consistent with focal myocarditis. Electrophysiological study was negative for inducible ventricular arrhythmias. Testing for drug-induced and infectious causes of myocarditis yielded negative results. No arrhythmias or recurrence of symptoms were observed during the hospital stay and the patient was discharged in a stable condition with advice to refrain from second dose of vaccine.

Discussion: A diagnosis of focal myocarditis temporally associated with the vaccine was established. Clinical course was mild, and he continued to do well at follow-up without additional clinical sequelae. Recent literature shows an association of myocarditis with mRNA-COVID-19 vaccination, with a prevalence of 0.03%. It is mostly seen in young healthy males after the second dose. Cardiac arrest secondary to COVID vaccine-induced myocarditis is an unusual presentation and no similar cases have been reported to date. Such presentation after the first vaccine dose is also rare in the reported cases.

Conclusion: A high clinical suspicion of COVID-19 vaccine-associated myocarditis should be maintained in young healthy males with a mild disease course. Cardiac arrest is a possible catastrophic presentation of such vaccine-induced myocarditis.

Resident/Fellow Clinical Vignette

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Interstitial Lung Disease - A rare complication of chronic Synthetic Cannabinoid use.

Introduction:

With the rise of synthetic cannabinoids (SC) use over the last decade, there has been an increase in the reported complications of the drug. Pulmonary complications secondary to SC use are rare. We reported a case of interstitial lung disease secondary to chronic SC use.

Case Report:

A 32-year-old female with a past history of polysubstance abuse (intravenous drug use and chronic SC use), hepatitis C, and asthma presented to the emergency department with 2 days history of generalized weakness, sore throat, and nonproductive cough. She was afebrile, and hemodynamically stable. Blood work-up revealed normal leukocytes and electrolytes. Viral work-up for influenza, COVID-19, and RSV was negative. Chest x-ray showed an ovoid opacity at the right mid lung lobe. A follow-up non-contrast Computerized tomography (CT) scan of the chest showed diffuse centrilobular nodules and tree-in-bud pattern. Due to underlying Intravenous drug abuse history, septic emboli secondary to endocarditis were considered. Her sputum and blood cultures were negative and transthoracic echocardiography did not show evidence of vegetation. HIV testing was negative. Patient admitted to the use of synthetic marijuana particularly K2 on a frequent basis

.Discussion:

Synthetic cannabinoids are psychoactive chemical concoctions sprayed onto plants and dried herbs that can be smoked to mimic the appearance and effects of cannabis. Usage is predominantly by teenagers and young adults. Synthetic cannabinoid receptor agonists produce effects similar to natural marijuana but have a different chemical structure from delta-9-tetrahydrocannabinol (THC), the main cannabinoid found in natural marijuana. Synthetic cannabinoids are Schedule I drugs, the most restrictive category under the Controlled Substances Act, but are readily available across the United States, and their use has been dramatically increasing.

The differential diagnosis for diffuse centrilobular nodules and the tree-in-bud pattern includes infectious bronchiolitis (Mycobacterium including tuberculosis, fungi, mycoplasma-bacteria, and virus), congenital airways diseases (cystic fibrosis, dyskinetic cilia syndrome, bronchiectasis), aspiration or toxic inhalation, connective tissue disorders (follicular bronchiolitis associated with Sjogren syndrome and rheumatoid arthritis), idiopathic (obliterative bronchiolitis, panbronchiolitis), immunologic (allergic bronchopulmonary aspergillosis, immunodeficiency disorders), neoplastic disease (adenocarcinoma, chronic lymphoid leukemia, primary pulmonary lymphoma), and microangiopathic tumor emboli

We know less about the pathophysiology of acute and chronic use of synthetic cannabinoids. The increased use of synthetic marijuana known as spice, k2, black mamba, or crazy clown has recently led to increasing presentations in healthcare due to its intoxication. Chest CT images demonstrating diffuse centrilobular nodules and tree-in-bud pattern and a histopathologic pattern of organizing pneumonia with or without patchy acute alveolar damage should alert radiologists and treating physicians to include synthetic marijuana abuse in the differential diagnosis, inquire further history and perform blood or urine testing to detect synthetic marijuana metabolites.

Resident/Fellow Clinical Vignette

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Iodide Mumps - A rare complication of iodine containing contrast Computed Tomography Scan.

Introduction

The inflammation of the submandibular, sublingual, and parotid glands is an uncommon adverse reaction to intravenous (IV) administration of contrast material. We report a case of iodide mumps post iodinated contrast exposure.

Case

A 43-year-old female with a past medical history of hypertension and no known allergies, presented to the emergency department (ED) with complaints of worsening Left lower quadrant abdominal pain status post failed outpatient management for uncomplicated sigmoid diverticulitis. After starting intravenous antibiotics, CT scan of the Abdomen and pelvis with IV iopamidol 370 mg iodine /mL (76 %) injection 90 mL was done in the ED which showed a sigmoid diverticular abscess. Overnight, she complained of increasing facial swelling. She was afebrile and her bedside examination was significant for non-tender, non-erythematous, bilateral lower facial and neck swelling with no signs and symptoms of hemodynamic, respiratory, or integumentary compromise. Oropharyngeal examination was normal. A Non-contrast, head and neck, CT scan revealed bilateral parotid, and submandibular gland swelling with cervical lymphadenopathy without any evidence of sialolithiasis, or involvement of the pharynx. She was managed conservatively with supportive care and her swelling completely resolved over the next 48 hours.

Discussion

Iodide mumps is a rare complication of IV contrast material, the pathogenesis of which is unknown. The clinical presentation of iodide mumps overlaps with that of infectious sialadenitis, obstructive etiologies, strictures, trauma, inflammatory disorders, and neoplasm which make the clinical diagnosis difficult. Our patient did not have signs of infection and imaging did not reveal any evidence of obstruction, strictures, or mass. Hence, the most likely etiology attributing to the mumps in our case was the prior IV contrast exposure. The natural course of contrast induced mumps is variable, however most of the cases are self limiting with supportive care.

Resident/Fellow Clinical Vignette

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Acute Psychosis as an Initial Presentation of Stroke in a Middle-aged Male with SLE

INTRODUCTION:

Neuropsychiatric involvement in systemic lupus erythematosus (SLE) is a challenge for clinicians, both at a diagnostic and therapeutic level. It has a high heterogeneity of clinical phenotypes, including arthralgias, psychiatric symptoms, and peripheral neuropathy. We report a case of acute embolic stroke in an SLE patient presenting as new onset psychosis.

CASE DESCRIPTION:

A 52-year-old man presented to the emergency department with abrupt new onset of paranoid delusions. His history is significant for SLE without previous neurological symptoms and hypertension. He reports compliance with the SLE regimen of methotrexate, hydroxychloroquine, and belimumab monthly injections since 2017. He occasionally smokes marijuana.

On admission, his blood pressure was 180/100. On examination, the patient was agitated; neurological examination showed no blurry vision or focal deficits. The workup was unremarkable for any electrolyte, metabolic or infectious abnormality. Initial CT head showed no evidence of stroke but revealed atrophic changes more significant than expected for age. His urine toxicology, ESR, CRP, C3, C4, and dsDNA were all within normal limits. On the second day of admission, the patient experienced a second episode of paranoia, with thoughts of being killed. After his delusions waned, he had no recollection of the episode. A continuous video EEG was performed, which showed left-sided slowing but no epileptiform discharges. Subsequently, an MRI brain with contrast revealed clusters of small acute to early subacute transcortical MCA infarct involved in the right posterior temporoparietal regions, suggesting acute embolic stroke. A CT angiogram of the head and neck were unremarkable, and the TEE did not reveal any vegetations or PFO. The final workup revealed a positive anti-cardiolipin Ab and a positive beta2-glycoprotein, which supported a diagnosis of anti-phospholipid antibody syndrome (APS). These were planned to be repeated in 12 weeks. The patient was started on aspirin and heparin bridge to warfarin. One day after treatment initiation, the patient's mentation improved, and delusions resolved.

DISCUSSION:

Our case illustrates that sudden new-onset psychosis can be an early presentation of acute embolic stroke in SLE and APS without other signs of systemic disease flare-up. Only 0.6-11% of SLE patients present with acute psychosis, which is often secondary to disease or adverse effects of medications. Acute psychosis due to APS with SLE can be managed effectively with anticoagulants and anti-platelets. Patients with neuropsychiatric SLE are at risk for increased morbidity and mortality. It can be challenging to diagnose NPSLE among other convincing differentials, including organic or marijuana-induced psychosis and hypertensive emergency. Therefore, it is important to keep the broad differential diagnosis in mind when evaluating a patient with SLE and neurological symptoms.



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Resident/Fellow Research

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CIRRHOSIS OUTCOMES ARE ASSOCIATED WITH COUNTY HEALTH DISPARITY IN NEW YORK STATE

BACKGROUND: Cirrhosis, a life-threatening disease caused by long-term liver damage, is the third most common cause of death in ages 45-65 and poses a tremendous public health and economic burden in the United States. County Health Rankings (CHR) is a composite measure to evaluate multiple factors that can impact health outcomes and determine the health rankings of counties in the same state. Our study aims to examine the association between county health disparity as assessed by CHR and cirrhosis mortality and hospitalization rates in New York State (NYS).

METHODS: We obtained the county-level cirrhosis mortality and hospitalization rates for 2017-2019 from the New York State Community Health Indicator Reports (CHIRS) provided by the New York State Department of Health. We acquired the z-scores for the health-impacting factors for each NYS county from the 2021 CHR report, which includes data for 2015-2019. Using weighted measures these factors are defined by 4 sub- indicators: 30% Health Behaviors (Tobacco use, diet & exercise, alcohol & drug use, sexual activity), 20% Clinical Care (access to care, quality of care), 40% Social and Economic Factors (education, employment, income, family & social support, community safety), and 10% Physical Environment (air & water quality, housing & transit). Using this data, we plotted a negative binomial regression model to estimate the association between cirrhosis outcomes and the z-score for each health-impacting factor in NYS.

RESULTS: From 2017 to 2019, the cirrhosis age-adjusted mortality rate per 100,000 population was 7.0, and the hospitalization rate per 10,000 population was 3.4. Among 62 counties, the highest mortality rate was reported in Hamilton (34.5/100,000) whereas the lowest mortality rate was in New York (4.3/100,000). Hospitalization rates ranged from 0.8/10,000 in Schuylar to 7.5/10,000 in Hamilton. CHR indicated Nassau had the lowest z-score (the healthiest county) and Bronx had the highest z-score (the least healthy county) for overall health factors. Our study showed that mortality rates were significantly greater in counties with higher z- score of overall health factors (Rate Ratio [RR]: 1.029 [95%CI: 1.006-1.052], per 0.1-unit increase), Health Behaviors (1.098 [1.042-1.156]), and Social and Economic Factors (1.054 [1.011-1.098]). In addition, counties with higher z-score of Social and Economic Factors were significantly associated with greater hospitalization rates in NYS (1.061 [1.002-1.122]).

CONCLUSIONS: This is the first investigation that demonstrates geographic differences in cirrhosis outcomes in NYS and its marked association with county-level health disparities. To improve inequitable outcomes of liver cirrhosis, targeted public health interventions and resource allocation should be prioritized in health disadvantaged areas.

Resident/Fellow Research

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THE POOR GET POORER, ANALYZING THE SOCIOECONOMIC FACTORS FOR HEART FAILURE READMISSION

Purpose of study: Heart failure admissions account for an estimated national cost of \$30.7 billion annually. Numerous factors come into play as to why patients require readmission including hospital-controlled, patient-controlled, and situational factors. The purpose of this study is to identify if socioeconomic, median income, and insurance status impact the readmission rate to the hospital.

Methods: The Nationwide Readmission Database (HCUP) was queried for 2019-2022. We collected data on hospital readmissions of 1,548,576 adults readmitted within 30 days. Our study first applied standard logistic regression and decision trees to obtain influential variables and derive practically meaningful decision rules. We then stratified the original data set and applied logistic regression to each data stratum. Finally, using Area under the curve and Odds ratio, we further explored the risk and accuracy of interacting variables in the logistic regression modeling.

Results: A total of 1,548,576 patients were readmitted between 2019-2022. Of these 556,879 (Mean age 58.4 ± 12.4, 58% women), patients were included after the propensity score matching. 173,768 (32%) patients were Heart Failure Patients. Multiple logistic regression of the independent variable showed a readmission probability of 2.73% in the Insurance group, and in Lower median Income quartile showed increased readmission by 8.2%(p=0.02). The odds of readmission Median household income (OR 1.19, p<0.01), and Insurance status (OR=2.03 P<0.01) showed an increased incidence of readmission. Accuracy of Median household income and Insurance status was also significant for AU ROC (0.517, p<0.01), Insurance status AU ROC (0.667, p<0.01) as compared to the logistic regression.

Conclusion: Our results suggest that patients with Insurance status and lower quartile pay showed an increased risk for readmission. Research is needed to determine if targeted interventions for high-risk patients decrease readmissions.

Resident/Fellow Research

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IMPACT OF RACE ON "WEEKEND SYNDROME" IN PATIENTS WITH GASTROINTESTINAL BLEEDING

Introduction:

Gastrointestinal (GI) bleeding includes bleeding from anywhere in the GI tract. It can lead to various outcomes depending on the degree of bleeding. Occult GI bleed is usually found to cause anemia over time, but a massive bleed may lead to shock and death. The study aims to assess the outcome between weekend and weekday GI bleeding and identify if any predictable risk factors impact the outcome.

Methods:

In our study, we performed a retrospective analysis of all Gastrointestinal Bleed (GI) patients admitted to our hospital from 2009- 2022. Data on comorbidities, insurance status, Endoscopy/ colonoscopy report, mortality, length of stay, and Race were collected. Data was then divided based on the patient's Race and admission date. A matched subset was examined with propensity scoring matching to balance baseline characteristics. We then stratified the original data set and applied logistic regression to each data stratum, and the Kaplan Meier survival analysis and Log Rank (Mantel-Cox) model were used to analyze the outcome based on weekday and weekend admission. We further explored the risk and accuracy of interacting variables in the logistic regression modeling and relationship mapping.

Results:

A total of 5104 GI bleed patients were admitted between 2009-2022. 2142 Patients were female (41.9%); the average age in the study population was 49.5 years. Weekday GI bleed showed no change in length of stay as compared to the weekend (4.5 vs. 5.2 p=0.121), and Log Rank Mantel-Cox for survival analysis on weekday GI bleed showed no change between weekend and weekday (p:0.165). Comparing weekend with weekday admissions, there was no significant difference in unadjusted mortality (0.4 vs. 0.4.2%, P = 0.152). Among races, the Hispanic population showed increased LOS (2.5 vs. 3.9 days) and Mortality (0.5% vs. 0.23% p<0.01) as compared to the other races. Multiple logistic regression of the independent variable showed Race 7.2%(p:0.012) as an identifiable risk factor for mortality for GI bleed. There was a significant difference in multivariable-adjusted mortality rates in Race (OR= 1.52, p<0.01). Relationship mapping was used to test the above hypothesis.

Conclusion:

Weekend GI bleed showed no change in Mortality and Length of stay as compared to the weekday. Race was an independent predictable risk factor that impacted the outcome. However, this study has some limitations due to the unknown confounders and biases with variations in billing. Given these dataset limitations, further sensitivity analysis comparing the outcomes remains challenging.

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CHANGE IN THE INCIDENCE TREND AMONG THE RACIAL AND ETHNIC GROUPS WITH UPPER GASTROINTESTINAL BLEEDING "“ A SINGLE INSTITUTIONAL STUDY

Introduction:

Upper gastrointestinal hemorrhage is a common gastrointestinal emergency. In the United States alone, it is responsible for nearly 300,000 admissions per year, with an associated cost of more than \$2 billion annually. In the United States, significant disparities in healthcare outcomes have been observed in racial minorities. Our study aim is to analyze the trend change in the UGI among the different Race/Ethnic Groups.

Methods:

In our study, we performed a retrospective analysis of all Upper Gastrointestinal bleed (UGI) patients admitted between 2009- 2022. Data on comorbidities, insurance status, surgical procedures, colonoscopy/ Endoscopy reports, and baseline characters were collected. UGI patients were categorized by Race and Year of GI bleed. The Jointpoint Regression model measured incidence trends over time by race/ethnicity groups. The dependent variable is the natural logarithm of annual standardized incidence rates, and the independent variable is the year from 2009-2022.

Results:

A total of 2519 UGI patients were involved in the study. 1042 (41.3%) patients were Females. The Annual percentage change in incidence increased in the Hispanic (APCC= 0.9, 95% CI (0.4, 1.3) 2009-2014 as compared to 2015-2022. The Asian population had a descending trend in incidence (APCC= -1.4, 95% CI (-2.0, -1.1) between 2015-2022 as compared to 2009-2014. There was no change in the APCC among the Afro-American and White populations. In the pairwise comparison test, incidence rates of UGI in the Afro-Americans and White showed coincidence and parallelism, but no coincidences were found in the other groups.

Conclusion:

Our study showed an increase in the Incidence of UGI among the Hispanic population and a descending trend among Asian populations. The changing incidence of UGI may indicate a change in causal factors. Further large-scale studies are required to study the cohorts.

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IMPACT OF SOCIAL MEDIA SENTIMENT ANALYSIS (SA) TO PREDICT POPULATION OPINION TOWARDS ANNUAL SCREENING COLONOSCOPY.

Introduction:

Sentiment analysis is an emerging trend to understand patients' thoughts in multiple situations, especially in healthcare settings, regarding patients undergoing screening procedures such as colonoscopy. Given the growing use of social media, public health interventions to improve cancer screening are being widely implemented. The primary aim is to analyze the population response toward the annual colonoscopy, and the secondary goal is to analyze the population sentiment toward earlier colonoscopy screening.

Methods:

We used the Twitter application programming interface (API), Hypertext preprocessor (PAP), and Response capture interface (RAI) to collect the response across Twitter, YouTube, Reddit, and Facebook. Lexicon-based sentiment analysis of the tweets was done using the VADER sentiment analysis tool. Descriptive statistics were used to summarize absolute numbers, frequencies, means, and standard deviations (SD). Independent t-tests were used to compare the average positive and negative sentiment. Finally, correlation analysis was used to examine the relationship between the sentiment across the three years. The data were analyzed with SPSS.

Results:

We recorded 7,651,350 responses from December 2017 - November 2022. 3,520,673 responses between December 2018 - November 2020 and 4,130,677 responses between January 2021 - November 2022. Positive sentiment toward the Annual colonoscopy has improved significantly from 2018 to 2022 (59% vs. 69% $P=0.022$ 95% CI). Positive sentiment increased from annual colonoscopy from age 50 to age 45 between 2018 to 2022 (53% vs. 67% $p<0.01$ 95%CI).

Conclusion:

Our study showed an increase in the frequency of Positive sentiment toward Annual Colonoscopy and Earlier colonoscopy surveillance. Positive sentiments are likely attributed to data showing that the population favors the benefit of earlier colonoscopy screening. The negative sentiments could be due to side effects, lack of knowledge, specific cultural backgrounds, and social media misinformation. Furthermore, the polarization in the Social media users, based on sentiment polarity, showed that the users were well connected, highlighting that such issues bond our society rather than segregate it.

Resident/Fellow Research

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IMPACT OF INSURANCE AND MEDIAN INCOME ON 30-DAY READMISSION IN IRRITABLE BOWEL SYNDROME PATIENTS " A NATIONWIDE ANALYSIS

Introduction:

Irritable bowel syndrome (IBS) is a functional disorder involving alternating diarrhea and constipation and is often associated with painful abdominal distention and spasms. IBS negatively impacts patients' quality of life and is associated with substantial utilization of both traditional and alternative healthcare resources. Efforts focusing on costs associated with protocols to reduce hospital readmission are limited. Our study aims to identify the high-risk group among IBS patients to prevent 30-day readmission.

Methods:

The Nationwide Readmission Database (HCUP) was queried for 2019-2022. We collected data on hospital readmissions of 1,748,576 adults readmitted within 30 days. Inclusion criteria included a principal diagnosis of IBS. The primary outcome was 30-day hospital readmission rates for IBS-specific causes. Our study first applied standard logistic regression and decision trees to obtain influential variables and derive meaningful decision rules. We then stratified the original data set and applied logistic regression to each data stratum. Finally, using Area under the curve and Odds ratio, we further explored the risk and accuracy of interacting variables in the logistic regression modeling.

Results:

A total of 1,558,776 patients were readmitted between 2019-2022. Of these, 20,518 (Mean age 56.4 \pm 11.4) patients were included after the propensity score matching. 9,205 (45%) patients with IBS to 11,313 (54%) Patients without IBS. Multiple logistic regression of the independent variable showed a readmission probability of 5.2% in the Insurance group ($p=0.023$), HTN 3.2% ($p < 0.01$), COPD 6.8% ($p < 0.01$), Obesity 5.2% ($P=0.021$) and Lower median Income quartile (1k-24K) showed increased readmission 4.2% ($p=0.013$). The odds of readmission were increased in patients with a history of HTN requiring medication (3.4 $p < 0.01$), Median household income (OR 1.19, $p=0.012$), and Insurance status (OR=2.53 $P=0.023$) showed an increased incidence of readmission. In addition, the female sex was associated with higher odds of readmission (OR 2.21, $P < 0.01$). The accuracy of gender, Insurance status, and the lower median income were also significant. Gender AU ROC (0.620, $p < 0.01$), Insurance status AU ROC (0.610, $p < 0.01$), and Median Income AU ROC (0.525, $P=0.012$) as compared to the logistic regression. Relation mapping confirmed the hypothesis.

Conclusion:

Our results suggest that patients with comorbid medical conditions, Insurance status, gender, and Lower Quartile pay showed an increased risk for readmission. Research is needed to determine if targeted interventions for high-risk patients decrease readmissions among IBS patients.

Resident/Fellow Research

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PREVALENCE OF OBESITY IN IRRITABLE BOWEL SYNDROME PATIENTS AFFECTING THE HEALTHCARE COST IN UNITED STATES- A NATIONWIDE ANALYSIS

Introduction:

Irritable bowel syndrome (IBS) is a chronic functional gastrointestinal disorder that presents with abdominal pain and altered bowel habits. It affects about 20% of the general population, mainly women, and considerably impacts quality of life and health care costs. The study aims to understand the impact of obesity on IBS patients and the health care cost based on hospital readmission and length of stay.

Methods:

The Nationwide Inpatient Sample (NIS) database was queried for 2019-2022. We collected data on hospital admissions of 3,702 IBS patients. Patients were divided based on their BMI A [>30] = 750 (20%) and BMI B [<30] = 2952(79%). Propensity case matching was performed to match the baseline characters. Our study first applied the Kaplan Meier curve and Log Rank Mantel-Cox test to compare the two groups. We then stratified the original data set and applied the Hazard ratio to identify the factors for prolonged Length of Stay.

Results:

A total of 3702 IBS patients were included. The median length of hospital stay for patients was A = 3 ±3 days, B= 5 ±4 days, by Kaplan Meier Curve. The Log Rank Mantel-Cox comparison among the two groups was significant $p= 0.015$. The covariates that prolonged the length of hospital stay were found to be abnormalities in HTN (HR= 0.256, $p<0.01$), Renal Failure (HR= 0.246, $p= 0.04$), and Heart Failure (HR= 0.556, $p<0.012$). IBS patients with obesity also showed increased 30-day readmission (OR:0.547, $p<0.01$)

Conclusion:

Obesity in IBS patients can affect the length of stay and 30-day readmissions, which can increase the health care cost. Factors associated with prolonged length of hospital stay of patients and readmission need to be considered in planning bed strength on a contingency basis.



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Preventative Cardiovascular Care Differences in Female Veterans: Mixed-Gender clinics vs. Women's-Only Clinics

Female Veterans have higher rates of cardiovascular disease than their non-veteran female counterparts, presenting a unique population. It is also known that Veteran women have inferior lipid, blood pressure, and diabetic control compared to their male counterparts. This illustrates the need to improve our interventions with cardiovascular risk reduction in this population. Early, aggressive treatment of these risk factors provides an opportunity to reduce the burden of cardiovascular disease in veteran women and decrease future adverse events. There is currently no data that has studied if preventative cardiovascular measures of female Veterans differs in various clinic environments. This study will identify any disparities with cardiovascular care in women's-only versus mixed-gender clinics.

We utilized the EMR system at the Buffalo VA Medical Center to extract patient data from several primary care clinics. These patients were under the care of providers in women's only and mixed-gender VA clinics.

A random indices database was used to identify 100 males from three mixed-gender clinics as well as 100 females from the mixed-gender and three women's-only clinics, noting any diagnoses of HTN, HLD, TIIDM, or lack thereof. Data was extracted ranging from the dates 10/31/21- 11/1/22, including recent blood pressure measurements, lipid levels and statin treatment, and HbA1c readings, all of which can be used to stratify cardiovascular risk. Patients with controlled vs. uncontrolled HTN (controlled: BP <140/90; uncontrolled: BP >140/90), controlled vs. uncontrolled HLD (controlled: adequately treated with a statin; uncontrolled: not prescribed a statin), and controlled vs. uncontrolled TIIDM (controlled: HbA1c <8; uncontrolled: HbA1c >8) were identified with the specific cutoff values.

A collection of logistic generalized linear mixed effect regression (GLMER) models were considered each with a specific binary response: one Controlled TIIDM, Uncontrolled TIIDM, Controlled HTN, Uncontrolled HTN, and Statin Treatment; a binary predictor variable: one of Clinic Type (Women's only or Mixed) and Gender (Male or Female); Provider as the intercept only random effect; and possibly with Age as a control/co- variate (including both main effect of age, and the interaction effect of Age with the binary predictor variable).

Among female veterans with HTN, HLD, and TIIDM, there were no statistically significant differences in the odds of diabetic, blood pressure, and cholesterol control between female-only clinics compared to mixed- gender clinics when age was ignored or considered conditional at five age levels. Odds of statin treatment was bigger among older female patients with HLD at both clinics. The odds of having HTN controlled was bigger among older female patients with HTN visiting mixed-clinics. Lastly, female patients with HLD (with or without DM and HTN) had significantly lower odds of receiving statin therapy than male patients, both when focusing on the mixed- gender clinic and the pooled data from both clinics.

Resident/Fellow/Medical Student Quality

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Pharmacoequity in Gastroenterology: A Comparison Between Patient's and Health Care Provider's Perspectives on Variations in Medication Prices among Pharmacies

Healthcare disparity is a significant public health problem particularly affecting vulnerable populations in the United States. Annually, billions of dollars are spent on retail prescription drugs, and the inability to afford medications strongly contributes to healthcare disparities. This impacts especially the socioeconomically disadvantaged persons who often have a higher prevalence of chronic diseases. In particular, patients with chronic medical problems, such as gastroenterological diseases, can face financial burdens associated with long-term pharmacotherapy. Pharmacoequity and improvements in access to medications independent of race, ethnicity, or socioeconomic status will narrow the healthcare disparity gap and help limit many preventable cascades of problems including delay of care, suboptimal medication compliance, and development of more serious diseases.

In this study, we targeted the lack of transparency in medication pricing as a factor contributing to variations in medication prices among pharmacies. To further investigate, we proposed a quality improvement project with multiple aims. First, we aimed to assess the level of understanding of healthcare providers and patients on the variability of medication pricing among different pharmacies. Second, we identified factors that influence providers' and patients' decisions when choosing pharmacies. Lastly, we investigated whether providing information on price variability among pharmacies would change where patients get their medications. The design of this project included a survey with three parts performed in one sitting: pre-intervention survey, intervention (short data table comparing different prices of the same gastroenterological medications at different pharmacies), and post-intervention survey. Two versions of the surveys were created which were designed for medical providers and patients. All surveys were collected at the Erie County Medical Center, in Buffalo, New York.

The preliminary data collected from health care providers suggest a generalized understanding of medication payment systems, however, awareness of price discrepancies among pharmacies was variable and often limited. Almost all providers agreed on the importance of medication cost and found the data table beneficial while considering referrals to pharmacies based on price discrepancies. Meanwhile, the preliminary data collected from the patients showed mixed opinions about the benefits of the data table. Although the majority felt that knowing of price differences among pharmacies was beneficial, it would not necessarily change where they would purchase their medications. At this stage, more data is being collected to assess the efficacy of the data table and contributions towards pharmacoequity. Nevertheless, pharmacoequity is an essential component in addressing healthcare disparity, and it remains an important task to find ways to provide fair, affordable, and effective medical treatment to all patients in the United States.

Resident/Fellow/Medical Student Quality

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IMPLEMENTATION OF A PATIENT NAVIGATOR IN A PRIMARY CARE CLINIC TO IMPROVE DIABETES MELLITUS FOLLOW-UP

Introduction

COVID-19 disrupted access to primary care and preventive care, hindering patient follow-up of comorbidities such as Diabetes Mellitus and hypertension. Populations disproportionately at risk for COVID were especially susceptible to poor continuity of care and largely contributed to the statistics of canceled and delayed primary care appointments during the pandemic. In the pre-pandemic world of healthcare, research suggested that the role of patient navigators is a factor in reducing health disparities. The role of a patient navigator is to remove barriers to care and facilitate patients' access to components of a health system. In this Quality Improvement (QI) project, a patient navigator was assigned to a cohort of approximately 250 patients who were lost to primary care follow-up.

Objectives

The aim statement of the QI project was "to implement the service of a patient navigator to a cohort of 257 pre-diabetic and diabetic patients with a goal of successfully having at least 50% of patients present to clinic for Hemoglobin A1c measurements." The target patient population followed at the Primary Care Clinic at SUNY Downstate and were lost to follow-up due to the COVID-19 pandemic.

Methods

An internal medicine resident served as a patient navigator and contacted a total of 257 patients. Patients were informed via a phone call of their last visit date and the need for follow-up given their history of Pre-diabetes or Diabetes Mellitus. They were advised to schedule appointments using the patient appointment line. Three months following the initial phone call, patients who did not schedule an appointment were contacted as a reminder. If complaints were voiced about difficulty scheduling appointments via the appointment line, the circumstance was mitigated by scheduling directly with the clinic secretary.

Results

Of the 257 patients who were contacted via phone, 26 patients (10%) endorsed having a different primary care physician and were excluded from the remainder of the data analysis. Of the remaining 231 patients, 188 patients (81.4%) scheduled visits and had their hemoglobin A1c measured between January 1 and December 31, 2022. Forty patients (17.3%) were reached but did not follow-up, two patients (0.87%) had appointments but did not have labs ordered, and one patient (0.42%) had a lab error where the sample could not be run.

Conclusion

The SUNY Downstate patient population was disproportionately at risk for COVID-19 and continuity of primary care was disrupted due to the pandemic. The implementation of a patient navigator acting as a liaison to coordinate care mitigates the data on vulnerable patients lost to follow-up to improve screenings such as Hemoglobin A1c.

Resident/Fellow/Medical Student Quality

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Appropriate screening for osteoporosis in female patients in the resident clinic with a DEXA scan

The purpose of the study:

The study's main aim is to assess the effect of education sessions regarding the American College of Clinical Endocrinologists (AACE) guidelines for Osteoporosis screening in peri and postmenopausal female patients in the outpatient setting on the rates of ordering DEXA scans.

Methods:

This is a combined retrospective-prospective study conducted in our resident clinic. Peri-menopausal and menopausal female patients were included in the study. The study was divided into 3 phases of 5 weeks each: pre-intervention, intervention, and post-intervention. Data were collected from chart review. Our intervention was weekly teaching sessions in the clinic regarding current AACE guidelines for Osteoporosis screening in the female population.

Rates of ordering DEXA screening were compared pre and post-intervention to assess the effectiveness of education sessions on the same.

Comparative analysis between groups was performed using the χ^2 test for categorical variables. For continuous variables, the t-test was used to evaluate normally distributed continuous variables. The Wilcoxon rank-sum test was used to assess continuous variables that are not normally distributed. Stepwise multivariable logistic regression will be used to estimate the odds ratio (ORs) and 95% confidence interval (CI) relating potential predictors to the outcome of optimal adherence.

Summary of the results:

One hundred twenty patients met the inclusion criteria for the study in the pre-intervention phase and sixty-four in the post-intervention phase.

For the pre-intervention group, the mean age was 56.93 years (Range: 41-84 years), the mean BMI was 33.45 (Range: 17.99-53.67), 32.5% were peri-menopausal, and 67.5% were postmenopausal. In addition, 18.3% had a DEXA scan done, and 81.7% did not have a DEXA scan.

For the post-intervention group, the mean age was 66.625 years (Range: 61.75-73 years), the mean BMI was 32.061 (Range: 27.15-36.56), 8.1% were peri-menopausal, and 91.9% were postmenopausal. In addition, 7.82 % had a DEXA scan done, and 92.18% did not have a DEXA scan.

In conclusion, based on the chi-square test, there was no difference in the rates of ordering DEXA scans between the pre and post-intervention groups.

Conclusion:

Consistent effort is required to keep enhancing DEXA screening in our resident clinic. Electronic reminder initiatives (best practice advisory), making smart phrases for health care screening, and robust education sessions (weekly teaching sessions in the clinic) are required to increase resident adherence to preventative screening recommendations. We plan to conduct a second phase study after implementing the changes mentioned above.

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INCREASING THE RATE OF LUNG CANCER SCREENING IN AN ACADEMIC PRIMARY CARE PRACTICE

Purpose of the study

Lung cancer is the second most common cancer in the United States, and it is by far the leading cause of cancer death. The objective of this study was to investigate and improve lung cancer screening (LCS) rate at the Albany Medical Center Health System Internal Medicine Group (IMG) over 12 months by providing education about LCS to our medical home team and patients.

Methods

We reviewed a random sample of 100 patients seen at IMG in 2019 with a current or former cigarette smoking history. Based on the 2013 United States Preventive Task Force (USPSTF) recommendations on screening for lung cancer with low-dose computed tomography (LDCT), inclusion criteria included patients aged 55-80 years who have a 30-pack-year smoking history and currently smoke or have quit within the past 15 years. Exclusion criteria included patients who have not smoked for 15 years or developed a health problem that substantially limited life expectancy or the ability or willingness to have curative lung surgery. Of the 100 patients, 46 patients qualified for lung cancer screening. The pre-intervention rate of LCS was assessed based on the number of eligible patients who underwent CT lung cancer screening study ordered by IMG providers.

Interventions to improve LCS rates included educational meetings and flyers posted in patient examination rooms. We presented a PowerPoint explaining the importance of lung cancer screening and the 2021 USPSTF screening guidelines to attending and resident physicians, physician assistants, and nursing staff. The flyers included facts about lung cancer and decision aids for high-risk patients.

After the 12 months of our intervention, we assessed the rate of eligible patients who underwent lung cancer screening by LDCT based on a random sample of 100 patients seen at IMG in 2022. Of the 100 randomly selected patients with a smoking history, 33 were eligible for screening.

Results

Before our intervention, 12 patients out of 46 eligible patients underwent CT lung cancer screening (26%). Post-intervention, 19 patients out of 33 eligible patients underwent CT lung cancer screening (57.6%).

Conclusion

Low-dose CT lung cancer screening is underutilized in the United States. By closing the knowledge gap through engagement of the medical home team and patients, we increased the rate of LCS by 2.2-fold in 12 months.

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Teaching Value in Care Through Implementation of a Novel Curriculum

Purpose for Study

This quality improvement project evaluates the efficacy of implementing a new high-value care (HVC) curriculum into our internal medicine residency program.

Methods

An HVC curriculum was introduced, consisting of a series of dedicated noon conferences using case studies to teach quality of care and cost-effective practices. The existing morning report structure, which consisted of reviewing the clinical reasoning in a challenging case, was modified to include an HVC learning point about the case reviewed. Surveys were circulated among internal medicine residents engaging with this curriculum, before and after 15 months of implementation. Respondents were asked about the perceived importance of value in care and several knowledge-based questions about high-value management decisions and the costs of common procedures. Additionally, the post-intervention survey identified whether residents were more likely to consider several factors of HVC in patient care.

Findings

Among respondents, 71% of residents had engaged in HVC discussions during case reviews in the morning report after the intervention. Respondents endorsing the view that physicians need to consider cost in patient care decisions was 74% at baseline, which increased to 93% after the curriculum. Three questions were directed at identifying high-value management decisions, with the correct answer selected 23% more frequently after the curriculum as compared to before. The costs of common interventions, including CMP, EKG, EGD, and non-contrast CT head were significantly underestimated at baseline. In the post-intervention survey, one-quarter to more than one-half of all respondents stated that they were more likely to consider a variety of HVC factors in patient care. The strongest impact was seen in considering how test results will affect management, endorsed by 43% of respondents, and cost to the patient, endorsed by 55% of respondents.

Discussion

The introduction of a novel HVC curriculum was successful in improving resident knowledge of and attitudes toward HVC. Using a case-based approach was particularly effective in demonstrating the practicality of considering the quality of care and cost-effectiveness in clinical decision-making. Future directions may include providing access to resources for understanding costs for common labs, imaging, and procedures.

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REAL-WORLD EXPERIENCES OF ROBOTIC BRONCHOSCOPY FOR PULMONARY LESIONS: INSIGHTS FROM THE FDA MANUFACTURER AND USER FACILITY DEVICE EXPERIENCE (MAUDE) DATABASE

Purpose: Bronchoscopes are vital for tissue sampling, therapeutics, and palliation. Limitations in existing flexible and rigid bronchoscopes have led to promising developments in robotic assisted technologies with precise maneuvering and stability into lung periphery. The Ion Endoluminal System received FDA clearance in February 2019 and includes an articulating, flexible catheter with shape-sensing technology that provides live visualization and positional feedback. The Monarch Platform, which received FDA approval in March 2018, includes an outer sheath and an inner bronchoscope with 4-way steer control, electromagnetic navigation guidance, and continuous peripheral visualization. We aim to investigate the number and type of complications associated with the use of robotic bronchoscopes using a publicly accessible governmental database.

Methods: We analyzed post-marketing surveillance data on Ion and Monarch robotic bronchoscopes using the FDA MAUDE database between March 2019 and November 2022. This open-access platform receives device reports from both mandatory sources (manufacturers and facilities) and voluntary sources (healthcare professionals and patients). These reports allow the FDA to monitor device performance and device-related safety concerns. Events are classified into four categories: death, injury, malfunction, or other.

Results: During the study period, approximately 364 cases with 34 device issues and 351 patient complications were identified. Of the two systems, Ion had the most reported cases (308/364, 84.6%). Collectively, many of the 34 device problems were due to device detachments (n = 7, 18.4%), output/lack of visual prompts (n = 6, 15.8%), defects (n = 5, 13.2%), program shutdown (n = 5, 13.2%), and needle fracture (n = 2, 5.2%). Amongst the 351 patient complications were pneumothorax (n = 267, 76.1%), hemorrhage (n = 38, 10.8%), cardiac arrest (n = 15, 4.3%), and stroke (n = 9, 2.6%). Several cases described unspecified patient complications (n = 18, 5.1%). Lastly, 9 out of 364 cases (2.5%) resulted in mortality.

Conclusion: Our analysis of the FDA MAUDE database revealed that pneumothorax represented the most common patient complication from robotic bronchoscopy. While the technology is not readily available compared to rigid and flexible bronchoscopes, pneumothorax complication rates are still less in the latter. Reported device complications were related to detachments, visual output, and program malfunction. Notable shortcomings of this study include limited information on patient comorbidities, the experience of the performing bronchoscopist, anesthesia reports, and availability of adjunct imaging tools (such as radial EBUS and the use of fluoroscopy alone, or in conjunction with cone beam CT). In summary, while robotic platforms exist, we suggest careful consideration of the targeted patient population along with a risk/benefit discussion given the aforementioned complication rates.

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REDUCING THE FREQUENCY OF ORDERING HEMOGLOBIN A1c IN PATIENTS WITH WELL-CONTROLLED DIABETES

Introduction

"Let's check an A1c" is a sentence heard often in primary care settings. Is it truly required for each visit? According to Standards of Care 2021 by American Diabetes Association, hemoglobin A1c should be tested every six months for patients with well-controlled diabetes. Hemoglobin A1c test can cost between \$28 - \$245 with an average of \$85.20 without insurance. Unnecessary blood tests cause anxiety in patients and increase healthcare costs. We conducted a quality improvement project whose aim was to decrease the frequency of unnecessary hemoglobin A1c testing by 50% from March 2022 to March 2023 at an internal medicine residency clinic.

Methods

Our discovery phase included a survey of all providers in the residency clinic and a chart review. The goal of the survey was to understand how clinicians identified well-controlled diabetes. The survey was sent to 86 providers (attending and residents) with a response rate of 43%. Results showed a shortcoming to define goal A1c for adults >65 years of age. Less than half knew that A1c should be checked every 6 months only, for patients with well-controlled diabetes. A chart review was conducted for all patients seen by attending and residents as primary care providers in clinic with hemoglobin A1c between 6.5 and 8.5. Of the 462 patients, 20% charts were reviewed as a representative sample. Of the 45 patients with well-controlled diabetes (defined with goal A1c from standards of care 2021), 16 (38%) had A1c ordered sooner than recommended. Three interventions were planned to reduce this occurrence. The first intervention was an educational session with attendings, as they act as point regulators for every plan made for clinic patients. The second intervention was an educational session with the residents.

Results

Eight weeks after the first intervention, a similar chart review was conducted, which demonstrated a decrease in patients with well-controlled diabetes having A1c sent sooner than recommended from 38% to 33%, and after the second intervention, from 38% to 35%.

Discussion

The third intervention was to post information about A1c ordering in the precepting room at clinic, for which data will be gathered after 8 weeks. Although the decrease in A1c ordering was small, the combined effect of all 3 interventions will likely be more significant. Besides training, an ideal intervention would be to introduce an engineering control in the electronic medical record (EMR), such as a hard stop asking if the physician truly wanted to order another A1c since the last was ordered x months ago with the result of y%. A disadvantage of that would be adding to the fatigue that physicians experience from EMR alerts.