School of COMMUNITY MEDICINE

Clinical Vignette Symposium 2020

Book of Abstracts

University of Oklahoma – Tulsa
School of Community Medicine

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Dear Colleagues,

On behalf of the OU School of Community Medicine, I would like to welcome you to the 9th Annual Clinical Vignette Symposium. CVS is an opportunity to present your case reports in a conference setting and gives everyone a chance to share stories of great cases you have seen.

Case studies are a crucial part of exploratory scholarly activity and disseminate new knowledge, allowing for collaborative learning. We are so pleased that you have chosen to take part in CVS this year. We hope that you enjoy all of the cases and get a chance to meet new colleagues.

I want to thank all of our staff and faculty who help make this happen. Have a great CVS 2020!

Sincerely,

Martina Jelley

Martina Jelley, MD, MSPH, FACP

Professor and Vice Chair for Research, Department of Internal Medicine

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Clinical Vignette Symposium 2020

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Emergency Medicine

<u>Abstract #1:</u> EARLY BRADYCARDIA IN A RUPTURED ABDOMINAL AORTIC ANEURYSM: A CASE REPORT

Dr. Charles Chen - University of Oklahoma School of Community Medicine
Dr. Joshua Gentges - University of Oklahoma School of Community Medicine
Dr. William Gray - Green County Emergency Physicians

Introduction

Ruptured abdominal aortic aneurysms are true emergencies with mortality rates reaching as high as 80%. However, due to their rarity and frequent atypical presentations, ruptured AAAs are also often commonly missed, with misdiagnosis rates of approximately 40%. A thorough understanding and healthy level of suspicion for this disease are thus vital in timely diagnosis of the ruptured AAA.

Case Description

A 70-year old man presents to the Emergency Department (ED) via flight EMS for evaluation. He states that he was the performing guitarist at a veteran affair's event, and as he was on his way to the restroom, he thinks he tripped, fell and hit his head. When ground EMS arrived, they noted the patient's heart rate was in the 30-40 range, so air intercept was initiated. On initial presentation, patient only endorsed a mild headache. He was bradycardic but normotensive. On subsequent re-evaluation, patient started complaining of some mild groin pain. Shortly thereafter, patient became hypotensive in the 60s/40s, which responded well to one dose of atropine. However, the patient's blood pressure began declining again, and I performed a bedside ultrasound which showed a large AAA. No obvious extravasation or free fluid was noted in the abdominal quadrants. A CT scan was obtained which showed a ruptured AAA. We immediately consulted vascular surgery who came down and evaluated the patient. Blood transfusion was initiated with a blood pressure goal of MAP 65. A right internal jugular cordis was placed in the ED. The patient then went straight to the operating room. However, in the operating room, the patient continued to decompensate, and despite maximum ventilatory and vasopressor support, suffered periods of prolonged hypotension. Surgery was eventually terminated. The patient was made CMO and died several hours later.

Discussion

Ruptured abdominal aortic aneurysms present to the Emergency Department in a myriad of presentations. Maintaining a high index of suspicion for atypical presentations is thus necessary for identifying this disease. Bedside ultrasound, which has a sensitivity of 98% for diagnosing AAA, has become the screening modality of choice in the Emergency Department, offering flexibility especially in the unstable patient. Early diagnosis of the ruptured AAA is critical for initiating potentially lifesaving, definitive therapy in this otherwise deadly condition.

Abstract #2: PERICARDIOCENTESIS OF CARDIAC TAMPONADE IN THE SETTING OF AORTIC DISSECTION

Dr. Matt Millington - OU-TU Department of Emergency Medicine
Dr. Emily Fitz - OU-TU Department of Emergency Medicine

Introduction

Cardiac tamponade is one of the most common causes of mortality associated with acute type A aortic dissections, seen in over 18% of deaths. The performance of pericardiocentesis in tamponade has been debatable as aggressive drainage could potentially worsen bleeding from the aorta into the pericardium, while withholding the procedure leaves patients at risk for worsening hemodynamic instability and electromechanical dissociation.

Case Description

A 79 year-old male with past history of atrial fibrillation and hypertension presented to the emergency department with chest pain. Ambulance service reported that the patient was initially complaining of chest pain and associated shortness of breath, but en route to the hospital the patient began to complain of left leg weakness and numbness. On arrival to the emergency department, patient was noted to have a cold left lower extremity without palpable pulses and was taken immediately to the CT scanner. Initial scan showed extensive aortic dissection with involvement of the right coronary artery and aortic root, extending distally to the left iliac artery. As the patient was being transferred out of the CT scanner, he went into cardiac arrest. ACLS was initiated and during initial pulse check bedside ultrasound showed a large pericardial effusion with cardiac tamponade. ACLS was continued with emergent percutaneous pericardiocentesis draining approximately 50mL of blood. On subsequent pulse checks the patient continued to reaccumulate pericardial blood despite repeated pericardiocentesis. The patient remained pulseless and resuscitative efforts were eventually halted.

Discussion

Aortic dissection is a diagnosis with significant mortality. While surgical intervention is the definitive treatment in most cases, initial treatments involve rapid diagnosis and strict hemodynamic control to prevent extension of the dissection and aortic rupture.

Previous literature reports poor outcomes in patients with aortic dissection where pericardiocentesis was performed, with concern for destabilizing clot formation or extension of dissection due to rapidly correcting blood pressures. Guidelines were published against the procedure in 2001. However, it has been shown that pericardial effusions are physiologically tolerated up to the point that diastole is impeded, and critical tamponade is reached. Removal of small volumes can have significant effects on restoring cardiac output. Current guidelines recommend controlled pericardial drainage with multiple small volume aspirations to maintain hemodynamic stability until definitive surgical intervention can be performed[4]. In cases of acute hemopericardium such as ours, patients are unlikely to benefit from small volume removal due to rapid reaccumulation of blood. In these cases, rapid pericardiocentesis should be considered

Abstract #3: CEREBRAL T-WAVES IN AN ALTERED PATIENT

Dr. Luke Lewis - OU Department of Emergency Medicine
Dr. Brian Milman - OU Department of Emergency Medicine

Introduction

Stabilization and disposition is the main role of the emergency physician. Emergency medicine physicians become specialists in workup of the undifferentiated patient. The chief complaint of altered mental status exemplifies this because of its broad differential diagnosis. 5% of ED presentations are for the chief complaint of altered mental status. Here we discuss how presence of a rare EKG finding led to more rapid stabilization, diagnosis, and disposition of an emergency department patient.

Case Description

A 68-year-old male presented to the Hillcrest Emergency Department after family became concerned for confusion, weakness, and falls at home. Two days prior to presentation the patient fell at home, with subsequent headache. Family reports a history of alcohol abuse. On initial exam the patient was hypertensive, tachycardic, and confused. No focal findings or deficits were appreciated on neurologic exam. No chest pain or shortness of breath was present. At this point the ED differential was very broad.

An EKG was obtained immediately upon the patient's arrival and showed deep T wave inversions in the anterior leads. Based on history and EKG findings, an intracranial process was suspected. CT imaging was rapidly performed and showed extensive right sided subdural hematoma with 2-3mm of midline shift. The remainder of the workup showed hyponatremia (116) likely secondary to syndrome of inappropriate anti-diuretic hormone. Cardiac enzymes were normal, airway remained patent, neurosurgery was consulted, the patient was admitted to the ICU, and was ultimately discharged without lasting deficit.

Discussion

The electrocardiogram is a critical tool for identifying cardiac pathology in the emergency department. Non-cardiac causes of EKG changes are often overlooked or interpreted as cardiac ischemia. There have been documented instances of cardiac catheterization performed for presumed ACS, only to be found to have clean coronaries and later a developing brain bleed. Intracranial pathology including intracranial bleeding can cause widespread deep T wave inversions (known as cerebral T-waves), QT prolongation, bradycardia, tachycardia, rhythm disturbances, or ST changes mimicking ACS. In this case, early recognition of cerebral T-waves led to rapid neuroimaging and an expedited diagnosis of subdural hematoma. A non-contrast head CT should be considered in a patient with cerebral T-waves on EKG.

Abstract #4: A CASE OF UNDIFFERENTIATED SEPSIS TURNS INTO DISSEMINATED GONORRHEA

Dr. Sarah Fichuk - OU-TU Department of Emergency Medicine
Dr. Eric Lee - OU-TU Department of Emergency Medicine

Introduction

The incidence of sexually transmitted infections has increased in the United States especially infection with *Neisseria gonorrhoeae*. Identification and timely treatment is important to prevent development of disseminated disease.

Case Description

An 18 year old African American female with history of seizures and asthma on no medications presents from home with one hour of chest pain, atraumatic right wrist, and right ankle pain. Her initial vital signs were heart rate of 135, temperature of 39.9 degrees Celsius, and blood pressure of 138/107. Two liters of fluid were given along with ibuprofen and acetaminophen which improved the heart rate to the 120s and fever reduced to 38.6 degrees. Labs including BMP, CBC, ESR, lactic acid, UA were all within normal limits. EKG with sinus tachycardia and imaging of chest x-ray and CT scan of the abdomen and pelvis were all unremarkable. Empiric antibiotics of vancomycin and ceftriaxone started. Chest pain resolved after pain medication but the joint pain persisted. Exam was positive for tenderness to palpation and pain during range of motion in right ankle and right wrist but no erythema, effusions, or other skin abnormalities present. Patient was admitted to the hospital for further evaluation. During hospitalization urine was positive for gonorrhea and negative for chlamydia. CRP was also found to be elevated. A 7 day course of ceftriaxone was completed during hospitalization along with a one-time dose of 1,000 mg po azithromycin. She was then discharged with resolution of her symptoms.

Discussion

Gonorrhea is one of the most common notifiable diseases in the United States. In 2018 there were 179 cases per 100,000 population. This has increased by 82.6% since 2009. However in those patients infected with *Neisseria gonorrhoeae* disseminated infection only occurs in 0.2-1.9%. The clinical signs and symptoms include arthritis or arthralgias, tenosynovitis, and multiple skin lesions. Rarely there have been manifestations of perihepatitis, myocarditis, and meningitis. Patients do not usually present with concurrent symptoms of a gonococcal infection involving the mucous membranes including the urethra, cervix, rectum, or pharynx. These localized infections typically precede the development of disseminated gonorrhea by two to three weeks. Treatment consists of ceftriaxone 1 gram intravenously every 24 hours plus azithromycin 1 gram orally as a single dose. The minimum duration of therapy is 7 days and should continue until clinical signs of infection are gone.

Abstract #5: PENETRATING ATHEROSCLEROTIC ULCERATION: AN INCIDENTAL FINDING WITH POTENTIALLY DEADLY CONSEQUENCES

Dr. Brandon Koenigsknecht - OU-TU Department of Emergency Medicine
Dr. Eric Lee - OU-TU Department of Emergency Medicine

Introduction

Penetrating atherosclerotic ulcers (PAU) form as a result of disruption of the aortic intima secondary to plaque deposition and rupture. [1] PAU is a rare but well recognized subset of a cluster of pathologies known as acute aortic syndrome (AAS) which include aortic dissection, penetrating atherosclerotic ulcer, intramural hematoma, and aortic aneurysmal leakage or ruptured abdominal aortic aneurysm. PAU accounts for 2% - 7% of all recognized diagnoses of AAS. [2] One study has indicated rate of incidence of PAU may be increasing. [3]

Case Description

An 84 year-old male with past medical history of hypertension and neurocardiogenic syncope presented to the emergency department via EMS for evaluation of chest pain. Patient reports he was at rest when he had sudden onset of retrosternal chest with radiation into the back followed by complete syncope.

On arrival to the emergency department, patient was noted to be awake, alert, and oriented without any evidence of acute distress. Patient noted continued chest pain but decreased from onset. Patient was moderately hypertensive but further examination revealed no further abnormality. Based on high pre-test probability of AAS patient underwent CT angiography of the chest, abdomen and pelvis which revealed moderate atheromatous change of the abdominal aorta with associated mural ulceration of the distal abdominal aorta measuring 9 x 9 x 15 mm.

As patient was still with chest pain the diagnosis of symptomatic PAU was confirmed and strict hemodynamic control was initiated with Esmolol. Cardiothoracic surgery was consulted who recommended continued monitoring with admission to cardiovascular intensive care unit. Patient was admitted and observed without apparent deterioration of clinical condition. Patient was discharged in stable condition on hospital day two with instructions to complete interval imaging of PAU in 180 days.

Discussion

Although PAU is a well-recognized subset of AAS exact incidence and mortality of PAU is difficult to determine as PAU is at risk of transformation to intramural hematoma, pseudoaneurysm, aortic rupture, or acute aortic dissection. [4]

Symptomatic PAU indicates disruption of internal vascular structures after which aortic rupture must be expected. [4] The rate of rupture of symptomatic PAU has been shown to be as high as 45%. [4] Prompt recognition and treatment of PAU is a necessity of the Emergency Medicine clinician as delay of treatment may lead to frank aortic rupture causing rapid exsanguination, hemodynamic instability, and death.

Abstract #6: STAPHYLOCOCCAL TOXIC SHOCK SYNDROME: FORGOTTEN FOREIGN BODY

Dr. Jay Scarborough - OU-T
Dr. Jeffrey Goodloe - OU-T

Introduction

Staphylococcal Toxic Shock Syndrome is an infectious illness which causes multi-organ system involvement and is described with *Staphylococcus aureus* infection. Historically, the syndrome may be associated with the use of menstrual products such as tampons. As expected with multi-organ system involvement, symptoms include but are not limited to abdominal pain, vomiting, diarrhea, fever, headaches, confusion, and myalgia. This involvement is attributed to exotoxins such as TSS toxin-1 which is produced by *S. aureus*. Due to the nature of this illness, there is significant overlap with viral syndromes such as that caused by the influenza virus. Menstrual TSS accounts for the majority of cases and had a 4.1% case fatality ratio which has improved since initial identification and treatment of the disease.

Case Description

A 28 year old female initially presented to the emergency department complaining of flu symptoms. These included fevers, malaise, body aches, vomiting, headaches, and abdominal cramping. On review of systems she stated that she had one episode of malodorous vaginal discharge. Upon further investigation she noted that her last menstrual cycle ended one week prior to presentation. Physical exam was positive for fever, tachycardia, and right lower quadrant abdominal tenderness. Rapid flu testing was negative. With consent of the patient, pelvic exam was performed and a retained tampon was removed. She was not aware of the presence of the tampon prior to examination. Laboratory analysis showed neutrophil predominant leukocytosis with left shift. Broad spectrum antibiotic therapy and supportive care were provided and she was admitted to the hospital for ongoing parenteral antibiotics and monitoring. She was treated in the hospital and discharged in stable condition after 2 days of inpatient treatment without complication.

Discussion

The patient described had a good clinical outcome in the face of a severe and rare syndrome which is life threatening if not identified and treated early. The outcome in this case is likely attributed to early recognition and removal of the foreign body. The winter season increases the likelihood of presentations in the ED for viral infections, which may contribute to misdiagnosis in presentations regarding bacterial infections which cause multi-system syndromes with overlapping signs and symptoms such as TSS. Clinical suspicion of non-viral infection must remain high with effective history and physical examination in order to make the correct diagnosis and treatment.

Abstract #7: TOO MUCH OF A GOOD THING

Dr. Bassam Aldeeb - OU Department of Emergency Medicine
Dr. Brian Milman - OU Department of Emergency Medicine

Introduction

Serotonin syndrome is a potentially life-threatening condition that is associated with increased serotonergic activity in the central nervous system. Serotonin syndrome may present with a wide variety of clinical findings, which often include altered mental status, autonomic hyperactivity and neuromuscular abnormalities.

Case Description

A 62-year-old female with history of diabetes, hypertension, CVA, anxiety, and depression presented to the emergency department with altered mental status. Per family, the patient was not acting like herself. EMS found the patient in the bathroom unable to stand. Upon arrival to the ED, patient was hypertensive with a blood pressure of 210/168, febrile with a temperature of 40.3 C, and tachycardic in the 140s. She was awake, unable to follow commands and non-verbal. The patient had a leftward gaze, dilated pupils, diaphoresis, intermittent spontaneous movements of the upper and lower extremities, and hyperreflexia with non-sustained clonus of the bilateral ankles with dorsiflexion.

While in the ED, the patient had an initial stroke work up, was started on broad spectrum antibiotics for a potential infectious etiology, and given fluids and benzodiazepines for serotonin syndrome or possible toxidrome. The patient's respiratory status declined while in the emergency department and she was subsequently intubated. A lumbar puncture was performed which revealed no infectious process. The patient was admitted to the ICU and was started on Cyproheptadine. Inpatient workup showed no acute cerebral infarction or infectious etiology. The patient was later found to be taking Venlafaxine, Metoclopramide, Tramadol, Ultram, and Pregabalin, all of which are known to contribute to serotonin syndrome. She improved during a three-week inpatient stay and was discharged to a rehab center for physical, and occupational therapy.

Discussion

Serotonin syndrome is a clinical diagnosis and should be on the differential of all patients presenting with hypertension, tachycardia, hyperthermia, and altered mental status. It can be potentially life threatening and needs aggressive supportive care with all serotonergic drugs needing to be discontinued. All patients should receive benzodiazepines and in severe cases some patients may need to be endotracheally intubated and paralyzed to help reduce the autonomic instability. Some patients are started on Cyproheptadine, a histamine-1 receptor antagonist with nonspecific 5-HT1A and 5-HT2A antagonistic properties, however definitive evidence of Cyproheptadine's effectiveness is lacking. It is critical for physicians to be aware of this syndrome as it carries a high mortality and has overlap with many other disease processes.

Abstract #8: LEPTOMENINGEAL METASTASES

Dr. Sabha Momin - OU Department of Emergency Medicine
Dr. Brian Milman - OU Department of Emergency Medicine

Introduction

Leptomeningeal metastases (LM) also known as “leptomeningeal carcinomatosis” or “carcinomatosis meningitis" is an uncommon and late complication diagnosed in approximately 5 percent of patients with metastatic cancer. The most common primary tumors associated with this complication are breast, lung, and melanoma. Patient’s with LM commonly present with multifocal neurological signs and symptoms, which develop over days to weeks. Diagnosis requires high suspicion as well as cerebrospinal fluid analysis and neuroimaging. This disease has a poor prognosis and limited treatment options.

Case Description

Patient is a 60-year-old female with past medical history significant for right lung adenocarcinoma, thyroid cancer, myeloproliferative disorder, GERD, irritable bowel syndrome, osteoarthritis, depression, and fibromyalgia who presents to the ED as a transfer from outside facility for hydrocephalus. Patient initially presented for headache, which developed over the last 24 hours. She also complained of word finding difficulty and difficulty with ambulation. Neurological exam did not show any focal neurological deficits. CT head without contrast at outside facility revealed developing hydrocephalus compared to previous imaging. All ventricles were enlarged suggesting that the patient’s underlying hydrocephalic disease process is non-obstructive. Given the patient's known history of adenocarcinoma of the right lung, there is suspicion that the patient has developed non-obstructive hydrocephalus in the setting of recurrent adenocarcinoma manifesting primarily as carcinomatous meningitis. Lumbar puncture was completed and CSF results demonstrated high protein concentration as well as lymphocytic pleocytosis. During the hospitalization, the patient had an indwelling intrathecal lumbar drain catheter placed for temporary cerebrospinal fluid diversion. Patient’s symptoms improved, and she did not develop any complications post operatively. She did well with therapy and was discharge home with oncology follow up.

Discussion

The case described above can be challenging to diagnose and requires detailed history, neurological exam, CSF studies, and neuroimaging. Goals of treatment are pain control, improvement of neurological function, and prolonged survival. For patients with high level of functional capacity, no significant neurological deficits, and minimal disease burden, treatment is directed at controlling the tumor with radiation therapy and intrathecal or systemic chemotherapy. If these options are not possible due to extent of disease, then palliation is the goal, which includes radiation therapy, ventriculoperitoneal shunting, analgesics, corticosteroids, anticonvulsants, and SSRI or stimulant medications.

Family Medicine

Abstract #9: COGNITIVE BIAS AND DELAYED DIAGNOSIS OF CORONARY ARTERY DISEASE

Ms. Kayleigh Schoenfelder - OU-TU School of Community Medicine
Mr. Mark Perdue, PA-C - OU-TU School of Community Medicine

Introduction

Coronary artery disease (CAD) is the most common form of cardiovascular disease in the world. Initial presentation often consists of dyspnea on exertion and chest tightness that resolves with rest. These symptoms are similar to those seen in exacerbations of chronic obstructive pulmonary disease (COPD), which illustrates the critical importance of maintaining a wide differential. This aids in preventing diagnostic errors influenced by cognitive bias, which is a systematic error in thinking that affects decision making.

Case Description

A 59-year-old male presented to Bedlam E with complaints of "sore lungs and chest tightness". Additionally, he endorsed exertional dyspnea and left arm pain. History revealed he had recently switched from vaping to smoking cigarettes. COPD was assumed to be the primary problem based on these findings. Smoking cessation was recommended, PFTs were ordered and inhalers were prescribed. Four months later, the patient returned to the evening clinic complaining of "easy fatigue and chest tightness" with concern that he will "have a heart attack at home far from town" and "won't make it in time to a hospital". At this visit, the patient was diagnosed with angina, started on 81mg aspirin daily, and referred to Bedlam L.

During the initial longitudinal clinic visit—five months after initial presentation—the patient complained of substernal heaviness and tightness associated with dyspnea on exertion and palpitations. Physical exam and EKG were unremarkable. Nitroglycerin and stress testing were ordered. Testing revealed myocardial ischemia in the RCA territory. At follow-up, the patient had continued angina with a physical exam that remained unchanged. He was referred to cardiology and started on metoprolol.

Cardiology found CAD to be highly likely and coronary arteriography was deemed necessary. This revealed tandem 99% stenoses of the proximal "large and dominant" RCA. At this time, balloon angioplasty was performed and resulted in a successful return of flow and resolution of symptoms. This procedure was performed 2 months after cardiac workup began, and 7 months after initial presentation.

Discussion

This case illustrates the importance of limiting cognitive bias, such as anchoring on the readily available smoking and respiratory history, and forming a wide differential in order to minimize delayed or missed diagnoses. Although this patient received intervention before suffering from an acute coronary syndrome, workup of cardiac causes of dyspnea and chest tightness should have begun at the first visit. Clinician insight of cognitive biases is critical to providing timely and accurate diagnoses, and therefore appropriate treatment, to patients.

Abstract #10: NEW ONSET, PROFOUND NEUTROPENIA IN SETTING OF RECURRENT PYELONEPHRITIS

Dr. Giuliana Vande Zande - OU-TU School of Community Medicine, Family and Community Medicine
Dr. Thomas Kern - OU-TU School of Community Medicine, Family and Community Medicine

Introduction

Neutropenia, or too few white blood cells in the blood, can arise from many conditions, with the most common being infectious, drug induced, or oncologic. The mechanism is typically either a decrease in the production of white blood cells or the destruction of these cells in circulation. Neutropenia, which is defined as an absolute neutrophil count of less than 1500 cells/microL, is a medical emergency in the setting of a fever or concurrent infection, as it can lead to hemodynamic instability, sepsis, and even death. We report a case of neutropenia secondary to cefepime, a commonly used antibiotic.

Case Description

A 20-year-old female admitted for recurrent pyelonephritis was found to be severely neutropenic and developed a fever that day. She reported a three-month-long history of recurrent pyelonephritis with fevers, chills, sweats, fatigue, and back pain. Patient had been followed by Infectious Disease and Urology outpatient, receiving 4 weeks of cefepime via a PICC line at home. Just prior to admission, she developed worsening fevers and chills while on antibiotics, requiring further evaluation. Upon presentation, the patient was started on broad-spectrum antibiotics and evaluated for neutropenic fever. Her WBC had been 25,000/microL just three weeks prior and was now less than 1,410/microL. Exam was only remarkable for pallor and cervical lymphadenopathy. A CT chest/abdomen/pelvis was remarkable for renal scarring and diffuse reactive lymphadenopathy. Hematology/Oncology was consulted and recommended a broad evaluation for infectious diseases such as Hepatitis and HIV, which was negative. A blood smear and bone marrow biopsy were also negative for malignancy. Infectious Disease was consulted and recommended discontinuing cefepime, as it rarely can cause hematologic changes. Upon stopping the cefepime, the patient's white cell count improved significantly, from 1,050/microL to 2,530/microL the following day . She was given a dose of tbo-filgrastim intradermal, prior to discharge, which led to resolution of the neutropenia and even led to a high white blood cell count of 21,000/microL . She was discharged home on ciprofloxacin, with outpatient follow up with Infectious Disease and Hematology/Oncology.

Discussion

Neutropenia, even as a side effect of a medication, is a serious medical condition that requires appropriate measures to prevent widespread infection in this immunocompromised state. The incidence of drug-induced neutropenia ranges from 2 to 15 cases per million people. Proper referral or consultation by a Hematologist is critical for ensuring the safety of these patients.

Abstract #11: HEREDITARY HEMORRHAGIC TELANGIECTASIA: Consequences of Delayed Diagnosis

Mrs. Robin Rainey Kiehl - OU-TU School of Community Medicine, Department of Family and Community Medicine
Dr. Janelle Whitt - OU-TU School of Community Medicine, Department of Family and Community Medicine

Introduction

Hereditary Hemorrhagic Telangiectasia (HHT), a rare autosomal dominant disorder also known as Osler-Weber-Rendu Disease, is often underdiagnosed. The initial symptom tends to be spontaneous and recurrent nose bleeds followed by the development of telangiectasias at multiple mucocutaneous locations. In HHT, patients develop arteriovenous malformations (AVMs) in the spine, lung, brain, and liver. This case examines the impact of delayed diagnosis of HHT.

Case Description

A 36-year-old male with history of alcoholic liver cirrhosis and neurologic deficits due to intraparenchymal hemorrhage (7 months prior) presented to the longitudinal free clinic to establish care and refill seizure medication. On further evaluation, the patient had history of an upper gastrointestinal bleed of unknown etiology in 2013, recurrent spontaneous epistaxis since middle school, telangiectasias on skin and roof of mouth, jaundice, and scleral icterus. Hemoglobin was decreased, but in proportion to his nosebleeds. CT angiogram two months prior showed cerebral AVMs. The diagnosis of HHT was confirmed with three of the four Curacao Criteria. Further evaluation was needed to assess for disease complications including gastrointestinal bleeding and pulmonary and hepatic AVMs. Transthoracic contrast echo with agitated saline, a screen for pulmonary AVMs, was positive. Abdominal ultrasounds showed an AVM in the left lobe of the liver. Due to a continual decrease in hemoglobin, an upper gastrointestinal study was ordered. Interventional radiology and neurovascular specialist were needed to evaluate possible embolizations of AVMs. Care would ideally be managed at a HHT center but due to the uninsured status of the patient this was challenging. Patient is currently stable and has not developed any new symptoms since establishing care.

Discussion

Many physicians who manage the complications of this disease are unfamiliar with the genetic condition; therefore, this disorder is often under-diagnosed. Diagnosis is made when three of four Curacao Criteria are met. The criteria are spontaneous and recurrent epistaxis, mucocutaneous telangiectasia, a first-degree relative with diagnosis, and multi-organ AVMs. An earlier diagnosis could have been made if his previous physicians were more aware of the disease, its associated signs and complications, and had conducted a more thorough history and physical exam. Unfortunately, the diagnosis of HHT was made months after the patient experienced a life-threatening hemorrhagic stroke caused by a cerebral AVM, resulting in neurologic deficits. Hopefully with the knowledge of his diagnosis, physicians will continually screen and evaluate him to prevent serious complications in the future.

Abstract #12: ENTEROBACTER BACTEREMIA SECONDARY TO PYELONEPHRITIS

Dr. James Brigance - "OU-TU School of Community Medicine, Department of Family and Community Medicine
Dr. Thomas Kern - OU-TU School of Community Medicine, Family and Community Medicine

Introduction

Pyelonephritis, an infection of the kidney, occurs in 16/10,000 women in the U.S. The rate in pregnancy is 2% versus 1% in the general population. *Escherichia coli* is the most common cause of pyelonephritis. *Enterobacter* is identified in <3% of cases. Fifteen percent of women with pyelonephritis develop bacteremia. We present a case of acute pyelonephritis in a postpartum patient who developed *Enterobacter* bacteremia and sepsis.

Case Description

Previously healthy 16-year-old female presented to ED with acutely worsening back pain and fever 3 days after vaginal birth to a healthy baby. She reported back pain for several weeks but contributed it to pregnancy. On arrival, she was tachycardic, febrile and initial labs showed WBC of 17,000 and UA suggestive of infection. CXR was normal. Blood and urine cultures were obtained. IV sulfamethoxazole/trimethoprim was started; a fluid bolus given. Over 24 hours, she became more ill and preliminary blood cultures were positive for gram-positive cocci. Antibiotic coverage was expanded to vancomycin and piperacillin/tazobactam. Kidney ultrasound showed possible pyelonephritis. Urine cultures grew *Enterobacter* with blood cultures positive for methicillin-sensitive *Staphylococcus aureus* and *Enterobacter*. Antibiotics were changed to cefazolin and piperacillin/tazobactam. After 48 hours, she remained tachycardic and febrile. Abdominal CT showed only kidney changes consistent with pyelonephritis. Infectious Disease was consulted and recommended meropenem and cefazolin. The next blood cultures were negative at 48 hours. Clinical improvement occurred over the next several days. She was discharged with PICC line for outpatient administration of antibiotic regimen for two more weeks. Follow-up with Infectious Disease and weekly CMP, CBC, ESR and CRP was scheduled.

Discussion

This case of postpartum pyelonephritis was complicated in many aspects. The patient's recent pregnancy created delay in care as back pain and UTI symptoms were easily mistaken for pregnancy/postpartum-associated pain. The UTI developed into pyelonephritis and eventually bacteremia. The initial antibiotic regimen, targeted at UTI, proved ineffective against the pyelonephritis and bacteremia. Additionally, although only one culture grew MSSA, the antibiotic course should have covered it due to high virulence and associated morbidity. Many surrounding circumstances made this a difficult case. Although recommendations are to use antibiotics targeted at the likely infection, when treating sepsis, broad spectrum coverage should not be narrowed without ruling out blood stream infection. Due to her recent delivery and associated pain from pregnancy, this patient presented late with her condition, which allowed for a severe and life-threatening illness.

<u>Abstract #13:</u> UTILIZING 'PROJECT ECHO' TO ACCESS HEPATITIS C TREATMENT FOR THE UNINSURED PATIENT

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Mrs. Autumn Ackerman - Ou-tulsa School of community medicine
Dr. Kim Crosby - Ou-tulsa School of community medicine

Introduction

In 2016 the World Health Organization proclaimed a hepatitis C virus (HCV) elimination goal of a 90% decrease in new infections by 2030. Some providers are facing this prevalent disease through an organization called 'Project ECHO', Extension for Community Healthcare Outcomes, with Oklahoma State University Center for Health Sciences. Funded by OSU-CHS and Cherokee Nation Health Services, this collaborative model connects an interdisciplinary team of infectious disease physicians and pharmacists with community providers to discuss treatment for complex medical conditions. This unique resource proved valuable in providing additional care for an uninsured, chronic HCV patient in the Bedlam Longitudinal Clinic. She became the first patient of the Bedlam free clinics to be evaluated by the ECHO team and receive treatment.

Case Description

The patient is a 60-year-old female with Hepatitis C diagnosed in 1981 after a blood transfusion secondary to a C-section. She is uninsured and treatment naïve. When she presented to the clinic there were concerns for hepatic fibrosis and decompensated disease. Along with a 20-pound weight loss within one year, her physical exam revealed a palpable liver 2-3 cm beyond the costal margin and a positive fluid wave. Her AFP was 7.5 and increased to 9.1 four months later, which led to obtaining an unremarkable abdominal ultrasound with the recommendation for a follow-up CT scan. Her case was presented to the ECHO team who collaborated to formulate recommendations for continuing her work-up, beginning treatment, and disease monitoring upon treatment completion. Based on their expert recommendations, the patient received a triple phase liver CT scan through the Medical Access Program (MAP) and a pharmaceutical patient assistance program approved free treatment with Epclusa.

Discussion

When this patient presented to clinic, she believed HCV treatment would never be an option for her financially. There was an underlying fear she would become decompensated or develop hepatocellular carcinoma for which her risk is high. Without the pro-bono support from the ECHO team and assistance programs, her opportunity for treatment would have likely been delayed without expert guidance or denied entirely. For the first time in 39 years, this patient will be able to move forward knowing HCV will be her past and not her future.

Abstract #14: ABDOMINAL PAIN OF UNKNOWN ORIGIN

Dr. Gregory Thompson - University of Oklahoma
Dr. Roberto Elvir - University of Oklahoma

Introduction

Abdominal pain is a common presenting problem in both primary care settings and Emergency Departments. The underlying cause is not determined in about 1 in 3 patients. The following is a perplexing case of abdominal pain that presented to our University clinic.

Case Description

A 43-year-old female with a past medical history of diabetes and hypertension presented to the clinic with a chief complaint of generalized abdominal pain. The pain started about 6 months prior and occurred about every 4 weeks, and typically lasting for 3-4 days. The patient had tried many over-the-counter treatments including TUMS and Maalox. There was an improvement with bowel movements. She described the abdominal pain as a throbbing with no radiation. She denied any urinary symptoms, vaginal bleeding, vomiting, or hematochezia. She had approximately 45 pounds of unintentional weight loss during this time. On exam, the abdomen was soft, nontender to palpation, and nondistended. Bowel sounds were present in all four quadrants. There was no hepatosplenomegaly. Of note, patient had a history of diabetes mellitus type II and was currently taking metformin 1000mg BID and dulaglutide 1.5mg weekly. The patient had been on this regimen for approximately 11 months. The initial differential included IBS, IBD, iatrogenic, and anxiety. Lab work was obtained and included a CBC, ESR, and CRP. The CBC was remarkable for an eosinophil count of 1710; the ESR was elevated at 28. The CRP was unremarkable. A Stool Ova and Parasites was negative. Due to the elevated eosinophil count, the patient was referred to Gastroenterology who performed an abdominal ultrasound, EGD, and colonoscopy. The abdominal ultrasound was normal. The EGD inspection was normal. The biopsy showed some mild inflammation and was negative for *H. pylori*. The colonoscopy was only remarkable for diverticulosis. Given the negative workup, it was determined this patient was likely suffering from irritable bowel syndrome.

Discussion

Abdominal pain is a common complaint in primary care settings and emergency departments. The differential should include iatrogenic causes and abdominal migraines, along with the more common causes including IBS, IBD, *H. pylori* infection, and gastritis. This patient presented with a lengthy differential diagnosis given her comorbidities, medications, and eosinophilia. Given those findings, an EGD and Colonoscopy were warranted in order to exclude eosinophilic gastroenteritis, IBD, and Celiac Disease. IT is important to remember that Irritable Bowel Syndrome is a diagnosis of exclusion, and this case required an extensive workup to exclude it.

Abstract #15: PSEUDOHYPONATREMIA DUE TO SEVERE HYPERTRIGLYCERIDEMIA

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Dr. Janelle Whitt - OU-TU School of Community Medicine, Department of Family and Community Medicine

Introduction

Hyponatremia is defined as low sodium within the blood that can lead to headache, balance and gait issues, confusion, seizures, or even death in severe cases. However, in some instances a low sodium value on laboratory studies is not a true representation of sodium concentration. This is pseudohyponatremia. One known cause of pseudohyponatremia is extreme elevations in triglycerides in the blood. When lipids replace the water within the serum, a low sodium number will be recorded but will not be accurate. We describe a case of pseudohyponatremia in the setting of severe hypertriglyceridemia.

Case Description

A 61-year-old female presented to the clinic with feelings of a mental break down, noting extreme anxiety and confusion. She was recently prescribed 30 tablets of Ativan for her anxiety, a prescription that she regularly obtained, leading to a question of Ativan overdose. Her clinic labs from one week ago noted a sodium of 126. She was sent to the Emergency Department for further evaluation of confusion and agitation with concerns of overdose versus further worsening of hyponatremia. Though her triglycerides were elevated at 1,409 on recent labs, further assessment was warranted to confirm pseudohyponatremia. At the ED, her hyponatremia was worse than previously at 119. She was given IV saline and fluid restriction, and admitted to the hospital for further management of hyponatremia. A lipid panel was obtained which showed triglyceride level of 8,520, resulting in a diagnosis of pseudohyponatremia in the setting of severe hypertriglyceridemia. She was subsequently discharged the following day with instructions to follow up with her primary care physician for antihyperlipidemic medication and lifestyle measures.

Discussion

Without evidence of pancreatitis, she was not treated with plasmapheresis or discharged home with an antihyperlipidemic medication. The pseudohyponatremia-associated low sodium value left her delirium and agitation unresolved. She returned to clinic for discussion of her severe anxiety and was referred to psychiatry. Ativan was discontinued due to her risk of overuse. She was then lost to follow up as she cancelled her next four clinic appointments. Although hyponatremia is often a result of dehydration or other common causes including diuretic use, SIADH, and renal failure, pseudohyponatremia should be present in a differential. This case serves as a reminder to explore other possibilities when an abnormal lab result is obtained. A lipid panel is not always a routine part of a hyponatremia work up, but maybe should be when suspicion of common causes is low.

Abstract #16: LARGE MALIGNANT METASTATIC BREAST CANCER – PHYLLODES TUMOR

Dr. A. Benjamin Chong - OU-TU School of Community Medicine, Department of Family and Community Medicine
Dr. Thomas Kern - OU-TU School of Community Medicine, Family and Community Medicine

Introduction

Phyllodes tumors of the breast are fibroepithelial lesions classified as benign, borderline, or malignant. They are rare, with an incidence of 2.1/million women, more common in Latina whites, at a median age of 45 years. We present a case of a malignant phyllodes tumor in an African American female.

Case Description

A 56-year-old African American female presented to ED with worsening shortness of breath, associated chest tightness and pleurisy. She had a 3.7cm tumor in her right lung along with a large right-sided pleural effusion on CT. Image-guided thoracentesis removed 800mL fluid, providing symptomatic improvement. She was seen by her outpatient oncologist a few days prior where she was advised on the progression of her disease and informed she should consider hospice. Patient was discharged with home hospice care and ultimately expired. Patient had previous diagnosis of a malignant phyllodes tumor of right breast and intraductal papilloma of left breast. Initial phyllodes tumor history was from self-breast exam and mammography 3-4 years prior to patient expiration. An image-guided biopsy confirmed diagnosis. She had repeat follow-up imaging, lumpectomy with good margins, and radiation treatment. Approximately 1.5 years after lumpectomy and radiation treatment, patient had an admission for intractable shoulder pain that developed over the course of 1-2 months. She noticed worsening shoulder stiffness and soreness, and initially thought it was from her exercise regimen. Imaging found significant disease progression with multiple pulmonary nodules and new skeletal metastases. Initial pathology was concerning for an osteosarcoma so she received urgent chemotherapy. She underwent further evaluation at MD Anderson. The tumor burden prevented adequate resection and pathology workup revealed metastatic malignant phyllodes tumor instead of a primary high-grade osteosarcoma.

Discussion

Phyllodes tumors are uncommon, accounting for <1% of all breast neoplasms, and often difficult to differentiate from other breast tumors. Needle or excisional biopsy is important for accurate diagnosis. Complete excision is important to prevent recurrence; however, malignant tumors have a high rate of recurrence, with common metastasis to the lungs. Due to their rarity, there are no evidence-based guidelines for post-treatment surveillance specific to phyllodes tumors. Some recommendations have follow-up at 6-month intervals for 2 years, then yearly afterwards. The patient had adequate follow-up after her initial lumpectomy, however this case points to the difficulty with phyllodes tumors of unpredictable rates of recurrence. Consideration for earlier follow-up or further imaging for malignant or borderline tumors should be considered for disease management.

Internal Medicine

Abstract #17: HYPOKALEMIA PERIODIC PARALYSIS

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Dr. Danial Fisher - University of Oklahoma – Tulsa, School of Community Medicine, Department of Internal Medicine
Dr. Muna Hale - University of Oklahoma – Tulsa, School of Community Medicine, Department of Internal Medicine, Division of Nephrology
Dr. Pranay Kathuria - University of Oklahoma – Tulsa, School of Community Medicine, Department of Internal Medicine, Division of Nephrology

Introduction

Hypokalemia Periodic Paralysis is a rare disorder in which patients have sudden episodes of paralysis associated with low potassium levels, typically from underlying thyroid or diet triggers. Typical treatment is identifying and treating underlying trigger and potassium replacement.

Case Description

A 52-year-old male with PMH of back surgeries presented w/ repeated episodes of sudden onset muscle weakness with multiple visits to the emergency room. He described bilateral arm weakness that progressed to leg paralysis lasting for about a day each episode. He denied thyroid issues, and studies were normal. Clinical examination confirmed profound weakness of limb muscles with hypotonic reflexes. MRI imaging of brain and spine excluded any compressive lesions. The patient had a low serum potassium of 2.1, otherwise CBC and CMP unremarkable. Usual causes of hypokalemia were excluded, pointing to idiopathic hypokalemia. Findings of sudden muscle weakness and idiopathic hypokalemia are consistent with hypokalemia periodic paralysis. The patient was prescribed acetazolamide 5mg daily and KCl 30meq every 30 minutes for 3 doses at the onset of his condition. On follow up, the patient had several episodes with unknown triggers. He was advised to change his diet to a low carbohydrate diet. He reported decreased episodes with strict carbohydrate control, but had some relapse when he increased his carbohydrate intake. Acetazolamide was increased to 10mg daily and the patient has remained w/o additional episodes. Continued workup includes pending genetic testing.

Discussion

Hypokalemia periodic paralysis is a rare condition that is often associated with triggers such as thyroid disease, vigorous exercise, high carbohydrate diets, viral illnesses, and with medications such as anticonvulsants and allopurinol. Hallmark features include extreme muscle fatigue/weakness characterized with temporary inability to move arms and/or legs in the setting of low potassium levels in blood. These attacks can vary in timing lasting from hours to days. Prevalence is 1:100,000 people and affect men greater than women. Most cases occur due to genetic alteration in calcium or sodium channels found on muscle cells. First-line treatment is acetazolamide and potassium repletion, although there is no standardized treatment regimen and recommendation when to start treatment. Our patient quickly improved after starting acetazolamide 5mg daily and KCl 30meq every 30 minutes for 3 doses at the onset of his condition. Based on our case study, we recommend to keep a differential that includes hypokalemia periodic paralysis with patients who present with hypokalemia and weakness/fatigue.

Abstract #18: PH OF 6.53 – INCOMPATIBLE WITH LIFE? LESSER KNOWN MANIFESTATIONS OF ANTICHOLINERGIC TOXICITY.

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Dr. Kevin Smith - OU - Tulsa
Mr. Mohsain Gill - OU - Tulsa

Introduction

Ingestion of unknown substances resulting in overdose is a common presentation, with 63,632 deaths from drug overdose in 2016 alone. Of those, diphenhydramine has been consistently in the top 12 overdose causes from 2011-2016, and the second most common cause of intentional overdose. We present a case of a man with lesser known manifestations of mono-pharmacologic overdose with diphenhydramine leading to seizure, profound acidosis, cardiomyopathy, and renal failure.

Case Description

A 36 year old man presented after being found unconscious in his truck with a suicide note. Upon presentation he had a tonic-clonic seizure and was intubated. Initial ABG showed a corrected pH of 6.53, CO2 of 65, lactic acid 29.6, and bicarbonate 5.4. The ingested substance was unknown. Osmolal gap was normal. Acetaminophen, salicylate, and ethanol levels were undetectable. UDS was positive for TCA and Methadone. He had an abnormal EKG and several signs of anticholinergic toxicity (altered mental status, tachycardia, fixed and dilated pupils, and temperature of 39 degrees Fahrenheit). During the first 24 hours he developed acute renal failure requiring hemodialysis. His course was also complicated by pulmonary edema that required noninvasive positive pressure ventilation. He had persistently prolonged QRS interval with nonspecific intraventricular block. Echocardiogram found an ejection fraction of 45% with left ventricle hypokinesis. With supportive care, his renal failure resolved. Repeat echocardiogram was normal. He admitted to ingesting an unknown amount of diphenhydramine tablets. He denied any other ingestion.

Discussion

Characteristic manifestations of the anticholinergic toxidrome have long been taught as “dry as a bone, blind as a bat, red as a beet, hot as a hare, and mad as a hatter,” which correspond with anhidrosis, mydriasis, flushing, hyperthermia, and altered mental status. Several lesser-known manifestations have been reported, including severe EKG disturbances leading to cardiac arrest, refractory pulmonary edema requiring ECMO, and false positive urine drug screen reports from Diphenhydramine ingestion. No other reports were found with acidosis of this degree. Diphenhydramine is known to cause cardiac sodium channel blockade, likely the cause of the QRS prolongation. Sodium channel blockade can cause negative ionotropic effects on myocardium as well, likely the cause of this patient’s transient hypokinesis. There have been several reports of delayed onset pulmonary edema occurring, sometimes fatal. One hypothesis relates to the Histamine H1 receptors being blocked, leading to greater availability of remaining histamine to bind to Histamine H2 receptors, which have been shown to increase vascular permeability in the lung.

Abstract #19: SERONEGATIVE MYASTHENIA GRAVIS MASQUERADING AS HEMIPLEGIC MIGRAINE

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Dr. Michael Weisz - University of Oklahoma – Tulsa, School of Community Medicine, Department of Internal Medicine

Introduction

Myasthenia gravis is an autoimmune disease affecting the postsynaptic neuromuscular junction of skeletal muscles. It is predominantly caused by the presence of autoantibodies against the postsynaptic acetylcholine receptor (AChR), with a minority of people having antibodies against muscle-specific kinase (MuSK) and lipoprotein-receptor-related protein 4 (LRP4). AChR antibody is positive in 85% of patients, with 7% of AChR-antibody negative patients carry the MuSK antibody. Seronegative myasthenia gravis occurs as an infrequent clinical phenomenon and poses challenges in the diagnosis and management of this well understood disease.

Case Description

A 37-year-old woman with a one-year history of migraine headaches, presented with a headache associated with paresthesia and weakness of the right face and dilated right pupil. She was diagnosed with hemiplegic migraine. The migraine headaches were treated over the next five years with several preventive and acute regimens. During this time, she continued to have headaches but also developed associated proximal muscle weakness, dyspnea on exertion worse by the end of the day, right eye ptosis, chest pain, and hand paresthesia.

Extensive workup including MRI of the brain, EMG, and chest CT were normal. A neurology consultation was obtained and an edrophonium (Tensilon) test was performed which was positive. A presumptive diagnosis of myasthenia gravis was made. Pyridostigmine was initiated, which improved her muscle weakness and facial droop. Laboratory studies were negative for acetylcholine receptor antibody, acetylcholine receptor modulating antibody, and acetylcholine receptor blocking antibody, and anti-MuSK antibody. Over the next few months, her symptoms recurred and she was hospitalized multiple times for myasthenic crises requiring intubation. Intravenous immune globulin, azathioprine, and prednisone therapy were initiated, but she continued to have recurrent exacerbations. Multiple neurology second opinions were obtained, which confirmed the diagnosis of myasthenia. Subsequently her therapy was changed to routine plasmapheresis and mycophenolate mofetil with resolution of her symptoms and acute exacerbations.

Discussion

This case demonstrates the challenges of diagnosing and managing seronegative myasthenia gravis, especially when the presentation is complicated by another neurologic illness. It also portrays the importance of using a team approach to determine optimal management strategies.

Abstract #20: A LATE PRESENTATION OF OXALATE NEPHROPATHY

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Introduction

Oxalate nephropathy is an important etiology within the differential for acute kidney injury in a patient presenting after gastric bypass surgery. Most cases reported have a mean presentation within 1-2 years of surgery. Currently, there is no treatment for this type of nephropathy and patients are encouraged to follow a low fat, oxalate diet as preventive measures. This is a case of a patient presenting with oxalate nephropathy 14 years after gastric bypass surgery who progressed rapidly to chronic kidney disease (CKD) stage V.

Case Description

A 69-year-old female, with history of chronic kidney disease stage III and gastric bypass surgery 14 years prior, presented to the emergency department after abnormal routine labs. Her baseline creatinine was 1.6 mg/dL six months prior presentation but had increased to 5.99 mg/dL. Urinalysis showed minimal blood and protein. Work up including HIV, ANA, ANCA, complement C3 and C4, hepatitis profile, and serum immunofixation was negative. Renal ultrasound showed bilateral renal calculi with hydronephrosis. Bilateral ureteral stents were placed but failed to resolve her kidney injury. Renal biopsy was then performed and revealed deposition of oxalate crystals within renal tubules consistent with diagnosis of oxalate nephropathy. Patient rapidly progressed to CKD stage V with little improvement in renal function despite low fat and oxalate diet.

Discussion

A known risk for patients after gastric bypass surgery is acute renal failure secondary to oxalate nephropathy. It is essential to follow these patients closely after surgery. This includes monitoring serum creatinine and considering a 24-hour urinary oxalate collection if renal failure develops. Most case series and retrospective studies reveal that the mean presentation of oxalate nephropathy is around 1-2 years post-operative. This case demonstrates that patients remain at risk of oxalate nephropathy even over a decade after surgery. Patients who develop this type of disease are at high risk of progressing to end stage renal disease requiring hemodialysis. A low fat and oxalate diet is recommended for these patients; however, if nephropathy develops there is no treatment.

Abstract #21: CAN YOU SEE ME NOW?

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Dr. Audrey Harris - OU Tulsa Department of Internal Medicine
Dr. Karl Hoskison - OU-Tulsa Department of Internal Medicine

Introduction

Anton Babinski syndrome is a condition characterized by the denial of loss of vision (visual anosognosia) associated with confabulation in the setting of obvious visual loss and cortical blindness. The infrequency with which it is encountered makes this diagnosis one of importance to recognize because the patient will tell you they can see.

Case Description

60 y/o women who initially presented to hospital worsening abdominal pain and nausea/non-bloody vomiting of one week duration. Her abdominal pain had been going on for 5 months with 6 weeks of constipation. On admission she was found to have a 6 cm pelvic mass. OB-GYN and colorectal surgery were consulted due to the suspicion for cancer. She was taken for lengthy surgery which was complicated by episodes of hypotension. Following surgery she was difficult to arouse and lethargic initially this was thought to be due to a fentanyl epidural which was stopped and did not result in resolution of symptoms. Post op day 2 it was noted on physical exam that she was not making eye contact and had a new left facial droop. When visual fields were tested she could not see despite denying symptoms. MRI proved she had suffered bilateral PCA stroke resulting in cortical blindness and left sided weakness. The patient continued to confabulate the ability to see despite being informed multiple times that she couldn't. She was started on ASA and statin for management of the stroke. Over the course of hospitalization she worked with PT/OT with no resolution of visual symptoms. Her stay was further complicated by AKI attributed to hemodynamic changes from episodes of hypotension. D/C to rehab for continued therapy to regain function.

Discussion

This case illustrates the potential for cortical blindness following a bilateral PCA infarct. Anton Babinski syndrome was first noted in the 1500s. It is important to differentiate from Charles Bonnet syndrome in which patients also have evidence of hallucinations. While this syndrome is very uncommon, it is important to recognize and test a patients visual fields after a stroke to understand the areas affected and how to go about future management of the patient.

Abstract #22: AN UNCOMMON CASE OF ACUTE KIDNEY INJURY DUE TO MCARDLE DISEASE

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Dr. Krishna Baradhi - University of Oklahoma School of Community Medicine

Introduction
We present a case of an adult woman with acute kidney injury secondary to rhabdomyolysis due to McArdle disease.
Case Description
A 60 year old woman was admitted for generalized weakness triggered by starvation and physical exertion. She was found to have CK 73,230 U/L. UA showed large blood, 2-5 RBC/hpf, ketones, and granular casts. TSH, GFR, and phosphorus were normal initially. UDS was positive for opiates. The patient had a recent admission for unexplained rhabdomyolysis which improved with fluid resuscitation, although CK level remained mildly elevated at discharge. During this admission, she developed oliguria despite stable hemodynamics, fluid resuscitation, and diuretic administration. She subsequently required dialysis due to worsening renal failure suspected from acute tubular injury in setting of rhabdomyolysis. Her medication list did not reveal causative agents, and a myositis panel was negative. A muscle biopsy was performed showing patchy loss of phosphorylase staining consistent with McArdle disease. The patient's CK level and renal function improved with fluid resuscitation and intermittent dialysis, which was eventually discontinued.
Discussion
Glycogen storage disease type V, or McArdle disease, is a rare autosomal recessive deficiency of the enzyme myophosphorylase, an important catalyst for the breakdown of muscle glycogen. Typically, the disease manifests as myalgias, fatigue, and muscle weakness with exercise or hypoglycemia, although more severe complications such as rhabdomyolysis resulting in renal failure can occur. The diagnosis is established by evidence of homozygous *PYGM* mutation on genetic testing or absence of phosphorylase staining on muscle biopsy. McArdle disease diagnosis is typically delayed or missed in adults due to its typical age of onset in the first decade of life and the broad etiologies of muscle weakness and rhabdomyolysis. Treatment is supportive with dietary changes and avoidance of high-intensity exercise along with management of its complications including acute kidney injury.

Abstract #23: THE SPACE BETWEEN

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Dr. Jared Lepley - Oklahoma State University College of Osteopathic Medicine
Dr. Audrey Corbett - University of Oklahoma School of Community Medicine

Introduction

Lung hernias are extremely rare and not well-documented in medical literature. They occur with trauma to the chest wall resulting in a defect allowing lung tissue to herniate through, and infrequently as a result of congenital malformation. Here we present a lung hernia identified in a male presenting with dyspnea.

Case Description

A 64-year-old Native American male with history of COPD, heart failure, coronary artery disease, and deep vein thrombosis presented to the Emergency Department for dyspnea. Admission workup included chest CT negative for pulmonary embolism but revealing a 5.7cm broad-based herniation of the right lower lobe through the 8th posterior intercostal space. On physical exam, a soft bulging of lung under the skin moved with respiration through an abnormally large intercostal space. The herniation was not entrapped. Cardiothoracic Surgery was consulted and recommended no surgical intervention. On further questioning, the patient revealed he had undergone chest compressions for cardiac arrest at an outside hospital four months prior. CT imaging five months prior at our facility showed no herniation. We suspect trauma from chest compressions lead to herniation of lung through a congenitally wide intercostal gap.

Discussion

Hernias of the lung were first described in medical literature in 1499, later classified as acquired (80%) or congenital (20%). Acquired hernias are characterized as spontaneous or traumatic, the majority being traumatic. Traumatic lung hernias may form after penetrating or blunt trauma, including from surgical incision sites and most frequently from motor vehicle accidents. A spontaneous lung hernia is actually a type of traumatic lung hernia, with the “trauma” being a self-inflicted injury, such as a cough or a sneeze. These hernias most commonly occur in male smokers along the anterior chest. Congenital hernias are most often supraclavicular. Symptoms can be subtle. A bulge along the chest wall will be present with paradoxical movement with inspiration. CT scan with Valsalva confirms diagnosis. Surgical intervention is indicated if the hernia is incarcerated, large, or symptomatic, and should be repaired by closure with mesh, either through open or thorascopic technique. In our patient, the herniation was traumatic during a code blue event but we suspect he was predisposed to it due to a congenitally large 8th intercostal space.

The incidence of lung herniation following chest compressions and lung fractures is not well defined and should be further explored. Unless symptomatic, lung hernias are often incidental findings and do not require surgical closure.

Abstract #24: CHOKING ON SAND: DIFFUSE CALCIFICATION OF THE LUNGS FROM PULMONARY ALVEOLAR MICROLITHIASIS

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Dr. Mohamed Eslam - University of Oklahoma School of Community Medicine
Ms. Kaitlin Phillips - Texas College of Osteopathic Medicine
Mrs. Robin Kiehl - University of Oklahoma School of Community Medicine
Dr. Blake Lesselroth - Department of Medical Informatics and Internal Medicine

Introduction

Widespread pulmonary calcification is a relatively uncommon finding in patients presenting with dyspnea; differential diagnosis is limited, particularly when accompanied by a diffuse "sandstorm" appearance on plain radiographs. Pulmonary alveolar microlithiasis (PAM) is an extremely rare genetic disease characterized by deposition of calcium phosphate microliths choking the alveoli and small airways.

Case Description

A 33-year-old female immigrant from the Mediterranean region presented for acute on chronic dyspnea. Her 10-year history of exertional dyspnea was punctuated by two days of acute, unremitting, exertional and resting dyspnea with associated fever, pleurisy, and anxiety. Initial room air oximetry was 68%, increasing to 92% on 2L supplemental oxygen. Exam showed cachexia, tachypnea without accessory muscle usage, and diffuse bronchial breath sounds. Laboratory evaluation revealed polycythemia, and computed tomography showed essentially complete lung opacification with diffuse confluent sand-type calcific opacities with air bronchograms. Extensive inpatient workup for a precipitating infectious or rheumatologic etiology of acute decline was largely fruitless, including blood and sputum cultures, atypical respiratory panel, fungal cultures, and autoimmune workup. Quantiferon gold testing was positive. Bronchoalveolar lavage showed scattered calcified concretions. She was discharged on supplemental oxygen to follow up with an interstitial lung disease specialist and complete latent tuberculosis treatment. She was unfortunately lost to follow up after returning to her home country.

Discussion

Lung tissue calcification can be organized into three main categories: metastatic calcification (i.e., deposition in normal tissue due to systemic disease); dystrophic calcification (i.e., deposition due to trauma or previously abnormal tissue), and PAM – a rare genetic mutation producing an abnormal type IIb sodium phosphate cotransporter in alveolar type II cells, from mutation of the SLC34A2 gene[1]. The dysfunctional cotransporter fails to clear phosphate from degraded surfactant, resulting in microlith accumulation, chronic inflammation, tissue destruction, pulmonary fibrosis, and respiratory failure[2,3]. PAM has been diagnosed in 65 countries and is most common in Asia. There is a spectrum of disease severity; some patients present asymptomatically, discovered based on incidental abnormal radiographs, and some present in respiratory failure. CT chest plus bronchoscopy with bonchoalveolar lavage is typically used for diagnosis. Clinical course varies but most patients progress to respiratory failure and cor pulmonale. Currently the only definitive treatment is lung transplantation[1].
Widespread or multifocal calcification is rare. When diffuse alveolar calcific disease is present, the differential should include metastatic pulmonary calcification and pulmonary alveolar microlithiasis. In our patient, progression of her underlying lung pathology was suspected as etiology of progressively worsening dyspnea.

Abstract #25: AN ETHICAL DILEMMA: BRAIN DEAD MOTHER AT 17 WEEKS PREGNANCY

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Dr. Errol Gordon - St John Medical Center, Neuorlogy

Introduction

Continuation of life support after brain death determination is generally futile and unethical. In this case of a brain dead mother with an intrauterine pregnancy, the decision whether to continue life support was complicated and involved multiple parties

Case Description

A 27 year old pregnant female was brought to the ER via EMS after suffering cardiac arrest from self-asphyxiation. She was found to have severe anoxic brain injury confirmed by MRI and EEG. At the time of arrival, the patient was at 17 weeks of pregnancy confirmed by bedside fetal ultrasound. The patient's course progressed to brain death as determined by neuro critical care on the 7th day of hospitalization.

The patient's parents were recognized to be next-of-kin and therefore medical decision makers of the patient, and they requested removal of life support in order to pursue organ donation. They expressed the patient would have wished to donate her organs to help others despite knowing that withdrawal of care would end the life of the fetus.

The ethics committee of the hospital reviewed the case and deemed that withdrawal of care would be against the religious directives of the hospital and state law because it would end the life of the fetus. The hospital would have to keep the patient alive with nutrition/hydration, ventilator support, and vasopressors to allow the fetus to reach a viable age (24 weeks minimum).

An informed decision was made by medical staff and family to continue aggressive supportive maternal somatic care to prolong gestation in an attempt for safe delivery of the fetus to 32 – 34 weeks or until the fetus was found to be non-viable.

The patient's hospitalization was complicated by increased intracranial pressures secondary to tonsillar herniation, preterm premature rupture of membranes, diabetes insipidus, hospital acquired pneumonia, and catheter associated urinary tract infection. The fetus was carried to 32 weeks, at which time an emergent cesarean section was necessary due to pre-term labor. A 4.5 pound baby girl was successfully delivered. The patient's body was transitioned to Life Share for organ procurement.

Discussion

This case illustrates the complex ethical, medical, and legal decisions surrounding maternal brain death. The decision to manage and continue life support for a fetus requires an unanimous and informed decision based on the patient's previous wishes, family's wishes, hospital directives, state law, maternal and fetal viability, and physician compliance.

<u>Abstract #26:</u> "BUT WHAT ARE THESE BUMPS?" A CASE OF ANTIMICROBIAL RESISTANT PNEUMONIA AND PAINFUL PUSTULES IN A RENAL TRANSPLANT PATIENT

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Introduction

Renal allograft patients are at risk for several opportunistic infections due to both the inherent risk a transplanted organ carries and the immunosuppressive medications required to host a foreign kidney. As a result, these patients are particularly challenging when they are diagnosed with sepsis as the differential must be broadened. While not commonly seen, providers must consider Nocardiosis as a possible infectious pathogen in this patient population.

Case Description

A 57 year-old male status-post renal allograft on mycophenolate, prednisone, and tacrolimus initially presented for shortness of breath and painful bumps on his arms and legs. He was previously treated for presumptive pneumonia three times within the past two months. He was being treated for nodular skin lesions on his extremities that was initially diagnosed outpatient as hidradenitis suppurativa, completing 7 days of trimethoprim-sulfamethoxazole with only slight improvement. On admission, findings were: HR 120s, RR 30s, SpO2 92% on 5L nasal cannula, and WBC 14.7. On initial examination, his skin lesions had become ulcerated and wound cultures were obtained in the ED. He was admitted for acute hypoxic respiratory failure. Shortly into his hospitalization, he suffered a cardiac arrest. ROSC was quickly achieved, however, during intubation, a circumferential mass-like tissue was noted surrounding the glottis, giving initial concern for malignancy. However, previous wound gram stain showed few beaded, branching gram positive bacilli, thus infection became the leading diagnosis. He underwent a BAL. Ultimately, the wound and BAL cultures revealed *Nocardia brasiliensis.* Empiric meropenem 1g q12hrs and trimethoprim-sulfamethoxazole 315mg IV q6hrs were initiated and continued for 14 days. He was then transitioned to ceftriaxone 2g daily per susceptibilities for an additional 20 days. Thereafter, he was continued on trimethoprim-sulfamethoxazole DS2 tabs BID for 3 months with plans to decrease to 1 tab BID for additional 8 months for a total of one year of therapy. He has been showing clinical improvement at outpatient follow-up appointments as the lung changes have resolved on imaging and his skin lesions are healing.

Discussion

Disseminated Nocardiosis is a rare but serious condition that must be considered in immunocompromised patients. Nocardiosis can infect several organ systems depending on method of transmission. However, this patient exhibited both lung and cutaneous manifestations, likely due to his immunosuppressed state. Therefore, providers must consider this as a differential in those at high risk such as transplant/immunosuppressed patients.

Abstract #27: FILAMENTOUS ACTIN IN THE ROLE OF DIAGNOSING SERONEGATIVE TYPE 1 AUTOIMMUNE HEPATITIS

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Introduction

Autoimmune Hepatitis (AIH) is an inflammatory liver disease which, without adequate diagnosis and treatment, can progress to cirrhosis. There are no distinguishing clinical features to discriminate this from other liver pathology; therefore, diagnosis is made by the presence of circulating autoantibodies, elevated serum globulin levels, and histologic examination. Initial treatment is with immunosuppression by glucocorticoid monotherapy or by combination of glucocorticoid with azathioprine.

Case Description

We present the case of a 65-year-old female with no PMH and non-specific abdominal complaints who was found to have unexplained liver cirrhosis. There was no evidence of past or present alcohol abuse. Transaminases were greater than 10x the upper limit of normal, while IgG was greater than 3x the upper limit of normal. Viral hepatitis panel and hemochromatosis mutation gene were negative. AIH was strongly suspected due to exclusion of other etiologies. Subsequently, ELISA for filamentous actin (FA) was tested and resulted positive; however, reflex to smooth muscle antibody (SMA) was negative. Autoantibodies including antinuclear, liver/kidney microsomal, soluble liver antigen, and anti-microsomal were negative. Without adequate evidence of autoantibodies, treatment was withheld until liver histopathology confirmed Type 1 AIH (AIH-1). Prior to discharge, the patient was started on oral prednisone with plans to taper immunosuppression based on therapeutic response (i.e. transaminase levels). Unfortunately, the patient was readmitted roughly 10 days later with severe complications of cirrhosis and ultimately passed away.

Discussion

The subset of SMA with specificity for FA, SMA-T, is the prototype autoantibody correlating with AIH-1. Testing for SMA-T is done by immunofluorescence staining, which can be difficult to visualize when titers are low. FA is detected by ELISA; however, this test has not been fully standardized leading to varying cutoff values depending on assay/laboratory, as well as inability to directly correlate with immunofluorescence titers. In addition, false positive results have been reported in which FA is instead linked to SMA-V, which is seen in a variety of viral illnesses, and not SMA-T. Several factors ultimately contributed to the outcome of this case including hesitation from the patient to pursue invasive measures resulting in a postponed biopsy, and thus diagnosis. However, FA levels were significantly elevated early in the course of illness, indicating the need for standardization of FA assays, as well as correlation between assay and immunofluorescence results. Development of reliable testing for FA has the potential to provide earlier diagnosis and treatment of AIH-1 in patients where SMA titers are negative.

Abstract #28: THE MYRIAD MANIFESTATIONS OF HEPATITIS C IN A SINGLE INDIVIDUAL

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Introduction

Hepatitis C is a virus that can present with multiple different manifestations. These manifestations can be hepatic or extrahepatic. While the presentation and complications can be varied, it is very unusual to see a multitude in one patient. The following patient demonstrates several of the complications of hepatitis C.

Case Description

A 65 year old male with a past medical history of hypertension, atrial fibrillation on rivaroxaban, heart failure with preserved ejection fraction presented to the hospital for headache, hematuria and acute kidney injury. Urine evaluation showed hematuria and proteinuria concerning for glomerulonephritis. Further evaluation through kidney biopsy revealed membranoproliferative glomerulonephritis likely due to hepatitis C. He was started on rituximab and steroids and discharged to complete his course of immunotherapy as well as follow up with gastroenterology for initiation of treatment for hepatitis C.

Due to unforeseen circumstances he was readmitted for diabetic ketoacidosis (with no previous diagnosis of diabetes). His hospital course was complicated with cryoglobulinemia, microangiopathic hemolytic anemia and thrombocytopenia of unclear etiology (ADAMTS13 negative). He did not improve with further immunotherapy as well as plasmapheresis for suspected TTP. He was urgently started on ledipasvir and sofosbuvir. He responded to therapy with resolution of his acute kidney injury and improvement of his thrombocytopenia.

Discussion

It is helpful to keep in mind the varied manifestations of hepatitis C. This case demonstrates unusual occurrence of membranoproliferative glomerulonephritis, microangiopathic hemolytic anemia, thrombocytopenia, and cryoglobulinemia in a single patient over a short period of time. The clinician should be aware that, while treatment of hepatitis C is usually reserved for the outpatient setting, it is sometimes necessary to initiate antiviral treatment urgently in the hospital.

Abstract #29: HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS: AN OFTEN OVERLOOKED SYNDROME

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Introduction

Hemophagocytic lymphohistiocytosis (HLH) is a syndrome of overamplification of the immune response. It is most commonly seen in children, but can affect adults as well. The most prevalent presenting features are fever and multiple organ involvement. HLH has about a 42% mortality rate in adults, with about half of those dying within one month of the diagnosis.

Case Description

A 32 year old male with a past medical history of opioid abuse treated with methadone presented to the hospital for abdominal pain, acute kidney injury, and elevated transaminases. His hospital course was complicated by cardiac arrest with resuscitation after 5 minutes. In the days following his resuscitation he experienced worsening kidney function and liver function. He eventually required intermittent hemodialysis for his kidney failure. After the cardiac arrest, he developed almost daily fevers. Infectious disease was consulted and following an extensive work up for a source of infection he was eventually taken off all antimicrobial therapy as no infectious etiology was found. Due to concern for possible malignancy and his continued anemia, hematology/oncology was consulted and the ensuing evaluation, including bone marrow biopsy, did not reveal a hematologic/oncologic cause. During the course of his hospitalization, his ferritin continued to increase, eventually getting to >40,000 ng/mL. His elevated ferritin prompted further worked up for other inflammatory causes. His clinical picture was not consistent with adult Still's disease. His iron studies and liver biopsy were negative for hemochromatosis. Eventually a soluble CD25 IL-2 receptor level came back elevated, which allowed for the diagnosis of HLH to be made. Hematology/oncology was asked to reevaluate the patient for possible treatment of suspected HLH. Treatment with etoposide and dexamethasone were then started. Unfortunately the patient had been in the hospital for 5 weeks by that time. After slight improvement, his respiratory status deteriorated and he and his family desired to be transitioned to comfort care measures.

Discussion

Because of the ability of HLH to mimic other disease entities, and the rarity of it in adults, it is important to make sure it is considered in our differential diagnosis. Elevated ferritin and elevated soluble CD25 IL-2 receptor can help lead to the diagnosis and are part of the HLH-2004 trial diagnostic criteria. This case demonstrates that if HLH had been considered earlier in the hospital course the patient would have had a better chance of surviving as prompt treatment is fundamental in patient survival.

Abstract #30: ABNORMAL PRESENTATION OF NECROTIZING GLOMERULONEPHRITIS WITH IMMUNE COMPLEXES

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Dr. Krishna Baradhi - University of Oklahoma School of Community Medicine

Introduction

Necrotizing glomerulonephritis is common in ANCA vasculitis and are typically pauci-immune. This is an abnormal presentation of a patient who is p-ANCA positive with immune complex deposits presenting with new diagnosis of hypertension, hematuria, and proteinuria due to necrotizing GN. Literature is limited on the prognosis of patients with immune complexes in necrotizing GN. This case illustrates improvement on IV steroids and rituximab.

Case Description

This is a 75-year-old female with prior history for positive ANA concerning for Lupus that was evaluated for new development of hematuria and proteinuria. She was being followed by a Rheumatologist for lupus, but after developing new onset hypertension with hematuria and proteinuria, she was referred to a nephrologist. Urinalysis showed +2 protein, +3 hemoglobin, and 11-25 RBC/hpf. Other lab work was obtained showing positive p-ANCA with titers of 1:640, myeloperoxidase antibodies at 499, and serum creatinine 1.4 mg/dL. She then underwent renal biopsy revealing focal necrotizing glomerulonephritis with crescent formation with accompanying immune complex deposits. For this, she was admitted to the hospital and started on IV methyl prednisone and Rituximab with improving renal function upon discharge.

Discussion

Necrotizing glomerulonephritis (GN) is a hallmark of patients with ANCA positive vasculitis. Although this can occur in both antibody types, C-ANCA typically is more common presenting 80% of the time. Furthermore, on biopsy, these patients are often pauci-immune. Necrotizing GN with negative ANCA antibodies have been described in a few cases and thought possibly due to activation of the complement pathway. This case, however, reveals an individual with an atypical presentation of necrotizing GN with both ANCA positivity and immune complex deposition. Due to this rarity, not much has been studied to further evaluate the prognosis and outcome of these patients who present additionally with immune complexes. This patient experienced improved renal function prior to discharge with treatment including IV steroids and Rituximab.

Abstract #31: THE SKIN AS A HARBINGER OF INTERNAL DISEASE: AN UNUSUAL PRESENTATION OF DISSEMINATED BLASTOMYCOSIS

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Introduction

Blastomycosis is a fungal disease caused by an environmentally acquired infection with dimorphic fungi belonging to the genus *Blastomyces*. Although blastomycosis primarily presents as a pulmonary infection, spread to other organs is seen in disseminated disease. Blastomycosis is geographically-restricted and is endemic to regions bordering the Mississippi, Ohio and St. Lawrence Rivers, and the Great Lakes. This is a case of disseminated blastomycosis in Oklahoma, outside the endemic region, which initially presented as a non-healing, precancerous skin lesion.

Case Description

The patient is a 61-year-old man who presented to the skin cancer center as a referral from his general dermatologist for evaluation of a rapidly growing ulcerating lesion located on his right check. The lesion had appeared a few weeks earlier as a small papule, which the patient squeezed. The patient had no recent travel, sick contacts, and denied any symptoms. After a shave biopsy indicated that the lesion was an actinic keratosis, it was treated with cryotherapy. The lesion did not resolve. It was re-biopsied, again revealing actinic keratosis.

When the patient was seen at the skin cancer center, the lesion was tender, bleeding, and clinically, consistent with a squamous cell carcinoma. New biopsies were obtained and fungal stains of the biopsies showed pityrosporum organisms and larger yeast forms with broad-based budding, consistent with blastomycosis. Subsequent CT imaging showed consolidative spiculation of the right lung apex with scattered reticular-nodular and left-sided spiculations, concerning for blastomycosis-related lung disease.

Discussion

This case highlights an unusual presentation of a fungal disease; particularly, one that occurred outside its known endemic region. Blastomycosis typically presents with respiratory symptoms (which this patient did not have) and expands to extrapulmonary sites only in cases of disseminated disease. It is unclear why the initial biopsies revealed precancerous lesions, not a fungal infection. One explanation may be that *Blastomyces* is not well visualized with hematoxylin & eosin stains, and requires more specific stains, such as fungal stains. This underscores the importance of keeping a broad differential diagnoses (which allows for a more comprehensive workup) when evaluating atypical skin lesions.

Overall, this case is a clear example of how the skin serves as a marker of underlying internal disease. Here, it was the dermatologic manifestation of a primarily pulmonary condition that spurred testing and ultimately led to the diagnosis. The patient was treated with oral itraconazole and referred to a pulmonologist for further management of the lung findings.

Medicine-Pediatrics

Abstract #32: MORE THAN A GALLSTONE: A TEENAGER WITH CHOLEDOCOLITHIASIS AND SPLENOMEGALY

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Introduction

Hereditary Spherocytosis (HS) is a rare hematological disorder affecting the red blood cell membrane. It is caused by mutations in one of five genes encoding membrane and cytoskeleton proteins, leading to increased fragility. HS is a common cause of hemolytic anemia in Caucasians and can present at any age. Initial presentations may include anemia, splenomegaly, cholelithiasis, jaundice, and occasionally aplastic or hemolytic crises. Traditionally, the osmotic fragility test has been used to diagnose HS; however, new tests such as Red-Band-3 Reduction, a protein fluorescent test, have been found to be more sensitive and specific.

Case Description

A 17 year old Caucasian male with a history of severe anemia with parvovirus infection and splenomegaly presents to the hospital with jaundice and right upper quadrant pain of one day. Physical exam findings included jaundice, scleral icterus, and a palpable spleen. Initial labs were significant for hyperbilirubinemia of 11 (50% direct), and hemoglobin of 13.9 g/dl. The following morning, total bilirubin was found to be 20 (50% direct). Further labs revealed an undetectable haptoglobin, reticulocyte count of 15%, and LDH of 455. Hemolytic anemia was suspected; DAT, ANA, and hemoglobin electrophoresis were obtained but all were unremarkable. Total bilirubin peaked at 28 (70% direct). Magnetic resonance cholangiopancreatography (MRCP) was significant for choledocolithiasis which was removed via endoscopic retrograde cholangiopancreatography (ERCP). Follow up partial-laparoscopic cholecystectomy revealed a gallbladder full of black stones. Post-procedures, the patient's total and direct bilirubin began to downtrend; however, the hemoglobin began to drop and eventually reached 6.7 g/dl on post-ERCP day 5. Post-ERCP, the reticulocyte count increased and reached a peak of 27% with a continued undetectable haptoglobin. Osmotic fragility and Red-Band-3 Reduction were obtained and positive, confirming the diagnosis of HS. The patient went home on day 7 of hospital stay once hemoglobin rose above 8 g/dl. He followed up with hematology outpatient.

Discussion

Hereditary Spherocytosis has been noted to be found in 4-12% of children presenting with cholelithiasis . It would be prudent to keep HS on the differential diagnosis for Caucasian children presenting with severe anemia with viral infections, cholelithiasis, splenomegaly, and jaundice. Though treatment is often supportive, diagnosis can lead to monitoring for hemolytic or aplastic crises. The osmotic fragility test is still often used, but new tests such as the Red-Band-3 Reductions can be used for a more definitive diagnosis.

Obstetrics and Gynecology

Abstract #33: SURGICAL SUTURE IN THE BLADDER AS NIDUS FOR BLADDER STONE FORMATION

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Dr. Jameca Price - OU-Tulsa Department of Obstetrics and Gynecology

Introduction

Urinary incontinence and recurrent urinary tract infections (UTIs) are reasons for referral to gynecologists and urologists alike. Obstructive uropathy, such as the presence of stones are a potential cause of urinary complaints. Bladder stones are known to form due to the presence of a foreign body, which may serve as a nidus for bladder stone formation and resultant UTIs.

Case Description

Patient is a 70 year old female referred to urogynecology for urinary incontinence. Surgical history notable for a hysterectomy and an incontinence and/or prolapse procedure, for which an operative report was unable to be obtained. Patient reported feeling a bulge which had become bothersome in the last 3 months, around which time she started experiencing urinary incontinence. She had a history of UTIs. Patient reported feeling something inside her moving around and having to rock her body into different positions to fully empty her bladder. She denied symptoms of stress incontinence and a physical exam revealed no pelvic organ prolapse. Oxybutynin failed to relieve her symptoms. Urogynecologist obtained an ultrasound which revealed a pelvic mass. CA-125 was normal. Patient underwent in-office cystoscopy which revealed a large (approximately 5 cm) bladder stone. Patient had an unremarkable diagnostic laparoscopy by her urogynecologist, followed by laser lithotripsy of her bladder stone, performed by a urologist. After all bladder stone fragments were removed, cystoscopy revealed blue suture with a knot at the base, present in the anterior portion of the bladder. The suture was from her previous incontinence/prolapse procedure. Suture was unable to be excised cystoscopically due to the surgical knot present. Patient had follow-up with urology who is planning definitive treatment to remove the suture from the bladder via an open or robotic procedure.

Discussion

This case highlights how: (1) a thorough history, physical examination, and appropriate imaging studies are important in the evaluation of a patient with complaints of urinary incontinence and urinary tract infections. (2) During pelvic surgery, utmost care should be taken to avoid suturing or otherwise injuring the bladder. A thorough cystourethroscopy should be performed at the conclusion of any pelvic surgery to evaluate for bladder injury or foreign body. In this case, suture material present in the patient's bladder served as a nidus for the formation of a large bladder stone, which caused this patient to have urinary incontinence and urinary tract infections.

Abstract #34: FALLOPIAN TUBE PROLAPSE AFTER HYSTERECTOMY

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Dr. Jameca Price - OU-Tulsa Department of Obstetrics and Gynecology

Introduction

Hysterectomy is the most commonly performed major gynecological surgical procedure.[3] Fallopian tube prolapse into the vaginal vault is a rare complication. Fan et al suggest it complicates 0.1% of hysterectomies [1]. Most common patient complaints: abdominal pain, dyspareunia, post-coital bleeding and vaginal discharge. As this is a very rare complication of hysterectomy, it is something to understand can happen and understand factors that can lead to proper diagnosis.

Case Description

Patient is a 42yo P2 that had a vaginal hysterectomy and left salpingectomy for heavy menstrual bleeding. Procedure went well, but noted that right fallopian tube was unable to be "safely brought down into surgical field," so decision made to leave in situ. At initial post-op visit 3 weeks out, patient denied vaginal bleeding, but reported yellow/brown discharge. Plan to re-evaluate cuff in 2-4 weeks. Three months later, patient returned for dyspareunia, post-coital spotting and constant pelvic "pressure", attributed to constipation due to improvement after bowel movements. Denied vaginal bleeding or abnormal discharge.

Pelvic exam: Right apical cuff structure consistent with fallopian tube with fimbriated end visualized. Area cauterized with silver nitrate sticks. After discussion with more senior surgeon, recommended diagnostic laparoscopy with right salpingectomy. Diagnostic laparoscopy revealed right fallopian tube prolapse into the vaginal cuff. Dense adhesions noted between the bowel and cuff, excised by general surgery. Fallopian tube removed from cuff with blunt graspers and small defect closed with suture. Fallopian tube removed and sent to pathology. *Pathology:* complete fallopian tube with focal acute inflammation and granulation tissue formation

Discussion

Surgical management reported in literature comprises of partial vs total salpingectomy, with vaginal repair in some cases using various approaches (vaginal, combined vaginal-laparoscopic, laparoscopic or laparotomy). Six patients were initially treated with silver nitrate application without success. Time interval between hysterectomy and first symptoms of fallopian tube prolapse in literature was around 120 days, with maximum interval of 32 years. Commonly reported symptoms: abdominal pain (44%), dyspareunia (34%), post-coital bleeding (24%), foul smelling vs bloody discharge (34%), watery discharge (14%), asymptomatic (4%).

As fallopian tube prolapse is a rare complication of a common surgery, it is important to recognize the symptoms patient's report and to include it in the differential when visualizing tissue at the vaginal cuff. It is also important to recognize that presentation for fallopian tube prolapse can occur on average up to 120 days after surgery. With our patient, her presentation was 100 days post-op.

Abstract #35: PREGNANCY IN RUDIMENTARY UTERINE HORN

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Dr. Caroline Markey - OU-Tulsa Department of Obstetrics and Gynecology

Introduction

A unicornuate uterus is a Müllerian anomaly that arises due to abnormal development of one of the two müllerian ducts. While this reproductive tract anomaly is rare, delay in diagnosis and management can result in serious morbidity and mortality.

Case Description

29-year-old gravida 1 para 0 at 16 weeks gestation presented to labor and delivery with the complaint of sudden onset severe abdominal pain. She reported being previously told she had a uterine anomaly, but was unable to answer more specific questions regarding the diagnosis. On presentation, she was hypotensive and tachycardic. Exam revealed significant abdominal tenderness and moderate distension. Ultrasound showed fetal bradycardia with heart tones ranging from the 30s-60s, as well as suspected hemoperitoneum. Given the concern for uterine rupture versus placental abruption, a blood transfusion was started and the patient was emergently taken to the operating room. Repeat ultrasound prior to the procedure revealed fetal demise. Surgical findings included significant intra-abdominal hemorrhage, a ruptured non-communicating right uterine horn, and an intact amniotic sac containing the demised fetus within the abdominal cavity. The ruptured uterine horn and products of conception were removed and the patient was taken to recovery in stable condition.

Discussion

During embryologic development, two lateral müllerian ducts fuse in the midline to create the uterus. A unicornuate uterus with a rudimentary horn occurs when one of the ducts develops incorrectly and fails to fuse with the contralateral duct. While there can be normal endometrial tissue in the rudimentary horn, it does not communicate with the normal uterine cavity or cervix. A pregnancy in a rudimentary uterine horn is a rare event that occurs in 1 in 76,000-150,000 pregnancies. While identifying a uterine anomaly is typically straightforward on imaging, diagnosis can be more difficult during pregnancy. In the case above, the patient knew she had an anomaly, but was unsure of the specific type. She received multiple ultrasounds during her 16 weeks of pregnancy, but the pregnancy was never identified as being within a rudimentary horn. Although this particular anomaly is rare, the presentation of uterine rupture in pregnancy is classic. To limit resulting morbidity and mortality, quick recognition and treatment is essential.

This case describes a uterine rupture in a pregnant patient with a rare uterine anomaly. Quick recognition of the signs of uterine rupture is critical in minimizing morbidity and mortality in these patients.

Abstract #36: THIRD TRIMESTER FETAL SUPRAVENTRICULAR TACHYCARDIA

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Dr. Caroline Markey - OU-Tulsa Department of Obstetrics and Gynecology

Introduction

Fetal arrhythmias complicate 1-2% of pregnancies, with supraventricular tachycardia (SVT) being the most common. Persistence of a fetal arrhythmia can lead to hydrops fetalis and fetal demise.

Case Description

21-year-old gravida 2 para 1 at 37 weeks 3 days gestation presented to labor and delivery from clinic for evaluation of fetal tachycardia. She was feeling well with no obstetric complaints. On ultrasound the fetus showed no signs of distress, but fetal heart rate ranged from the 180s-200s and a possible soft tissue mass near the foramen ovale was noted. There was no evidence of fetal hydrops. Review of the fetal heart tracing from a prior triage visit was unremarkable. Maternal-Fetal Medicine was consulted and recommended attempting to cardiovert the fetus to normal sinus rhythm by administering oral antiarrhythmic medication to the patient. The patient's baseline lab work and electrocardiogram were normal. She was given 0.5mg of digoxin orally. One hour after the digoxin administration, the fetal heart rate normalized to a baseline of 140s. The patient subsequently underwent induction of labor resulting in a spontaneous vaginal delivery. The infant had a normal echocardiogram after birth.

Discussion

Fetal arrhythmias can have a negative impact on both fetal wellbeing and the labor process. An uncorrected fetal arrhythmia can lead to hemodynamic compromise, cardiomegaly and decreased systolic function, ultimately causing nonimmune hydrops fetalis and fetal demise. In patients without fetal tachyarrhythmias, monitoring the fetal heart rate tracing for characteristics including baseline, variability, accelerations, and decelerations can improve detection of compromised fetal status during labor. In a patient with a fetal tachyarrhythmia, fetal heart rate monitoring is no longer reliable, making labor induction unsafe. A fetal arrhythmia that presents in the third trimester generally does not progress to fetal hydrops, but it can affect the route of delivery due to the inability to effectively monitor the fetus. Cardioversion allowed this patient to proceed with induction of labor resulting in a vaginal delivery. Literature review shows that 65-95% of fetuses will experience cardioversion within 48 hours to 1 week of medication administration. In this case, digoxin was selected due to its rapid absorption and safety profile. Sotalol, flecanide, and amiodarone can also been used for fetal cardioversion.

Fetal arrhythmias can affect multiple aspects of pregnancy and can influence both antepartum and intrapartum management. Converting fetal tachyarrhythmias via maternal antiarrhythmic administration can improve delivery outcomes.

Pediatrics

Abstract #37: BIRTH TRAUMA MASQUERADING AS CHILD PHYSICAL ABUSE

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Dr. Lauren Conway - Child Abuse Pediatrics, OU-TU School of Community Medicine

Introduction

Birth trauma is a common cause of injury to newborn infants. In a minority of infants, birth trauma is mistaken for abusive injury. Suspected abuse requires additional diagnostic workup and involvement of child protective services and law enforcement. Neonates with concerning injuries present a diagnostic challenge for child abuse pediatricians and medical personnel.

Case Description

A 29-day-old male born large for gestation age at 40 weeks gestation with a NICU stay for pulmonary and cardiac problems presented to the hospital with a fever of 105°F. Medical history included propranolol for supraventricular tachycardia. Physical exam indicated boggy swelling of the right parietal area. Septic workup included urinalysis which showed hematuria, elevated white blood cells, leukocyte esterase, and growth of extended spectrum beta lactamase *E. coli*, confirming sepsis secondary to pyelonephritis. X-ray imaging found right ribs 5-8 with callus formation indicating subacute (>10 days old) rib fractures, resulting in a child abuse pediatrics consult. A skeletal survey showed right posteromedial 5-8 rib fractures. Head CT without contrast showed right occipital parietal soft tissue swelling. Bone mineralization appeared normal, and metabolic bone mineralization workup including osteogenesis imperfecta labs (COL1A1 and COL2A1) was negative. Investigating the birth history revealed good prenatal care but a difficult delivery complicated by six failed vacuum-assist attempts with a pop off, Robertson maneuver, attempted clavicle fracture, and an ultimately successful corkscrew maneuver. Physical abuse was ruled out and a diagnosis of residual birth trauma was made based on the subacute rib fracture callus formation, subgaleal hematoma, and birth history. He completed ten days of piperacillin/tazobactam with complete resolution of pyelonephritis. Repeat skeletal survey was negative for acute fractures.

Discussion

Posterior rib fractures in infants are highly specific and suspicious for abusive injury; however, other causes must be considered when rib fractures are discovered, including birth trauma. Neonatal fractures from routine deliveries are well-documented in the literature, especially in large neonates or with shoulder dystocia. In this case, difficult delivery including shoulder dystocia was pertinent history that aided in the diagnosis of birth trauma. It is imperative that physicians take a detailed history, including birth history, even when the presenting symptom appears not to be directly related. Labs investigating bone development disorders should be obtained when assessing neonatal fractures. The obstetric history in this case led to the retention of a family and spared them unnecessary involvement with law enforcement and child protective services.

Abstract #38: DISSEMINATED HISTOPLASMOSIS IN AN IMMUNOCOMPROMISED PEDIATRIC PATIENT

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Ms. Jane Jarshaw - University of Oklahoma School of Community Medicine
Dr. Ella Kuchmiy - In His Image Residency
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Introduction

Histoplasma capsulatum is a thermally dimorphic fungi that is highly endemic in the central and eastern United States. The fungus lives in soil contaminated by bird or bat droppings and is aerosolized and inhaled causing infection. Histoplasmosis is generally a self-limited disease. Most symptomatic patients have acute pulmonary histoplasmosis while immunocompromised patients can have severe pulmonary or disseminated infection. This case emphasizes the importance of considering disseminated histoplasmosis in patients with a fever of unknown etiology.

Case Description

A 10-year-old female with Juvenile Dermatomyositis, managed with mycophenolate and methotrexate, presented to the Pediatric Emergency Center with ten days of fever (T max of 103.7°F) and symptoms of myalgia, fatigue, and anorexia. She had no recent travel or significant exposures and immunizations were up to date. Labs were remarkable for a WBC of 2.7 with absolute neutrophil count of 1100, hemoglobin of 11.9 and platelets of 79. Peripheral smear was consistent with mild leukopenia and marked thrombocytopenia. CRP was elevated to 2.46 and ALT to 69. Chest x-ray was negative for infectious process and blood cultures showed no growth. Due to persistent fevers, infectious work-up was broadened to include testing for common respiratory and gastrointestinal pathogens, Cytomegalovirus, Epstein-Barr virus, *Aspergillus*, *Bartonella*, *Brucella*, *Francisella tularensis*, *Mycoplasma,* and tick-borne illnesses, with all results negative. Due to worsening pancytopenia, a bone marrow biopsy was performed which revealed non-caseating granulomas with fungal yeast forms consistent with *Histoplasma capsulatum*. Histoplasmosis urine and serum antigen tests were positive, as was bone marrow culture. She completed a two-week course of intravenous amphotericin B while inpatient, with continued oral itraconazole for 12 months.

Discussion

Disseminated histoplasmosis is acquired by inhaling fungal spores in endemic areas and presents with symptoms of prolonged fever, fatigue, anorexia and hepatosplenomegaly. Common laboratory findings include pancytopenia, transaminitis and hyperbilirubinemia. Typical radiologic findings include diffuse reticulonodular, interstitial, or military infiltrates, however 40–50% of immunocompromised pediatric patients with disseminated disease have negative chest x-rays. Tissue culture demonstrating typical fungal yeast forms is definitive for diagnosing histoplasmosis. Treatment with intravenous amphotericin B is given for a minimum of 2 weeks, contingent on clinical response. When clinical improvement is demonstrated, oral itraconazole is given for 12 months.

Timely diagnosis of disseminated histoplasmosis can be challenging due to its heterogenous clinical presentation. This case illustrates disseminated histoplasmosis as an important differential diagnostic consideration especially in immunocompromised patients presenting with systemic illness.

Abstract #39: CONGENITAL DIAPHRAGMATIC HERNIA: AN INCIDENTAL FINDING IN A CHILD WITH DOWN SYNDROME

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Dr. Andrea Albin - University of Oklahoma School of Community Medicine, Department of Pediatrics
Dr. Stephanie Pena - University of Oklahoma School of Community Medicine, Department of Pediatrics

Introduction

Delayed presentation of Congenital Diaphragmatic Hernias (CDH) is considered a rare and challenging diagnosis. Delayed presentation of CDH can present with non-specific gastrointestinal and pulmonary symptoms, such as recurrent pulmonary infections, gastroesophageal reflux, epigastric pain, and feeding difficulties. Initial imaging of Late-presenting CDH can be misinterpreted, leading to unnecessary interventions and prolonged complications.

Case Description

A 9-year-old male with Trisomy 21, patent ductus arteriosus (with coil repair), recurrent pulmonary infections (Influenza B, pneumonia, and unspecified upper respiratory infections) and gastrointestinal symptoms (recurrent left-sided abdominal pain, diarrhea, vomiting, viral gastroenteritis, and decrease oral intake) admitted for influenza type A and croup due to increased stridor, hypoxia, and respiratory distress. Chest x-ray indicated a posterior left-sided diaphragmatic hernia. Patient received racemic epinephrine, dexamethasone, and oseltamivir for influenza and croup. Within four days, patient returned to baseline with no hypoxia or respiratory distress. Pediatric surgery recommended an outpatient upper gastrointestinal study that showed the proximal jejunum extending superiorly into the posterolateral diaphragmatic defect (Bochdalek hernia). During surgery three left posterior diaphragmatic hernias and an anterior diaphragmatic hernia (Morgagni hernia) were discovered and repaired. The patient tolerated the hernia repairs well apart from the development of a left-sided pneumothorax that resolved. He recovered with no complications. Upon re-evaluation of chest x-rays, the left-sided CDH was present at least 4 years prior to diagnosis. Chest x-ray from two years prior was misinterpreted as a left lower lobe pneumonia with developing empyema.

Discussion

A diagnosis of CDH at age nine is extremely rare. This patient ultimately obtained the work-up necessary to receive the proper diagnosis but it took multiple office visits and admissions spanning at least 5 years, delaying treatment. An untreated CDH is associated with an increased risk for herniation and strangulation of abdominal organs, which can be life threatening. Late-presentation CDH is recommended to be included in differential diagnosis if a child presents with persistent pulmonary and gastrointestinal symptoms as well as an abnormal chest x-ray. When CDH is suspected, it is necessary to obtain gastrointestinal contrast studies and nasogastric tube placement. This child may also have been diagnosed sooner if he had more consistent follow-up with the same provider and more thorough history obtained and documented.

Abstract #40: ENTERIC DUPLICATION CYST IN A PATIENT WITH SUSPECTED MILK-PROTEIN ALLERGIC PROCTOCOLITIS

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Introduction

Gastrointestinal duplication cysts are rare congenital malformations that are typically discovered by routine prenatal ultrasound. These cysts can arise anywhere along the gastrointestinal tract but are most commonly found in the small intestine. Presenting symptoms vary, but often invlude: nausea, vomiting, abdominal pain or distention, obstruction, or a palpable mass.

Case Description

An exclusively breastfed eight-month-old female presented to the children's hospital with severe microcytic anemia (hemoglobin concentration of 3.2 g/dL). Past medical history was significant for a six-month history of emesis and intermittent hematochezia. Around two months of age, she presented to the pediatrician due to intermittent loose, bloody stools, which were attributed to milk protein-induced proctocolitis. Dairy was removed from the mother's diet, which reportedly provided some improvement. Iron deficiency anemia was diagnosed at four months of age when hemoglobin concentration was 8 g/dL and improved to 10.6 g/dL at six months after the initiation of iron therapy. Follow-up labs at eight months revealed severe microcytic anemia and prompted admission to the children's hospital. Notably, medical history included a prenatal ultrasound concerning for bilateral ovarian cysts. Repeated postnatal images revealed decreased size of the cysts, and they were deemed insignificant. Upon admission, the patient was pale and tachycardic, but otherwise well appearing with a soft, non-tender, non-distended abdomen, normal bowel sounds, no palpable masses or hepatosplenomegaly. Ultrasound and CT of the abdomen showed bilateral abdominal mesenteric masses favoring mesenteric cysts. Exploratory laparotomy identified a ten cm bilobed retroperitoneal cystic mass and 80 cm of mesenteric duplication at the distal jejunum and proximal ileum closely adherent to native tissues with surrounding mucosal necrosis, ulceration, and hemorrhage. The native bowel could not be salvaged so resection and jejunoileostomy were performed. Hematochezia and anemia resolved after surgical recovery.

Discussion

This case demonstrates hematochezia, a relatively common pediatric complaint, which was suspected to be due to milk protein allergic proctocolitis and resulted in the missed diagnosis of a congenital enteric lesion. Unlike most cases of mesenteric duplication cysts, this patient had no palpable masses or abdominal distension. These lesions were detected by prenatal ultrasound but were dismissed postnatally. Severe microcytic anemia was the only sign of the severity of her illness and the need for prompt surgical management. Anatomic abnormalities discovered prenatally should be surveilled into infancy until they are resolved, corrected, or determined to be benign. Gastrointestinal duplication cyst(s) should be included in differential diagnoses for pediatric patients with unexplained hematochezia refractory to treatment.

Abstract #42: USE OF ANTITHROMBIN AND ALTEPLASE FOR DISSEMINATED INTRAVASCULAR COAGULATION IN A 15-MONTH-OLD

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Introduction

Disseminated intravascular coagulation (DIC) is a life-threatening complication of septicemia characterized by intravascular fibrin clot formation and consumption of clotting factors leading to a clinical paradox of increased systemic bleeding and thrombosis. Although diagnostic criteria of DIC have been well-established, studies have not described an effective targeted DIC treatment in the pediatric population.

Case Description

A healthy 15-month-old female with unremarkable past medical history presented with septic shock and DIC in the setting of Group A Streptococcus-positive bacteremia. She was admitted to the PICU in multi-system organ dysfunction requiring significant fluid resuscitation, inotropic therapy, and mechanical ventilation. Soft tissue extremity devitalization due to peripheral thrombosis, predominantly in the hands and feet, was noted. Despite initial hemodynamic stabilization, DIC persisted without palpable peripheral pulses in the extremities. After discussing bleeding risk and limb salvage, it was decided to simultaneously infuse Antithrombin III (AT-III) at a loading dose/continuous infusion (50 units/kg bolus + 35 units/kg/hr for maintenance) along with a very low dose continuous infusion of alteplase (0.025 mg/kg/hr) for 48 hours. Patient was closely monitored during treatment for signs of hemorrhage through neurological checks every 30–60 minutes with pupil assessments and access site checks every 2 hours for bloody secretions. CBCs were drawn daily to monitor hemoglobin and platelet levels and DIC panels and AT-III levels were drawn every 6 hours to assess coagulation profile. Within 18 hours of initiating therapy, significant improvement was noted in distal perfusion of upper and lower extremities given palpable peripheral pulses. The AT-III was weaned while the dose of alteplase remained the same. A continuous infusion of heparin 20 units/kg was started two and four hours prior to the discontinuation of AT-III and alteplase, respectively. At the conclusion of therapy, the patient's soft tissue devitalization had significantly improved with spots of necrosis only present on tips of certain digits of her hands and feet bilaterally. The patient did not require orthopedic surgical intervention during admission, only outpatient follow-up after discharge.

Discussion

DIC lacks an established, safe treatment regimen. Few studies describe the use of monotherapy with either AT-III or alteplase to treat DIC in children, with no studies that have used a combination approach with these medications in pediatric populations. In this case, novel treatment was explored for a patient on the verge of multi-organ failure and multi-limb amputation. Future studies should further assess the safety and effectiveness of this targeted treatment for DIC in pediatric populations.

<u>Abstract #43:</u> INFANTILE OTITIS EXTERNA: A RARE PRESENTATION OF A FIRST BRANCHIAL CLEFT CYST

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Introduction

Acute otitis externa (AOE) is a clinical syndrome commonly present in pediatric patients between the ages of five and fourteen years old. AOE is more common in this age range due to increased exposure to outdoor water activities. This case report sheds light on an atypical presentation of AOE in an infant, in the setting of a predisposing congenital anomaly.

Case Description

A previously healthy 2-month-old female presented to the pediatric ED with a one-week history of rapidly progressive left external ear swelling and sanguinopurulent drainage. Prior to presentation, the patient had failed multiple outpatient treatments including: a three-day course of amoxicillin, and oral cefdinir with ofloxacin drops. Upon admission, the patient was well-appearing, afebrile, without elevated inflammatory markers, only with a mildly elevated WBC count. On physical exam, there was a 2 cm indurated cyst in the left pre-auricular area anterior to the tragus with overlying erythema and soft-tissue swelling. Additionally, the left tympanic membrane could not be visualized due to significant external canal edema with otorrhea. There was no mastoid swelling, erythema, or tenderness. Given the rarity of AOE in this age group with concern for more invasive infection and possible underlying anatomic abnormality, Pediatric ENT was consulted. ENT recommended contrast CT which was consistent with a type II first branchial cleft cyst abscess with otitis externa. Gram stain of otorrhea showed gram-positive cocci and gram-negative rods (GNR), for which clindamycin and cefepime were started. Treatment was later modified to only clindamycin after cultures grew moderate viridans group streptococci and few methicillin-resistant *Staphylococcus aureus*. The initial GNRs visualized on gram stain were not seen in the culture, lowering suspicion for *Pseudomonas*. The patient was transitioned from intravenous to oral clindamycin after confirmed clinical response to antibiotics. Acute surgical intervention was deemed not necessary based on clinical improvement. The patient completed a 10-day antibiotic course with close outpatient ENT follow-up.

Discussion

AOE in an infant is an alarming clinical presentation that warrants thorough history and physical exam. This patient's otitis externa was related to an infection of a first branchial cleft cyst, a rare anomaly resulting from the improper involution of remnants of the first branchial cleft. First branchial cysts are extremely rare, making up only 7% of all branchial cleft cysts. In the context of a peri-auricular mass, it is important to include infection of congenital neck masses, such as a branchial cleft cyst, as part of the differential diagnosis.

Abstract #44: TRAUMATIC PRESENTATION REVEALS WILMS TUMOR

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Introduction

Wilms tumor, also known as nephroblastoma, is the most common type of renal tumor in the pediatric population though it occurs in approximately one in ten thousand children. The underlying etiology of Wilms tumor is thought to be due to genetic changes in the normal embryological development of the genitourinary tract. The most common presentation of Wilms tumor is an abdominal mass. Other presenting signs and symptoms may include abdominal pain, hematuria, fever, anemia, and/or hypertension. We report on a patient with this rare condition who had a traumatic presentation that led to the diagnosis.

Case Description

The patient is a 4-year-old previously healthy male who presented to the emergency department for evaluation of hematuria following a fall. His parents reported that a couple of hours prior to presentation, the patient was playing on the monkey bars and fell approximately 5 feet onto a metal bar onto his abdomen. Later that evening, his parents noticed blood tinged urine in his diaper. On physical examination he was noted to have mild periumbilical tenderness and the right side of his abdomen was noted to be fuller than the left, though no specific masses were palpated. Urinalysis revealed 3+ blood and >100 RBCs. The patient had an abdominal and bladder ultrasound performed which revealed a right renal mass. This was followed up by a CT abdomen/pelvis which revealed a right renal mass consistent with a Wilms tumor. He was admitted to the inpatient service for further evaluation and consultation. Three days after initial presentation the patient underwent a laparotomy with radical right ureteronephrectomy and lymph node sampling followed by 18 weeks of chemotherapy.

Discussion

If a renal mass is suspected, basic laboratory studies should be ordered to rule out and/or look for other pathologies. These include CBC, CMP, UA, and coagulation studies. An ultrasound is the first step in imaging. Positive imaging should prompt follow-up with contrast-enhanced CT. Management typically involves nephrectomy followed by chemotherapy but ultimately depends on the staging of the tumor. The overall survival for Wilms tumors is greater than 90% for localized disease and 75% for metastatic disease. 10-15% of cases will recur, in which most relapses occur within the first two years and most commonly occur in the lungs or abdomen.

Abstract #45: ACUTE MASTOIDITIS SECONDARY TO ACUTE OTITIS MEDIA IN AN UNVACCINATED CHILD

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Introduction

Acute mastoiditis most commonly occurs under 2 years of age and is the most common complication related to acute otitis media (AOM). It may go undiagnosed in children, as it usually resolves with treatment of AOM. With untreated or inadequately treated AOM, acute mastoiditis may occur and lead to further complications which can potentially be life threatening. These complications have been minimized by the development of vaccinations as there are vaccines against the most common bacterial sources of infection.

Case Description

A 3-year-old female unvaccinated by parental choice was diagnosed with bilateral AOM and treated with ceftriaxone and ciprofloxacin/dexamethasone ear drops. Her mom reported minimal improvement with continued fever, neck stiffness, lethargy, and otalgia. Two weeks following her initial diagnosis, she experienced one episode of emesis and swelling behind her left ear, with increased irritability. At that time, the patient was taken to the Emergency Department for evaluation, given ceftriaxone, and transferred to the Children's Hospital. On exam, the patient was irritable and lethargic. Her left auricle was protruding forward with notable postauricular edema, surrounding erythema and was tender to palpation. Her ear exam was notable for mild effusion behind her left tympanic membrane. She resisted passive flexion of her neck. She had no other remarkable symptoms, including no focal neural deficits. Her labs were notable for anemia and inflammation. Broad spectrum intravascular antibiotics and cefdinir drops were initiated. She required further evaluation by imaging and consults, including ENT, infectious disease, and hematology-oncology. The CT head showed bilateral mastoiditis with subperiosteal abscesses and diminished opacification of the right sigmoid sinus, possibly indicating a venous thrombosis. She went to surgery for a left mastoidectomy and bilateral myringotomy tube placement. Cultures indicated *Streptococcus pneumoniae.* Her MRI showed right transverse sigmoid sinus thrombosis. She was initiated on enoxaparin for a minimum of 3 months with close outpatient follow up with hematology/oncology.

Discussion

As high dose amoxicillin is currently the first line treatment for AOM, it's unclear why a single dose of ceftriaxone was chosen for this patient, especially given her unvaccinated status. It's important to understand that mastoiditis caused by *Streptococcus pneumoniae* is a vaccine preventable disease. For the health and safety of the pediatric population, it is imperative that parents are educated regarding AOM and its complications, risk factors, and preventative factors (i.e. vaccines). This case is a good reminder of the importance of proper therapeutic treatment and close follow up in the pediatric population.

Abstract #46: SCURVY- AN 18TH CENTURY DISEASE IN THE 21ST CENTURY

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Dr. Emilie Larson - University of Oklahoma School of Community Medicine, Department of Pediatrics
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Introduction

What was once a common disease described as early as ancient Egypt, is now a rare disease in our Modern Era. Scurvy is a condition resulting from a dietary lack of vitamin C (ascorbic acid). While symptoms do not typically occur until one month without vitamin C, it can initially present as weakness with sore limbs and progress to anemia, gum disease, hair changes, and bleeding from the skin.

Case Description

A 19-year-old male with cerebral palsy, autism spectrum disorder, ADHD, and bipolar disorder was admitted to the children's hospital with concerns for failure to thrive, severe protein-calorie malnutrition secondary to progressive (60 pound) weight loss over the preceding 9 months, and new onset tremors/muscle weakness, which lead to a gradual decline in his mobility. Thorough history revealed several months of oral aversion and difficulty feeding complicated by immediate regurgitation of food. Upon physical exam the patient appeared cachectic with gingivitis, tooth decay, missing teeth, decreased muscle strength and intermittent tremors. Lower extremities were thin and wasted in appearance with coiled leg hairs and surrounding petechial hemorrhages, all of which are findings concerning for scurvy. Endoscopy revealed sloughing tissue in his esophagus without erythema or inflammation, but suspicious for past pill esophagitis that may have caused difficulty swallowing. Extensive laboratory work-up indicated a Vitamin C level of <0.1 mg/dL, which confirmed a scurvy diagnosis. The patient was subsequently started on 1,000 mg of daily vitamin C supplementation. Nutrition was consulted and the patient was initiated on total parenteral nutrition via a peripherally inserted central catheter before transitioning to feeds via nasogastric tube prior to discharge. His oral intake remained poor due to oral aversions. One month later, a gastrostomy tube was surgically placed for administration of enteral nutrition, providing a more long-term approach to his feeding management. His condition continued to improve, and he continued to receive vitamin C supplementation as he transitioned to follow-up with a primary care provider.

Discussion

While this case describes a condition that is often associated with history, it can still present today, especially in patients that have abnormal diets, or chronic malnutrition. Diagnosis is based on physical presentation, and should be considered when caring for individuals with abnormal diets, changes in eating habits, or specific food aversions. Parents of children with food aversion should receive anticipatory guidance about signs and symptoms of vitamin deficiencies, such as scurvy, since their children may be at higher risk.

Abstract #47: MULTI-DRUG RESISTANT MYCOBACTERIUM ABSCESSUS OSTEOMYELITIS FOLLOWING AN ATV ACCIDENT

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Introduction

Mycobacterium abscessus (MA) is a rapidly-growing nontuberculous mycobacterium (NTM) found in water and soil that causes pulmonary, skin/soft tissue, and bone infections. Treatment of MA infections is difficult as there is extensive antimicrobial resistance and no consensus among experts on one standard regimen. Agents such as amikacin, cefoxitin, clofazimine, and omadacycline have been used in the treatment of this infection.

Case Description

A previously healthy 15-year-old female presented for evaluation of an open midshaft fracture with visible contamination of the tibia and fibula after an ATV accident. She underwent surgical debridement and open fracture repair. Over the following two months, she had multiple readmissions for repeat debridement, and was placed on IV antibiotics for treatment of osteomyelitis due to numerous organisms. While these organisms were not recovered on subsequent intraoperative cultures, she did not have tissue healing as expected for her injury, prompting empiric expansion of therapy until acid-fast bacillus culture returned positive for *M. abscessus* sub. *bolletii*. Therapy was thus expanded to include clarithromycin and meropenem. Based on susceptibilities, the therapy was changed to amikacin, cefoxitin, and linezolid. Repeat debridements were undertaken, resulting in clearance of cultures five weeks after MA was isolated. All interim hardware was removed but an intermedullary rod was required given non-union of the tibia. Antibiotics were continued with excellent wound healing. Despite initial tolerance, after six months the patient experienced increasing serum creatinine and decreasing white blood cell count, concerning for potential amikacin and linezolid toxicities, respectively. In consultation with MA experts, the decision was made to transition to oral therapy with clofazamine, linezolid, and omadacycline. To date, laboratories are not suggestive of infection recurrence.

Discussion

MA is a rapidly-growing NTM uncommonly encountered in healthy children; however, MA resistance to multiple agents is common. Current data does not support a single standard therapeutic regimen. Rather, the infection usually requires a prolonged courses of antimicrobials particularly in presence of hardware. This patient tolerated her initial regimen for the majority of her course, but she began to demonstrate evidence of possible nephrotoxicity and myelosuppression. Due to these abnormalities and the absence of data suggesting a clear total duration of therapy, transition to an oral regimen of clofazamine, omadacycline, and linezolid was planned. While the literature supporting clofazimine use for this indication is scant, for omadacycline it is limited to a NTM pulmonary case. This case highlights the need for study and identification of safe and efficacious NTM susceptible antibiotics.

Abstract #48: LYMPHOCYTIC CHORIOMENINGITIS VIRUS: A RARE CAUSE OF CONGENITAL HYDROCEPHALUS

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Introduction

Pediatric hydrocephalus is a significant cause of morbidity and mortality in children, affecting as many as 6 in 10,000 live births and causing a neonatal mortality rate of 13%. Among the known congenital causes of hydrocephalus, intrauterine infections should be considered early in the evaluation, as post-infectious hydrocephalus is the most common cause of neonatal and pediatric hydrocephalus. Lymphocytic choriomeningitis virus (LCMV) is an under-recognized cause of neonatal hydrocephalus. We present the case of a neonate found to have hydrocephalus secondary to intrauterine LCMV infection.

Case Description

A 1-day-old male born at term was evaluated for concerns of hydrocephalus. He was born via uncomplicated vaginal delivery after induction at 38 weeks 3 days due to ventricular dilation noted on prenatal ultrasound. CT confirmed the presence of lateral ventricular dilation and subtle ependymal calcifications in the lateral ventricles suspicious for intrauterine infection. Maternal labs included RPR nonreactive, Rubella immune, HIV negative, Hepatitis B surface antigen negative, and Group B Strep negative. On further evaluation, mother was negative for Cytomegalovirus (CMV) and Toxoplasmosis. Mother reported a normal pregnancy only complicated by a house fire, which caused a total loss of her home. For the duration of pregnancy, she stayed with family members and noted extensive mouse infestation, with mouse nests discovered in the bedrooms. She denied travel history. Infant's laboratory analysis was significant for mild thrombocytopenia of 104, which quickly resolved. Ophthalmologic exam demonstrated chorioretinitis and suspected severe vision loss in the left eye and probable loss of vision in the right eye. Given concern for intrauterine infection, urine CMV cultures, serum CMV PCR, serum Parvovirus PCR and Toxoplasmosis testing of mother and infant were obtained and all were negative. Due to mouse exposure, LCMV evaluation was performed on the infant. LCMV titers returned positive, with LCMV IgG 1:640 (Positive > 1:10) and LCMV IgM <1:10 (Ref. Negative <1:10), suggesting LCMV infection as the cause of hydrocephalus and blindness in this patient.

Discussion

LCMV is an important but under-recognized cause of human infection. While up to 1/3 of cases are asymptomatic, it is capable of producing non-specific symptoms of viral infection as well as frank meningitis and, when contracted congenitally, hydrocephalus. There is no specific therapy for this infection. While uncommon, LCMV should be considered in the differential diagnosis of congenital hydrocephalus, especially with maternal mouse exposure in either the home or work place.

Abstract #49: SEVERE COARCTATION OF THE AORTA: A DELAYED DIAGNOSIS

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Introduction

Coarctation of the aorta (CoA) is a congenital heart disease characterized by narrowing of the aorta near the aortic isthmus. The incidence of CoA is 4 out of every 10,000 births, accounting for 6–8% of all congenital heart disease. It is common for CoA to be accompanied by other cardiovascular abnormalities, such as bicuspid aortic valve, ventricular septal defects, and mitral valve stenosis. Early diagnosis and treatment of CoA is crucial to improving morbidity and mortality associated with this disease as the mean age of death in untreated coarctation is 34 years.

Case Description

A 10 year old male presented to the outpatient pediatric clinic for an acute illness. On examination, he was found to be hypertensive with a blood pressure of 126/69 accompanied by a systolic heart murmur. Medical history included the diagnosis of a heart murmur at a 2 year well child examination before the patient was lost to follow-up until age 9. Upon re-establishment he was noted to have a II/VI systolic heart murmur. He was seen multiple times during year 10 of life where this murmur was consistently documented. Referral to cardiology for further evaluation was made. At presentation to the cardiologist, patient was found to be well appearing with clear lung sounds and a III/VI systolic murmur heard best at the left upper sternal boarder with radiation throughout the chest. During examination absent femoral and lower extremity pulses with pale lower extremity nail beds were also noted. Echocardiogram demonstrated severe CoA, bicuspid aortic valve, and aortic root dilatation. He was started on metoprolol for aortic root dilatation. Referral for heart catheterization was made for planned stenting to relieve the coarctation.

Discussion

Heart murmurs are a common finding on pediatric exams. The primary care provider typically determines which heart murmurs are pathologic and require follow-up. In the setting of a heart murmur there are clinical signs that indicate when further follow-up with cardiology is needed, including absent distal pulses, hypertension, radiation of the murmur throughout the chest, and discrepancy between upper and lower extremity blood pressure. Early referral to cardiology is imperative for any murmur that is not innocent to prevent delayed diagnosis of pathologic lesions. This case demonstrates the importance of checking blood pressure and lower extremity pulses in the setting of an asymptomatic patient with a heart murmur.

Abstract #50: PENILE INJURY IN INFANT MALE: ACCIDENT OR ABUSE?

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Dr. Lauren Conway - Child Abuse Pediatrics, OU-TU School of Community Medicine

Introduction

Traumatic injury to the penis may occur from a wide variety of mechanisms in the context of accidental injury, or child physical or sexual abuse. Accidental penile injuries may include injuries occurring during toilet training in a closing toilet lid, with zippers, hair tourniquets, from straddle injuries, kicks, or more traumatic events such as bike wrecks or automobile accidents. Inflicted penile injury may occur in the context of physical or sexual abuse. The developmental ability, history provided by the caregiver, and other concurrent injuries play an important role in distinguishing between accidental or inflicted trauma.

Case Description

A 3 month old male presented to the emergency room due to redness on the glans and shaft of his penis that parents reportedly noticed after a bath. Coagulation studies and complete blood count were obtained which were unremarkable. Social work, Child Protective Services, and Law Enforcement were contacted. He was seen in follow-up the next morning at the Children's Advocacy Center, where the Child Abuse Pediatrician ordered imaging studies to complete a work-up of possible child physical abuse, including a non-contrast head CT and a full skeletal survey radiography. Head CT was negative. The skeletal survey found bilateral distal medial metaphyseal corner fractures of the femurs, which raised additional concern for child physical abuse and prompted admission to the Children's Hospital for further management. Pediatric orthopedics was consulted for management of the fractures; treatment included a Pavlik harness which was managed by orthopedics follow up. The patient's father later admitted during interviews with law enforcement to have forcefully pinched the glans penis in an attempt to stop urination during the patient's bath. The Child Abuse Pediatrician testified as an expert witness during the trial for this patient, which ultimately found the defendant guilty of child physical abuse.

Discussion

Classifying an injury as accidental, physical abuse, or sexual abuse depends on the setting in which it is reported as well as the intent behind the injury. Multiple accidental mechanisms of injury for the penis bruising were presented prior to the confession; no history was provided for the metaphyseal corner fractures. Child physical abuse was diagnosed due to the additional fractures and lack of history consistent with the injuries. The diagnosis was additionally ultimately supported by the partial confession. This case represents an uncommon presentation of child physical abuse that highlights the need for full appropriate medical evaluation and investigation by coordinating agencies.

Abstract #51: RIGHT SUPRACLAVICULAR LYMPHADAENITIS CAUSED BY KIKUCHI-FUJIMOTO DISEASE

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Dr. Ama Karikari - University of Oklahoma School of Community Medicine, Department of Pediatrics
Dr. Gregory Kirkpatrick - St. Judes Oncology at Saint Francis

Introduction

Kikuchi-Fujimoto disease is a rare and self-limiting condition with unknown etiology that is most commonly seen in young Asian women. It usually presents with low grade fever that varies from one week to one month, cervical lymphadenopathy between 2-7cm, and other non-specific symptoms including rash, arthralgias, fatigue, night sweats, and weight loss. Histopathology of the involved lymph node typically differentiates it from more serious, life-threatening conditions that mimic similar clinical features, such as lymphoma.

Case Description

We present the case of a previously healthy 15-year-old, African-American male, with a two week history of fatigue, low grade fever, and cervical lymphadenopathy with a prominent right supraclavicular lymph node. Lab work was significant for leukopenia, anemia of chronic disease, and mildly elevated ESR and LDH. Monospot testing was initially negative; however, EBV titers (both IgM and IgG) were found to be elevated. CT scan of the neck was consistent with bilateral cervical chain lymphadenopathy with a right supraclavicular lymph node measuring 2.5 x 1.6cm. Peripheral smear was negative for blasts and immunotyping by flow cytometry was negative for lymphoid population. Supraclavicular lymph node excisional biopsy showed focal areas containing lympho-histiocytic infiltrate and immunochemistry stain with CD68 of the lymph node was positive for histiocytes, consistent with proliferative phase of Kikuchi-Fujimoto lymphadenitis.

Discussion

Here is a very rare case of Kikuchi-Fujimoto disease preceded by EBV in a young African-American male. Etiology is unknown but preceding viral etiology has been proposed, such as EBV, HHV-6, HIV, Parvovirus, or Parainfluenza, or even bacterial etiology with *Yersinia enterocolitica* or *Toxoplasma*. Although it is a self-limiting condition, patients should be followed within one to four months for recurrence and increased risk of developing systemic lupus erythematosus. This intriguing case of an uncommon cause of right supraclavicular lymphadenitis prompts investigation and recognition by physicians and pathologists to avoid misdiagnosing it as lymphoma and initiating treatment with cytotoxic agents.

Abstract #52: FUSOBACTERIUM NUCLEATUM BRAIN ABSCESSES IN AN IMMUNOCOMPETENT ADOLESCENT WITH DENTAL BRACES

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Dr. Kimberly Martin - University of Oklahoma School of Community Medicine, Department of Pediatrics

Introduction

Fusobacterium nucleatum is an anaerobic, non-spore forming, gram-negative bacilli that is commonly found in soil, respiratory tracts of animals, and can be isolated from oropharyngeal specimens of healthy people. *Fusobacterium spp.* infections of dental plaque are most common in adolescents and young adults and may lead to periodontal disease. *Fusobacterium spp*. are capable of causing invasive disease commonly associated with otitis media, tonsillitis with Lemierre syndrome, gingivitis, and oropharyngeal trauma.

Case Description

A previously healthy 16-year-old, Hispanic male initially presented with a three day history of fevers, chest pain, and lower back pain and acutely developed headache, neck pain, and vomiting. Broad spectrum empiric antibiotics were promptly started. Cerebral spinal fluid (CSF) was concerning for bacterial meningitis with white blood cell (WBC) count of 18,440 with 91% segmented neutrophils, red blood cells (RBC) 1260, Glucose 34, and Protein 222. Pre-treated CSF Gram stain and culture were negative. MRI of the brain showed numerous ring-enhancing lesions within bilateral cerebral hemispheres and brainstem concerning for multiple cerebral abscesses versus Neurocysticercosis (NCC). Fungal studies and immune studies including HIV and TB testing were all negative. Neuroimaging was reviewed with national NCC experts who did not feel the imaging was consistent with NCC. Serum serology sent to CDC for Neurocysticercosis testing ultimately returned negative. CSF 16s PCR analysis for fungal and broad range bacterial pathogens resulted as *Fusobacterium nucleatum*. Triple antibiotic therapy with ceftriaxone, vancomycin, and metronidazole was continued for eight weeks. Repeat CSF analysis showed remarkable improvement with WBC 169, RBC 146, Glucose 29, and Protein 68. Repeat MRI of the brain after finishing antibiotic therapy showed ring-enhancing lesions remarkably decreased in size and number with no new lesions demonstrated.

Discussion

This case illustrates a very rare cause of brain abscesses in an immunocompetent adolescent with dental braces as the probable source of oropharyngeal infection. Further discussion with family and patient indicated that his oral hygiene routine was poor which likely lead to periodontal disease and ultimately dissemination of the organism to the brain. The diagnosis was ultimately established by 16s PCR analysis. The combination therapy with Metronidazole and Beta-lactams is recommended for an invasive disease. Because the patient was presumed to have meningitis, he received broad spectrum antibiotics which sterilized his CSF culture. This intriguing case of an uncommon cause of brain abscesses prompts further investigation of the role of *Fusobacterium nucleatum* causing disseminated disease in a healthy population.

Abstract #53: A TEN-YEAR-OLD WITH RASH AND FEVER: ATYPICAL PRESENTATION OF KAWASAKI DISEASE

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Dr. Lamiaa Ali - University of Oklahoma- Tulsa, School of Community Medicine, Department of Pediatrics

Introduction

Kawasaki Disease is the leading cause of acquired heart disease in young children in the US. The exact cause of Kawasaki Disease remains unknown; however, a combination of clinical symptoms, including fever, conjunctival congestion, cervical lymphadenopathy, and changes in oral cavity and peripheral extremities, confirm the diagnosis.

Case Description

A ten-year-old, ill-appearing Latina female presented to her primary pediatrician with a swollen face, left-sided subconjunctival hemorrhage, and mild erythematous rash on both arms and legs. Three days prior to presentation, she was seen at an ED due to emesis, abdominal pain, a painful pruritic erythematous rash on her hands, and an erythematous, blanching, maculopapular rash diffusely across her body. At that time, her conjunctivas were clear and her posterior pharynx was erythematous without exudates. A Rapid Strep A Screen administered at the ED was negative.

While at the pediatrician's clinic, another Rapid Strep test was conducted and remained negative. A urine analysis indicated large bilirubin and ketones with trace blood, protein and leukocytes. The patient was admitted to the pediatric inpatient service.

The patient remained in the hospital for five days, and remained febrile for four days with a maximum temperature of 102°F. During admission, labs demonstrated an elevated ESR and CRP . She was treated with doxycycline for suspected tick-borne illness, pending additional lab results, and sent home.

The patient returned to the clinic three days post-discharge reporting nausea and vomiting. The family reported her having a purple/blue tongue two days prior. On physical exam, she had a strawberry-like tongue and a desquamating rash on her palms, soles and peri-inguinal area. She was once again readmitted where her labs showed transaminitis, elevated CRP and ESR, and thrombocytosis. An echocardiogram indicated no abnormalities. Based on prior medical history, a presumptive diagnosis of Kawasaki Disease was made. The patient was treated with IVIG and 81mg ASA daily which was successful.

Discussion

This case demonstrates a rare presentation of Kawasaki Disease, with 11 days of symptoms until clinic diagnosis. This diagnosis requires purposeful questioning, along with clinical, and lab findings. Recognition of this syndrome is critical due to its potential to cause fatal coronary artery aneurysms. After appropriate treatment with IVIG and ASA, every child should follow up with pediatric cardiology to ensure that no cardiac issues arise due to this disease. This atypical presentation of Kawasaki Disease should remind clinicians to always be aware of the diverse manners in which this syndrome may appear.

Abstract #54: RISPERIDONE INDUCED PROLACTINOMA IN AN ADOLESCENT MALE

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Dr. David Jelley - University of Oklahoma School of Community Medicine, Department of Pediatric Endocrinology
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Introduction

Case reports have described pituitary microadenomas or prolactinomas associated with several antipsychotic medications, including risperidone. This is caused by dopamine receptor antagonism in the tuberoinfundibular pathway, leading to a rise in prolactin from the pituitary gland. Risperidone is the only atypical antipsychotic noted to cause a sustained hyperprolactinemia. To date there have too few case studies of tumors associated with risperidone treatment in humans to derive conclusive data regarding tumorigenesis with this class of drug.

Case Description

A 20 year old male was started on risperidone for behavior management associated with autism. One year after starting risperidone, a screening prolactin level was checked at an endocrinology evaluation and found to be elevated at 61.6 ng/mL (normal 2–18 ng/mL). The patient disclosed new onset frequent headaches and one near-syncopal episode, but denied galactorrhea or vision changes. Risperidone was discontinued immediately. An MRI revealed a 0.5 cm lesion with decreased enhancement within the left pituitary gland and mild deviation of pituitary stalk to the right consistent with a microadenoma. There was no evidence of optic chiasm compression. Prolactin levels 3, 5, and 9 months after stopping risperidone were 5.6, 21, and 8 ng/mL respectively. Repeat MRI at 9 months did not show the pituitary microadenoma seen on the previous exam.

Discussion

There have been several cases of pituitary microadenoma associated with risperidone. Previous case reports include an adolescent female with bipolar affective disorder and a woman with schizoaffective disorder. Both were found to have a pituitary microadenoma on MRI after ridsperidone therapy of varying durations. Both tumors completely resolved with cessation of risperidone and serum prolactin levels returned to normal. There does not seem to be an association with previous endocrinology diagnoses and formation of a prolactinoma, although the patient described in this report was previously diagnosed with hypothyroidism that was in remission at the time of tumor diagnosis.

Although hyperprolactinemia is a known complication of risperidone, there is no warning of pituitary microadenoma from the FDA. Tumors described in the literature seem to be benign and completely resolve with cessation of risperidone but could lead to neurological changes due to mass effect or other hormonal imbalances if left unaddressed. Providers who are prescribing risperidone should be aware of the risks associated with this medication and be vigilant when monitoring for side effects related to hyperprolactinemia or mass effect from a tumor.

Abstract #55: A CASE OF CONGENITAL SYPHILIS COMPLICATED BY SEVERE HEPATOCELLULAR DYSFUNCTION, THROMBOCYTOPENIA, AND ATYPICAL SKIN LESIONS

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Introduction

Congenital Syphilis (CS) is an infection caused by the spirochete Treponema Pallidum. It's transmitted predominantly via the placenta, and only severe cases are clinically apparent at birth. Its incidence has risen sharply, with the CDC reporting 1306 cases in 2018, a 40% increase from 2017 nationally with a 92% increase in Oklahoma alone.

Case Description

A 28-year-old mom with no prenatal care and a positive admit maternal syphilis antibody underwent C-section and delivered a newborn female infant weighing at 3020 g with APGARS 6 and 9 at a gestational age of 38w5d. Maternal history was significant for illicit drug use and positive UDS for methamphetamine and marijuana prior to delivery. NB exam showed hypotonia, low-set ears, flattened nasal bridge, 2/6 holosystolic murmur, hepatomegaly, scattered petechiae on the back, an erythematous ring-shaped lesion on right palm, and another similar lesion on right foot. NB admission was complicated by hypoglycemia, thrombocytopenia and hyperbilirubinemia. Patient was admitted to NICU soon after delivery. Lumbar puncture with CSF analysis yielded RPR 1:64 and non-reactive VDRL. ECHO showed a small PFO. A diagnosis of CS was made anda 10-day course of IV Penicillin G was initiated. LFT showed transaminitis and TPN/SMOF was begun. Abdominal ultrasound confirmed hepatomegaly and HIDA scan results were consistent with severe hepatocellular dysfunction without exclusion of biliary atresia. The lowest direct bilirubin was 1.96 and lowest platelet level was 30. One platelet transfusion was administered and Ursodiol 10 mg/kgs was initiated. She was discharged with Ursodiol 15 mg/kgs and will be following up with the Audiology, Hepatology, Gastroenterology, Infectious Disease, and Opthalmology pending referral from PCP.

Discussion

This case illustrates the various clinical findings seen in classic CS as well as those unique to our patient. Interestingly, our patient had a healthy birthweight, whereas classic CS patients are four times more likely to have low birth weights. Distinctive features of this case include the ring-shaped skin lesions as large as 2 cm in diameter which were present at birth. The rash of CS usually appears later on in the disease course and consists of small brown/copper colored spots on the palm or soles. Another noteworthy finding in this case was the severe involvement of the liver requiring treatment with Ursodiol. Although early diagnosis and treatment is linked to better outcomes, our patient's vast hepatocellular dysfunction may be an indicator of a poorer prognosis. The rising prevalence of CS may make these exam findings more common.

Psychiatry

Abstract #56: SHOCKING RESULTS: A CASE OF MALIGNANT CATATONIA

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Introduction

Malignant catatonia is a life threatening disease and can be difficult to distinguish from other disorders including delirium, neuroleptic malignant syndrome, or exacerbation of mood and psychotic disorders. Catatonia includes three or more of the following symptoms: stupor, catalepsy, waxy flexibility, mutism, negativism, posturing, mannerism, stereotypy, agitation, grimacing, echolalia and echopraxia. Malignant catatonia can include autonomic instability (fever, hypertension, tachycardia), severe muscle rigidity, and nonspecific laboratory findings of leukocytosis and elevated creatinine kinase. This syndrome can lead to severe morbidity and mortality if not promptly treated.

Case Description

An 18 year old African American male with no past psychiatric history and a family history of schizophrenia presented with new onset of mania and psychotic symptoms including bizarre, disorganized behavior and emotional outbursts. He initially responded to olanzapine for control of his symptoms, but over time stopped the medication due to side effects. As a result, he had a return of his psychotic symptoms along with waxy flexibility, sleeping for nearly 20 hours each day, restricted affect with minimal speech, and a refusal to eat or drink. The patient responded to a lorazepam challenge putting catatonia on the differential. The patient needed high doses of lorazepam to help with catatonia and severe symptoms of mania and psychosis, including hypersexual behavior, agitation, combativeness, and bizarre and disorganized thought content. With his symptoms, hypertension, and elevated creatine kinase, electroconvulsive therapy (ECT) was initiated for treatment of malignant catatonia. He responded well to six sessions with total resolution of symptoms. After discharge, he was admitted to our community assertiveness program and he continued to do well with low dose lorazepam, mood stabilizer and antipsychotic which were added for maintenance treatment of his mood and psychotic symptoms. Over several months, his outpatient psychiatrist slowly tapered the lorazepam and he continues to have good control of his mood and psychotic symptoms with no return of catatonia symptoms.

Discussion

First line treatment of catatonia is scheduled doses of lorazepam. However, in severe cases such as malignant catatonia, ECT should be initiated as soon as possible. The response rate to malignant catatonia is higher with ECT versus treatment with lorazepam alone. On review of case reports, it is beneficial to start ECT within five days of onset of symptoms to lower mortality rates. It is important to have catatonia on a differential diagnosis for patients presenting with mental status changes to ensure timely treatment is initiated.

Abstract #57: CANNABIS VAPING: A CASE OF CATATONIA ASSOCIATED WITH USE OF HIGH POTENCY THC

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Introduction

Several troubling trends in cannabis use have converged in recent years. The concentration of psychoactive THC has increased while the concentration of psychoprotective CBD has fallen. This trend coincides with a wave of legalization as well as novel methods for consuming marijuana, often in the form of "vaping" concentrated THC. While vaping associated lung injuries have become evident, literature also reveals significant psychiatric morbidity with the use of highly concentrated THC. We present a case of psychosis and catatonia associated with vaping concentrated cannabis.

Case Description

A 20-year-old man presented to the emergency department with severe anxiety, agitation, and catatonia manifested by stereotypic movements, grimacing, and verbigeration. He screened positive on the Bush-Francis Catatonia Scale. He acknowledged vaping prior to admission, and a urine drug screen was positive for cannabinoids. Records also revealed psychiatric hospitalization one year earlier for mania following THC vaping. He initially required 2 mg lorazepam IM every 4 hours for catatonia. After one week, he had improved sufficiently for discharge on oral lorazepam with plans to taper outpatient.

Discussion

This case adds to a growing body of literature associating high potency marijuana use with mania, psychosis, and catatonia. Previous studies have attempted to link consuming high potency marijuana and psychosis. However, this case highlights a high need for specific research into the consequences of vaping cannabis. Furthermore, these cases call for caution regarding the proliferation of laws legalizing marijuana until these dangers can be better understood.

Abstract #58: MENSTRUAL CATATONIA IN AN ADOLESCENT WITH INTELLECTUAL DISABILITY

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Introduction

Onset of menstruation can be a difficult transition for patients with intellectual disability. While there are limited studies relating menstrual related disorders and patients with autism and developmental disabilities, one prospective study indicated 92% of women with autism and intellectual disability met DSM criteria for luteal phase dysphoric disorder compared with 11% for non-autistic adults. Additionally, individuals with intellectual disability are also more prone to catatonia. This case presents a rare confluence of syndromes that severely impacted a young woman.

Case Description

The patient was a 13 year old female with mild intellectual disability admitted to the hospital for abrupt onset of altered mental status, odd and regressed behavior, decreased oral intake, reduced speech and sleep. This was concurrent with her first menses. Prior to menses, the patient was her usual self, both happy and verbal. She was anticipating going to her first Special Olympics event, but plans were changed due to extreme emotional lability and tearfulness. Over the next 2 days, behaviors became regressive: increase in aimless wandering, disorganized speech, difficulty with following directions, urination on self, difficulty with dressing self, and psychomotor slowing. Speech deteriorated gradually and was limited to a few rote phrases. Additionally, she demonstrated frequent odd and repetitive stereotyped hand movements in her right arm. She was not moving left arm and there was some likely rigidity. Developmental history was significant for speech delay and difficulty grasping basic concepts around the age of 2. Brain MRI, LTEEG, and lab work was unable to explain abrupt changes in the patient's mental status. Diagnostic challenge with Ativan showed rapid improvement in symptoms with notably increased verbalizations and increased emotional expressivity and activity. Some mild symptoms remained and an increase of Ativan improved symptoms markedly. Given improvement, the patient was discharged from the hospital with recommendations to follow-up with psychiatry with some consideration of starting oral contraceptives.

Discussion

This case describes menarche with onset of catatonia in an intellectually disabled adolescent[MM1] —a confluence of symptoms that are rare and severe, but readily reversible if recognized early. The clinical syndrome of catatonia can be unexpected in adolescence and the relationship of catatonia to menstruation is rare, but should be assessed with one of the various ratings scales. The treatment of catatonia is standard prescription of benzodiazepines or ECT, but to prevent further episodes of catatonia, the underlying pre-menstrual dysphoria should be addressed with oral contraceptives or SSRIs.

Abstract #59: COMPLEX CASE OF CONVERSION DISORDER (FUNCTIONAL NEUROLOGIC SYMPTOM DISORDER): A CASE REPORT

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Introduction

Conversion Disorder refers to the manifestation of neurologic symptoms not explained by medical evaluation. It is frequently associated with underlying psychiatric illness, but can occur without known psychological stressor. Because of this, the broader term "Functional Neurological Symptom Disorder" is gaining acceptance for the condition.

Case Description

A 16-year-old male with generalized anxiety presented for workup of syncopal episodes with bilateral leg weakness for 7 months. The episodes occurred without pattern followed by quick awakening, stuttering, or arm/leg weakness up to 2 days. Workup included EEG, EKG, Echocardiogram, brain MRI/MRA, all of which were negative. He was diagnosed with POTS and prescribed labetalol, increased dietary sodium and fluids. At another evaluation, he obtained a brain CT/MRI and was referred for neurosurgery consultation. During hospitalization, medical work up included CBC, inflammatory markers, CMP, CK, Aldolase, Lead, Tick Panel. All labs were unremarkable and physical examinations were not consistent with disease of the brain or spinal cord. Child Psychiatry was consulted and risk factors for FNSD were identified. Discharge recommendations included Child Psychiatry follow up, medications (fluoxetine, trazodone), and frequent follow up with a consistent PCP.

He started therapy with resolution of symptoms temporarily, until he developed hallucinations, derealization, and paranoia. Therapy was continued and antipsychotic medication was prescribed with improvement in auditory hallucinations. Despite this, he continued to present with new onset fluctuating symptoms including episodes of waking up blind or deaf. These have since resolved but the patient continues to report occasional auditory hallucinations and engages in treatment.

Discussion

This case demonstrates the complex, fluctuating presentations of FNSD. It is important to verify adequate medical workup is completed before focus on primary mental health treatment. This teen had a FH of Schizophrenia, making it difficult to assess and treat the new onset hallucinations. Given that comorbid conditions can exist, vigilance must be maintained for emergence of other psychiatric conditions.

FNSD is still a poorly understood diagnosis in children. These patients require frequent, consistent primary care and mental health follow-up utilizing a team based approach to effectively treat and minimize risk of invasive diagnostic tests. Utilizing a family centered approach and coordinating care with treating providers is crucial in caring for these patients.

Abstract #60: REVERSIBLE CEREBRAL VASOCONSTRICTION SYNDROME CAUSED BY FLUOXETINE.

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Mrs. Robin Rainey Kiehl - OU- Tulsa Psychiatry Department

Introduction

Reversible Cerebral Vasoconstriction Syndrome (RCVS) Syndrome is a rare vascular condition that results in the sudden constriction of cerebral blood vessels. Intense, sudden "thunderclap" headaches are a common feature of RCVS, while strokes and neurological deficits may or may not be present. While there are many possible etiologies for RCVS, it is commonly associated with selective serotonin reuptake inhibitors (SSRI's) typically used to treat mood and anxiety disorders.

Case Description

A 32-year-old female with a history of unspecified mood disorder, anxiety, hypertension and type-2 diabetes mellitus presented initially for recurrent "thunder-clap" headaches and was subsequently found to have multiple, progressive cerebral infarcts as seen on serial MRI and trans-cranial Doppler. Her symptoms did not respond to treatments including intravenous immunoglobulin, steroids, and rituximab. She was transferred to a tertiary academic center and her presentation was reviewed by a multispecialist team including neurology, internal medicine, neuro-critical care and rheumatology who determined that she was suffering from RCVS caused by her selective serotonin reuptake inhibitor, fluoxetine, which had been managing her mood and anxiety symptoms for the past several years. After cessation of fluoxetine, she had no further progression of neurologic illness. She was subsequently transferred to our inpatient physical rehabilitation center for recovery. She is currently receiving treatment for residual effects from the recent central nervous system insults resulting in bladder issues, ataxia, and difficulty in cognitive processing and memory. Our Psychiatry service was consulted when patient's depressive symptoms began to return. A literature search was performed, and lithium was selected for treatment.

Discussion

A significant portion of medications utilized for the treatment of major depressive disorder , including SSRIs, SNRIs and TCAs, have serotonergic activity which is thought to precipitate RSVS. Clinicians must take this into consideration in treating patients with RCVS or risk relapse or occurrence of illness. Lithium has long been used to treat mood disorders including depression, is not known to have significant serotonergic activity, and is overall well tolerated. Treatment of major depressive disorder with Lithium may significantly reduce the risk of RSVS worsening or reoccurring.

Abstract #61: MANIA IN ISOLATION: AN ATYPICAL COMPLICATION OF THYROTOXICOSIS

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Introduction

Primary hypothyroidism is a common disorder often successfully treated with replacement of thyroxine (T4). Standard of care includes daily medication, regular laboratory monitoring, routine follow up, and patient education regarding medication side effects and illness. Intake of excessive thyroid hormone is known to cause a constellation of symptoms including tachycardia, nervousness, weight loss, hair loss, and increased bowel movements. Additionally, psychiatric symptoms of nervousness, anxiety and insomnia can occur, which typically occur concurrently with established physical side effects.

Case Description

27 year old female with established history of hypothyroidism on replacement levothyroxine 125 mcg daily presenting with symptoms concerning for mania requiring psychiatric hospitalization. Upon initial evaluation, patient's affect was notably bright with illogical thought process and pressured speech. Patient endorsed a 5 day history of elevated mood, racing thoughts, increased energy with little need for sleep, increased goal-directed activity. Additional history obtained from collateral informants indicated that patient had no previous history of bipolar disorder or mania. Physical exam revealed no goiter, proptosis or skin abnormalities. Patient did not consent to radioactive iodine uptake testing. Patient was mildly hypertensive at 135/91 without tachycardia. Patient had a BMI of 27 and denied change in appetite or weight loss. Diagnostic evaluation included normal EKG, CBC, CMP and negative HCG. Urine drug screen was positive for buprenorphine, consistent with patient's history of chronic pain treatment. Her free T4 was normal at 1.7. Notably, Patient's TSH was 0.01. She was subsequently started on risperidone 1 mg for treatment of mania and her levothyroxine was held, with improvement in symptoms. At outpatient follow up following discharge, she exhibited no signs of mania with a reduced dose of levothyroxine. Risperdal was discontinued without occurrence of symptoms.

Discussion

While thyrotoxicosis typically presents as a constellation of symptoms, clinicians must keep a broad differential for the etiology of mania, especially in patients without significant history of bipolar disorder or use of illicit stimulating substances. Thyroid pathology should continue to be included in the differential diagnosis of mania despite the absence of typical physical signs and symptoms.

Surgery

Abstract #62: HYBRID REPAIR OF STANFORD TYPE A DISSECTION WITH COMPLETE BRACHIOCEPHALIC DEBRANCHING

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Dr. Peter Nelson - Division of Vascular Surgery, Department of Surgery, University of Oklahoma – Tulsa
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Introduction

Ascending aortic dissection is a life-threatening condition requiring emergent ascending aortic replacement. After operative treatment, the descending aorta can degenerate over time, becoming aneurysmal. Aneurysmal degeneration requires repair, and Thoracic Endovascular Aortic Aneurysm Repair (TEVAR) is the standard operative intervention. We present a case of aortic dissection involving both the ascending and descending aorta, which was treated initially with ascending aortic replacement, and due to aneurysmal degeneration required repair of the aortic arch and descending thoracic aorta.

Case Description

A 63-year-old female with Klippel-Feil syndrome, and a resultant history of multiple maxillofacial reconstructive surgeries, was referred to our department for treatment of aneurysmal degeneration of a Type A thoracic aortic aneurysm, previously treated with ascending aorta replacement. On exam, there was dense scarring of the left neck due to her prior reconstructive surgery, with limited cervical flexion and extension of the neck. Thoracic and cervical computed tomography angiography (CTA) revealed 7.3cm aneurysmal degeneration of the thoracic aorta from the level of the aortic replacement in the ascending aorta (Zone 0) to the celiac artery (Zone 6). The patient underwent staged complete debranching of the brachiocephalic arteries, first with left carotid-subclavian bypass, followed by retropharyngeal carotid-carotid bypass, right subclavian to right carotid bypass, TEVAR with snorkel preservation of the right innominate artery extended into the subclavian artery, and left subclavian artery coil embolization.

Completion angiogram demonstrated total exclusion of the thoracic aortic aneurysm with endograft and left subclavian artery coil embolization, with preservation of the aortic arch vasculature via complete debranching and snorkel of the innominate artery, and preservation of the celiac artery. Follow-up CTA at 1 month demonstrated interval decrease in aneurysm size with remodeling of the descending aorta, and no endoleak.

Discussion

Stanford Type A aortic dissection describes any dissection that involves the ascending aorta. Urgent open surgical repair of the ascending aorta is recommended for Type A aortic dissection, while surgical intervention for descending aortic dissection is reserved for complicated aortic dissections, including aneurysmal degeneration. Endovascular repair involves adequate coverage of the intimal tear, coverage of the aneurysmal aorta, and sufficient seal zones proximally and distally. This may require partial or complete debranching of the brachiocephalic arteries to maintain flow to the extremities and brain. Complete aortic debranching often involves median sternotomy to establish arterial inflow from the ascending aorta. Combining endovascular and open surgical techniques in this case decreased both the morbidity of the surgery, and overall quality of life.

Abstract #63: PERICLAVICULAR APPROACH FOR FIRST RIB RESECTION IN VENOUS THORACIC OUTLET SYNDROME

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Introduction

Thoracic outlet syndrome (TOS) is a condition with constellation of symptoms resulting from compression of the neurovascular structures (brachial plexus, or subclavian artery, or subclavian vein) traversing the thoracic outlet. The management of TOS is initially focused on providing symptomatic relief, and the definite treatment is treatment the underlying cause (developmental or anatomical abnormalities). We present a case of a patient with venous TOS to highlight the presentation (signs and symptoms) and management of patient with TOS.

Case Description

A 20 year old male presented to the emergency department with left arm swelling for one day associated with pain in the arm. He denied any numbness, tingling, weakness or lack of sensation. He worked at a gymnasium and routinely participated in heavy lifting. On examination, his left arm circumference was 37cm and right arm was 34cm, radial pulses were palpable bilaterally, and motor and sensation was intact with strength 5/5. Computed tomography (CT) scan was obtained which demonstrated thrombus in the left subclavian and axillary veins. He was started on heparin drip and underwent central and left upper extremity venogram with pharmaco-mechanical thrombolysis and balloon angioplasty of the left subclavian vein. Postoperatively his symptoms improved. We treated the underlying cause with staged left first rib resection and external venolysis. One month postoperatively, he underwent another venogram which demontrated patent axillary vein but occluded subclavian vein; however, he remained assymptomatic. He was continued on anticoagulation, and a three month follow up duplex demontrated partially compressible subclavian vein with improved waveforms. Patient had returned to his routine activities and remained asymptomatic at 6 months post procedure.

Discussion

Thoracic Outlet syndrome can be neurogenic (most common), venous or arterial in origin. It commonly affects younger patients and females. Venous TOS is the thrombosis or severe stenosis of the subclavian-axillary vein due to anatomic anomalies, chronic repetitive motion or secondary to trauma. It can lead to pulmonary embolism and upper extremity venous gangrene. Diagnosis is based on physical examination, high clinical suspicion and imaging modalities (ultrasound, CT scan). The optimal treatment for venous TOS is debatable. Management includes anticoagulation, thrombolysis and surgical decompression with or without vein reconstruction.

Abstract #64: A UNIQUE CASE OF TRANS-CAROTID REVASCULARIZATION WITH A CAROTID-SUBCLAVIAN BYPASS

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Introduction

Trans-carotid artery revascularization (TCAR) has become a widespread treatment modality for carotid artery stenosis however; it is not often performed in adjunct with other cerebrovascular procedures. Patients with subclavian steal and carotid stenosis are routinely managed with a carotid-subclavian bypass and carotid endarterectomy. This surgery can be challenging with increase risk for morbidity. We present a case of TCAR performed in adjunct with a carotid subclavian bypass in a patient with carotid stenosis and left upper extremity chronic ischemia

Case Description

Our patient is a 73 year old male with a 120 pack year hx of smoking, diabetes mellitus Type 2, multiple prior myocardial infarcts with coronary artery stenting, and hyperlipidemia with left arm numbness at rest. On evaluation, there was a discrepancy of more than 25 mmHg between right and left arm blood pressures (left lower than right). Left radial pulse was non palpable. Computed tomography angiogram (CTA) of the neck demonstrated significant ostial disease of the left subclavian along with >80% internal carotid artery stenosis; as a result he was scheduled for surgical intervention. We performed left transverse neck incision and the left common carotid and left subclavian artery was exposed. Using 8mm Dacron graft, a left common carotid-subclavian bypass was performed. Then the mid-portion of the graft was accessed and upsized to an 8Fr sheath. With flow reversal technique (Silk Road Medical), the internal carotid lesion crossed and pre-dilated followed by Enroute stent placement (8x40mm). The completion angiogram demonstrated resolution of stenosis and brisk flow via the internal carotid artery. Post operatively and on follow up he had palpable left radial pulse and his symptoms of left hand numbness resolved, with blood pressure comparable in both arms.

Discussion

This is a unique case combining TCAR with carotid subclavian bypass. This saves patient the morbidity of a combining carotid endarterectomy along with the bypass. Cosmetically there is a smaller incision, lower risk for cranial nerve injury, shorter length of the procedure and anesthesia and faster post operative recovery. Additionally provides the benefit of TCAR with neuroprotection for the carotid intervention. This case demonstrates modification and expansion in the use of modern technological advances for improving patient care and development new treatment and management strategies

Abstract #65: ENDOVASCULAR REPAIR OF INFRARENAL ABDOMINAL AORTIC ANEURYSMS AND BILATERAL ILIAC ANEURYSMS

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Introduction

Endovascular aortic repair (EVAR) is a commonly accepted treatment for abdominal aortic aneurysm (AAA). Approximately 20% of all patients with AAA will have a concomitant iliac artery aneurysm (IAA), while 90% of all patients with iliac artery aneurysms (IAA) will be found to have concomitant AAA; at least half of those patients will have bilateral IAA. We present a case of AAA with bilateral common iliac artery aneurysm, and a discussion of treatment options and indications.

Case Description

A 57-year-old male with intermittent claudication presented to clinic with an incidental finding of an infrarenal AAA and bilateral common iliac artery aneurysms on computed tomography angiography (CTA). He was also noted to have bilateral superficial femoral artery (SFA) occlusions. The patient was counseled on his aneurysms, as well as treatment options and recommendations. Subsequently, he underwent elective endovascular repair of his aortic and iliac artery aneurysms with EVAR and iliac branched endoprostheses (IBE) through percutaneous access. Completion angiogram demonstrated exclusion of his aneurysms, a small Type 2 endoleak, and preservation of both hypogastric arteries. He had some abdominal discomfort post-operatively which resolved by post-operative day 1, and he was discharged home on post-operative day 2.

Discussion

Complex endovascular aortoiliac aneurysm repair requires advanced case preparation and operative treatment. Endovascular technique carries a risk of endoleaks and subsequent need for intervention, and therefore requires lifelong surveillance with non-invasive imaging. Open surgical repair mitigates that concern, but carries with it a higher risk of intraoperative and 30-day post-operative mortality, acute blood loss requiring transfusion, and increased peri-operative pulmonary and cardiac complications. Traditionally treated by open surgical repair, early generation endovascular technique required coil embolization of the hypogastric artery; later generation technologies now allow for endovascular repair with preservation of the hypogastric arteries. Maintaining antegrade flow in the hypogastric arteries allows the prevention of pelvic ischemia, as well as hip and buttock claudication. In patients with diminished lower extremity blood flow due to superficial femoral artery occlusions, the hypogastric arteries can provide significant collateral vessels to help supply perfusion to the distal extremities. Preservation of these vessels, while adequately treating the iliac aneurysms, is of paramount significance to ensuring an optimal outcome.

Abstract #66: SINGLE STAGE BRACHIOBASILIC ARTERIOVENOUS FISTULA CREATION WITH BASILIC-BRACHIAL PERFORATOR VEIN OUTFLOW

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Introduction

End stage renal disease (ESRD) is a chronic kidney failure requiring dialysis or kidney transplant. Nearly 65% of people with end stage renal disease undergo hemodialysis. Arteriovenous fistula (AVF) creation using autogenous vein provides an access point with a low risk of infection and is preferred over catheters and arteriovenous grafts. However, a major barrier to autogenous AVF usage includes presence of adequate autogenous vein and failure rates ranging from 30-70%. We present a case of a brachiobasilic fistula creation with primary superficialization.

Case Description

A 57-year-old man with ESRD and a history of multiple failed AVF presented to the hospital with a hemodialysis (HD) catheter and bacteremia. The infected catheter was removed and a temporary catheter was placed for hemodialysis access. After recuperation, he underwent bilateral upper extremity venograms. He was found to have right subclavian vein stenosis, and the stent in the basilic vein in the proximal upper arm was occluded. The basilic vein in the left upper arm between the antecubital fossa and the stent was suitable for AVF creation, with a large perforator vein proximal to the stent. He underwent primary brachiobasilic AVF creation with superficialization, using the perforator as the outflow into the brachial vein. Subsequent balloon venoplasty of the perforating vein resulted in adequate flow to allow usage of the fistula. Follow up duplex in the clinic demonstrated brachial artery flow of 800ml/min with excellent flow and palpable thrill.

Discussion

Patients undergoing hemodialysis require reliable vascular access. Patients with multiple previous surgeries and limited vascular access are at risk for catheter dependence. The basilic vein requires superficialization for use in an AVF, which can be performed at the time of the initial surgery (single stage) or delayed until the fistula matures (staged). . Fistula creation necessitates good arterial inflow, adequate vein size as a conduit, and adequate venous outflow into a patent central venous system. This case demonstrates sufficient venous collateralization to the brachial vein in a patient with an occluded basilic venous outflow, which allowed for fistula creation and usage. This patient was able to undergo primary brachiobasilic AVF creation utilizing a single large perforator vein to the deep venous system of the arm as his outflow, thereby avoiding an additional anastomosis while promoting fistula maturation and autologous hemodialysis access. Use of an anatomic large perforator vein *in situ* is limited in the literature, and this case demonstrates the viability of this concept.

Abstract #67: MANAGING CHRONIC LIMB THREATENING ISCHEMIA WITH ADVANCED GASTRIC ADENOCARCINOMA: A TREATMENT CONUNDRUM

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Introduction

Chronic Limb Threatening Ischemia (CLTI) is chronic lower extremity peripheral arterial disease with rest pain or tissue loss. CTLI is associated with an impaired quality of life with 25% requiring an amputation and about 25% mortality within one year of diagnosis. Consequently, revascularization is the treatment of choice to prevent limb loss and mortality. We present a treatment conundrum in a patient with CLTI of bilateral lower extremities and Stage IV gastric cancer.

Case Description

A 62-year-old African-American frail male with history of hypertension, chronic obstructive pulmonary disease (COPD), congestive heart failure (CHF), and peripheral arterial disease (PAD) was evaluated for bilateral lower extremity rest pain and chronic foot wounds, which had been managed with local wound care. On examination, he had superficial wounds on dorsum of bilateral feet with surrounding erythema, drainage and diminished arterial signals on Doppler. Duplex arterial ultrasound demonstrated multilevel flow-limiting stenoses. Patient refused ABI at that time due to pain. Based on these studies, elective angiogram was planned. Preoperatively, the patient was diagnosed with Stage 4 gastric adenocarcinoma, leading to a treatment conundrum considering his poor prognosis and short life expectancy. We decided to exhaust endovascular options to prevent limb loss. A third-order left lower extremity arteriogram demonstrated complete occlusion of the distal Superficial Femoral Artery (SFA) and occlusion of the peroneal artery. After crossing the SFA lesion with a re-entry catheter, we performed balloon angioplasty of the SFA, popliteal and the posterior tibial artery, with stent placement in the SFA and above-knee popliteal artery. Completion angiogram revealed atheroembolism distally in the dorsalis pedis artery. We then performed suction embolectomy using Penumbra device. Completion arteriogram then re-demonstrated resolution of the SFA and above-knee popliteal artery occlusion, with brisk runoff to the foot via widely patent PT artery as well as flow through the anterior tibial artery to the dorsalis pedis. His wounds healed over the following two months, and he underwent revascularization of the right leg with similar technique and results.

Discussion

Approaches to treatment of CLTI include endovascular repair, bypass surgery, and amputation. The goal of intervention is to prevent limb loss and overall mortality which is patient specific. In our case, endovascular intervention was the best option to treat patient's severe ischemia. It is important to understand that endovascular therapy is also associated with risks such as distal thromboembolism. Endovascular approach can be considered as a palliative therapy to prevent limb loss.

Abstract #68: A YOUNG PATIENT WITHOUT DIALYSIS OPTIONS: TIME FOR A SUPERHERO

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Introduction

Arteriovenous fistula (AVF) is necessary for patients on hemodialysis secondary to renal failure. Patients with multiple failed AVF secondary to central venous stenosis or occlusion fistula have minimal options for dialysis access and are usually limited to lower extremity catheter dependence. Catheter dependence increases risk for infections and failure. Hemodialysis Reliable Outflow (HeRO) Graft (comprising of catheter and graft) is a relatively new approach towards the creation of a fistula. We present a case of patient with central venous obstruction and multiple failed AVF.

Case Description

Our patient is a 26-year-old woman with end stage renal disease (ESRD) secondary to focal segmental glomerular sclerosis (FSGS), failed kidney transplant, and multiple failed AVFs is on hemodialysis undergoing dialysis using a left internal jugular tunneled catheter. Venogram demonstrated central venous occlusion. With limited options of AV access, she underwent a HeRO Graft placement. The brachial artery and bifurcation were identified via ultrasound. The tunneled catheter was isolated and removed. A guide wire was placed in the SVC under fluoroscopy and the catheter portion of the HeRO graft was placed at the SVC-atrial junction. The graft portion was then tunneled and anastomosed to the brachial artery with good thrill in the graft. She presented one month later after difficulty with dialysis. Her HeRO Graft was found to be thrombosed. Thrombectomy was performed with good Doppler signal present in the graft. She has returned to dialysis with no further issues.

Discussion

AVFs will continue to be the first-line treatment for vascular access for those requiring hemodialysis due to its superior outcomes and decreased complications. Patients with multiple failed AVF or central venous stenosis may become catheter dependent. This has led to development of novel methods to access vasculature after failure of multiple AVF. HeRO graft has a catheter portion, which is placed centrally to bypass the central venous stenosis or venous outflow obstruction, and a graft portion, which is connected to the artery in the arm, which is accessed for dialysis. This helps to reduce catheter dependency and its associated complications and improve quality of life. However, it has its own challenges with thrombosis of the graft requiring intervention. Our patient was able to undergo HeRO graft placement, bypassing an occluded outflow vein, and returning to hemodialysis without a catheter for the first time in her life and improved her overall quality of life.

Abstract #69: THORACIC ENDOVASCULAR REPAIR OF DESCENDING THORACIC AORTIC THROMBUS

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Introduction

Penetrating atherosclerotic ulcers (PAU) develop in the internal elastic lamina and indicate severe aortic atherosclerosis. PAU can have an associated intraluminal aortic thrombus, with associated risk of thromboembolism with subsequent mesenteric infarct and limb loss. We present a case of persistent descending thoracic aortic thrombus, with embolic renal infarcts, necessitating repair.

Case Description

A 80-year-old woman with history of bilateral renal infarcts on Eliquis and uncontrolled hypertension was referred to our department for extensive aortic atherosclerosis and 6mm ulceration proximal to the celiac artery, demonstrated on a CT. A follow up Computed Tomography Angiogram (CTA) demonstrated a persistent descending thoracic aortic thrombus and thoracic endovascular repair (TEVAR) was indicated. Preoperative imaging demonstrated >50% stenosis of the distal left common femoral artery (CFA).

We accessed the proximal left CFA and subsequently placed stent grafts in the descending thoracic aorta, distally to proximally. Completion aortogram revealed complete occlusion in left external iliac artery. Doppler signals to the left foot were diminished on prompt exam.

Current intraoperative imaging showed thromboembolism vs. flow-limiting dissection in the left CFA and external iliac arteries. Given these findings, an open endarterectomy of the iliac arteries was indicated, along with stent graft deployment in the left external iliac artery and bilateral stents in the common iliac arteries.

A complete angiogram revealed a flow-limiting thromboembolism in the left superficial femoral artery (SFA). This was treated with covered stent placement, excluding the thrombus. Subsequent imaging demonstrated brisk flow into the left foot. On exam, pulses were palpable in the feet bilaterally and she moved all extremities. This patient had an uneventful hospital course and was discharge on postoperative day three.

Discussion

PAUs are a collective part of Acute Aortic Syndrome (AAS), seen in 2-8% of patients with AAS. PAUs develop from aortic mural thrombi, located most frequently in the abdominal aorta. A PAU > 4mm thick with ulceration is categorized as a complex plaque and warrants surgical repair. Anticoagulation is not sufficient for complex plaques. Endovascular repair (EVAR) is preferred to open since operating time is shorter, involves smaller incisions, and decreased hospital stay, with improved perioperative morbidity and all-cause mortality. Employing quality vascular access and wire manipulation can reduce endoleaks, access complications, and peripheral embolization. If complications arise, prompt imaging to access the stenotic vessels is necessary. This case demonstrates the potential morbidity of aortic thrombus embolization and the attention to detail required for successful treatment.

Abstract #70: AN INTERESTING CASE HIGHLIGHTING MANAGEMENT OF PELVIC CONGESTION SYNDROME

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Introduction

The development of valvular incompetence and/or obstruction in the pelvic and gonadal veins causing disabling symptoms comprises Pelvic Congestion Syndrome (PCS). It is a less known pathologic condition commonly occurring in women of child bearing age, and diagnosis can be challenging due to a variety of clinical presentations. Nutcracker syndrome (NCS) is a potential cause of PCS and involves compression of the left renal vein between the superior mesenteric artery and the aorta. We report one such case of a woman who presented with chronic pelvic pain.

Case Description

Our patient is a 31-year-old woman evaluated in our clinic with 6 years of unbearable back and suprapubic pain associated with dyspareunia and dysuria. She underwent evaluation by her gynecologist, and a transvaginal ultrasound demonstrated vaginal varicosities. Computed tomography angiogram (CTA) showed dilated left ovarian vein contiguous with left greater than right pelvic varicosities. We then performed a diagnostic venogram that demonstrated left pelvic venous plexus consistent with pelvic varicosities in the left ovarian vein and NCS anatomy. We decided to treat the PCS first. The patient underwent foam sclerotherapy of the pelvic venous plexus using 3cc of foam sclerosing agent (polidocanol) followed by coil embolization of the left ovarian vein. Post embolization venogram demonstrated radiographically successful treatment with no flow in the ovarian vein and preserved flow in the left renal vein.

Discussion

Chronic pelvic pain due to pelvic congestion is often associated with a constellation of symptoms including pelvic pain, dyspareunia, dysmenorrhea, and dysuria causing negative cognitive, behavioral, sexual and emotional consequences. There are three types of chronic pelvic pain, categorized by etiology. Type I is secondary to valvular incompetence of pelvic or ovarian veins, Type II is secondary to obstruction of outflow, and Type III is due to local compression. Venography is the gold standard for diagnosis. Treatment is directed at providing symptomatic relief with medical therapy, and treating the underlying cause by either endovascular (sclerotherapy and embolization, left renal venous stent placement) or open surgical techniques (including gonadal vein transposition, left renal vein transposition, or saphenous vein bypass).

Abstract #71: TRANSFEMORAL CAROTID ARTERY STENTING IN A PATIENT WITH A HOSTILE NECK

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Introduction

Carotid artery stenosis is an important risk factor for disabling stroke and death secondary to atheroembolization. Carotid endarterectomy (CEA) has been the gold standard for treatment of patients with CA stenosis. However, in recent years, trans-femoral carotid artery stenting (CAS) and trans-carotid artery revascularization (TCAR) have become attractive treatment modalities in a subset of selected patients. We present a patient with a hostile neck with asymptomatic >80% carotid stenosis.

Case Description

Our patient is a 69-year-old male with past medical history significant for laryngeal cancer treated by laryngectomy with permanent tracheostomy and neck irradiation presented with asymptomatic high-grade right carotid stenosis. Given the hostile neck, all options were discussed. To avoid potential infectious complications in a contaminated neck, trans-femoral CAS was chosen. Intra-operatively, femoral artery access was established under ultrasound guidance. Selective cerebral angiography confirmed critical stenosis of the proximal right internal carotid artery (ICA) consistent with pre-operative imaging. Neuroprotection was established using a filter device above the lesion, a 4mm pre-dilation was performed, and the lesion treated using a 7-10X40 mm tapered Acculink stent. A 5.5mm postdilation was performed with good stent effacement and completion arteriogram revealed resolution of the lesion.

Discussion

Carotid artery stenosis has three surgical treatment options: carotid endarterectomy (CEA) transfemoral carotid artery stenting (CAS), and hybrid transcarotid artery revascularization (TCAR). In all cases, best medical therapy including aspirin, clopidogrel, and a statin is also prescribed. CEA is recommended for symptomatic patients with 50-99% ICA stenosis and can be considered for asymptomatic patients with 70-99% ICA stenosis if the perioperative risk of stroke and death is <3% and if the patient has a 3-5-year life expectancy. In the presence of medical or anatomical contraindications to CEA, CAS offers the advantage of avoiding the risk of injury to surrounding structures in the neck, including cranial nerves, and reduced infection risk. As a trade-off, CAS has a twofold increase in 120-day stroke or death rates when compared with CEA. At this time, current data shows similar long-term benefit for patients with carotid occlusive disease who undergo either CAS or CEA. Early results with TCAR, both in our experience and in national registry data, show comparable outcomes to CEA due to the use of flow reversal neuroprotection through a minimally invasive exposure. In this case, however, the risk of infection to the carotid artery and the implanted stent was prohibitive due to the presence of the tracheostomy and history of neck irradiation.

Abstract #72: MEDIAN ARCUATE LIGAMENT SYNDROME: A CHALLENGING CLINICAL DIAGNOSIS

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Introduction

Median Arcuate ligament Syndrome (MALS) is an anatomic and clinical illness resulting from extrinsic compression of the celiac artery by the arcuate ligament. MALS is a rare disease – affecting 2 in 100,000 individuals – and patients usually have vague abdominal symptoms, making its diagnosis challenging. We present a patient with a history of chronic pancreatitis who was additionally determined to have MALS.

Case Description

Our patient is a 60-year-old male who presented to the emergency department with moderately-severe epigastric pain radiating to the back, as well as nausea and vomiting. The patient has had similar episodes in the last several years and significant weight loss in the last 6 months. Physical exam showed epigastric tenderness without signs of peritonitis. Patient's lipase was elevated, and CT showed pancreatic calcifications suggestive of chronic pancreatitis, as well as severe celiac artery stenosis concerning for mesenteric ischemia. Mesenteric duplex and CT angiography demonstrated 70-99% celiac artery stenosis[VP1] . The patient underwent angiography, which demonstrated a patent aorta, celiac artery, and superior mesenteric artery, but showed significant stenosis of the celiac artery on expiration which was relieved on inspiration, confirming the diagnosis of MALS. The patient was then referred for median arcuate ligament release.

Discussion

MALS is a rare and a challenging clinical diagnosis due to patients usually having non-specific symptoms that are often masked by more common gastrointestinal disorders, such as chronic pancreatitis. Duplex ultrasound and CT angiography are helpful adjuncts to make the diagnosis; however, angiography with demonstrable variation during expiration and inspiration remains the gold standard. Once the diagnosis is made, MALS may be surgically treated by decompression of the median arcuate ligament.

Abstract #73: DEVELOPING A UNIQUE STRATEGY FOR COMPLEX AUTOGENOUS DIALYSIS ACCESS

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Introduction

Arteriovenous fistulas (AVF) are created in order to provide long-term hemodialysis access for patients with end-stage renal disease (ESRD). Over time, they are associated with complications such as stenosis, occlusion, pseudoaneurysm, and steal syndrome, for which patients undergo further interventions. We present a patient with ESRD who had multiple AVF, subsequent complications, and required complex dialysis access.

Case Description

A 49-year-old male with a history of Alport's Syndrome, hypertension, and ESRD was evaluated for a malfunctioning AVF with complaints of pain, numbness and tingling in his left hand. He had multiple previous surgeries including fistula formation and fistula revisions, thrombectomies, and multiple stent placements to maintain the fistula. Ultrasound demonstrated occlusion of the fistula and stents in the brachial artery and cephalic vein. A fistulogram was performed demonstrating complete occlusion of the brachial artery stent and the left radial artery, with multiple collaterals perfusing the hand. The patient was an ideal candidate for right upper extremity fistula creation, however, he was right hand dominant and adamant against using his right arm for AVF. The patient then underwent a complex repair to revascularize his left arm and create an AVF involving harvesting the great saphenous vein from the right leg, removal of left cephalic vein stent, left brachial artery to radial artery bypass with reversed great saphenous vein, and AVF creation between the left axillary artery and brachial vein using reversed great saphenous vein as conduit. A completion angiogram and fistulogram performed at the end of the procedure demonstrated excellent forward flow in the bypass and filling of the hand, as well as excellent flow through the fistula. The fistula had a palpable thrill. He began successful hemodialysis through the fistula two months post-operatively.

Discussion

AVF is the preferred method of hemodialysis access in patients with ESRD. It has the best long-term patency rate, requires the fewest interventions of any type of access and has the lowest incidence of morbidity and mortality. However, multiple interventions to maintain access can lead to complications, as occurred in our patient. With the understanding of vascular anatomy and creativity, restoration of blood flow to his hand and autogenous dialysis access was successfully accomplished.

Abstract #74: FIRST BITE SYNDROME AFTER PARAPHARYNGEAL SURGERY

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Introduction

Most schwannomas, other than those associated with neurofibromatosis, occur in the parapharyngeal space often originating from Cranial nerves (CN) 9-12 or the sympathetic chain. Although cervical sympathetic chain (CSC) schwannomas are uncommon, they are known for their ability to mimic the physical and radiologic findings of carotid body tumors. Treatment is surgical resection. Post-operative complications involved with removing the CSC include Horner's syndrome (almost inevitable) and First Bite Syndrome.

Case Description

An 80-year-old female presented with a 7-year history of an enlarging right neck mass followed serially over time with moderate growth. Patient complained of locally compressive symptoms including bilateral neck pain, dizziness, dysphagia and hoarseness. Mass was non-tender and firm with a 4-5 cm diameter oriented vertically. Flexible fiber-optic laryngoscopy revealed R vocal cord (VC) sluggishness with poor abduction. CT demonstrated the mass as measuring 3.6 x 3.5 x 4.9 cm with close adherence to the right carotid artery. Biopsy was non-diagnostic. Patient consented to mass excision and right neck dissection that was performed by an otolaryngologist and cardiovascular surgeon. The right-sided mass was free from the jugular vein, carotid artery, and CN 10. It measured 5.7 cm in the largest dimension and was attached to a nerve bundle, possibly the CSC. Histopathologic examination revealed the mass to be likely consistent with a schwannoma.

On post-operative day #1, patient had normal tongue mobility, intact CN 7 function, slight ptosis of the right eye and symmetric pupils without meiosis. Fiber-optic laryngoscopy revealed subtle right VC cord weakness that improved by post-operative day #5. Approximately one month later, patient complained of discomfort in her mouth and jaw on initiating a meal. Following right parotid gland ultrasound examination, patient was diagnosed with First Bite Syndrome. Botulinum toxin was injected within the parotid gland for symptom management.

Discussion

In First Bite Syndrome, pain in the parotid area can be severe with the first bite of food. With subsequent bites, the pain often decreases. It is currently thought this is likely due to sympathetic denervation of the parotid gland due to severing of the CSC resulting in hypersensitivity of the sympathetic receptors. A majority of these symptoms resolve over time. There is evidence that Botulinum toxin type A injection causes improvement of symptoms by inducing parasympathetic nerve paralysis of the parotid gland. This can also minimize salivation by reducing the hyper-stimulation and exaggerated myoepithelial cell contraction.

Abstract #75: RENAL ARTERY STENOSIS AND OBSTRUCTIVE UROPATHY: TO RESECT OR TO STENT?

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Introduction

Atherosclerotic renal artery stenosis causes hypertension that is resistant to medical management and may eventually lead to loss of kidney function. The treatment options for uncontrolled hypertension include best medical therapy (BMT), renal artery stenting (RAS), or surgical intervention; however, the optimal modality remains uncertain. This is the case of a patient with renal artery stenosis complicated by concurrent obstructive uropathy.

Case Description

Our patient is a 66-year-old male with a long-standing history of hypertension uncontrolled with BMT (beta blocker, angiotensin II receptor blocker (ARB) and a thiazide diuretic) and progressive renal insufficiency which was presumed to be due to prostatic obstructive uropathy. Despite undergoing a transurethral prostatectomy, his renal function continued to decline. A pelvic magnetic resonance angiogram (MRA) was performed which showed bilateral renal artery stenosis with the left being worse than the right. Computed tomography angiogram (CTA) was then performed which confirmed significant bilateral renal artery stenosis of 80 percent and 60 percent of the left and right renal artery respectively. The patient then underwent balloon angioplasty followed by stenting of both vessels without complication. Post-stenting angiography showed less than 30 percent stenosis of either vessel. During hospitalization, he had some improvement in his blood pressure, and his renal function was improved from baseline. One month follow up showed no significant change in blood pressure from initial visit prior to stenting.

Discussion

In healthy subjects, reduced renal perfusion lowers the glomerular filtration rate (GFR), causing a response by the renin-angiotensin-aldosterone system (RAAS) which leads to a compensatory increase in blood pressure. Although the GFR is reduced, renal parenchyma is able to adapt to reduced blood flow if perfusion pressure is reduced by 40 percent. There are a number of ways to manage renal artery stenosis, including RAS versus BMT. Currently, the effects of stenting are controversial and not fully understood. Multiple randomized trails have shown confounding results. Some trails have shown benefit in RAS, while others have demonstrated increase adverse outcomes due to renal reperfusion. In this case, we decided to to proceed with RAS given the significant stenosis on imaging, the patient's clinical presentation of worsening renal function despite BMT, and having ruled out other causes of progressive renal failure. The decision to intervene in these patients is usually determined on a case-by-case basis after discussion between surgeon, nephrologist and patient and after educating the patient on the risks and benefits.

Abstract #76: MANAGEMENT OF ENDOLEAK AFTER ABDOMINAL AORTIC ANEURYSM REPAIR

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Introduction

Abdominal aortic aneurysm (AAA) represents a potentially life-threatening condition that requires proper surveillance and treatment. While AAA was historically treated by open surgical repair, technologic advances have resulted in Endovascular Aortic Aneurysm repair (EVAR) becoming the primary repair technique for AAA. Persistent endoleaks are a known complication of EVAR that often require additional intervention. We present a case highlighting the management of a Type 1B endoleak post-EVAR.

Case Description

Our patient is a 66-year-old male with history of EVAR at outside facility, and was evaluated in clinic with an enlarging iliac artery aneurysm. Computed tomography angiogram (CTA) demonstrated a 5cm aneurysmal degeneration of the right common iliac artery, most likely due to an endoleak in the distal portion of the stent (Type 1B). Due to the existing aortic endograft with a high flow divider, this required a combined axillary and femoral artery approach. The patient underwent placement of iliac branch endoprosthesis (IBE) at the right common iliac artery bifurcation with limb extension into both the external iliac and hypogastric arteries. Completion angiogram demonstrated successful extension of the endograft with exclusion of both the AAA and iliac aneurysm, preserved patency of the right hypogastric artery, and no endoleak.

Discussion

Endoleaks are a known complication of EVAR and frequently require intervention. There are multiple type of endoleak. Type 1 endoleaks denote leaks due to inadequate seal, and are divided further into 1A (proximal seal zone) and 1B (distal seal zone). Type II are due to branch vessel, type III endoleak are due to graft connection, and type IV due to graft porosity. The identification of location and type is frequently challenging and requires an angiogram. The management is based on the type of leak. Our patient had a type IB, due to leakage around the distal right common iliac limb. Relining the endograft with placement of an IBE device and extension of the stents into the external iliac and hypogastric arteries ensured development of adequate seal while preserving blood flow distally. With extensive pre-operative case planning and an intricate knowledge of the vascular anatomy, the modern vascular surgeon is equipped to provide advanced endovascular treatment options for complex vascular conditions.

Abstract #77: ENDOVASCULAR ANEURYSM SEALING WITH NELLIX: AN ALTERNATIVE TO ENDOVASCULAR AORTIC ANEURYSM REPAIR

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Introduction

Abdominal aortic aneurysm (AAA) results from a combination of a weakened aortic sidewall and the presence of pressurized flow through the aorta. The resulting dilation, when large enough, is at risk for rupture and death. Endovascular repair has quickly become the standard for repair of AAA. However, due to anatomy of the aneurysm, endovascular repair is not always possible. Endovascular aneurysm sealing is a novel therapy that may be able to treat aneurysms with difficult anatomy more effectively than traditional endovascular repair.

Case Description

The patient is a 69 year old male who presented to the vascular clinic with a 5.3 cm AAA, increasing in size in six months. The aneurysm was amenable to endovascular repair. Due to difficult anatomy and large lumen to mural thrombus ratio, he qualified for the EVAS2 trial for endovascular sealing with the Nellix device. In the vascular hybrid OR, bilateral percutaneous femoral artery access was obtained. Two Nellix endografts were then sized and placed in the abdominal aorta, covering the length of the aneurysm and extending into the bilateral iliac arteries. The polymer was then deployed to seal and exclude the aneurysm. The patient tolerated the procedure well and was discharged on post-operative day 1. One month follow-up computed tomography angiogram (CTA) demonstrated a patent graft in good position with no endoleak.

Discussion

The advent of endovascular therapy has immensely changed the treatment of aortic aneurysm. The lower perioperative morbidity and mortality compared to open surgery has immensely improved patient outcomes. The main goal of endovascular aortic repair is two-fold: to exclude the aneurysm and thus lower the pressure to prevent expansion and rupture, as well as to maintain flow to the lower extremities. For varying reasons, excluding the aneurysm is difficult, for example due to a large neck or significant angulation. Endovascular aneurysm sealing (EVAS) is a novel way to exclude the aneurysm using a polyethylene polymer within the sac, instead of relying solely on the sealing of the stent within the aorta. Early studies show that outcomes of EVAS are an acceptable alternative to traditional EVAR, and in difficult anatomy could be a useful adjunct to successfully exclude an aneurysm.

Abstract #78: TREATMENT OF A POPLITEAL ANEURYSM IN THE SETTING OF ACUTE THROMBUS

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Introduction

Popliteal artery aneurysms are the most common form of peripheral aneurysm, and they have a wide variety of presenting symptoms. The majority of patients are asymptomatic at the time of presentation, possibly owing to increases in the use of advanced imaging, but patients may also present with symptoms of rupture, local mass effect, or thromboembolism. We are reporting on a patient who presented acutely with Rutherford 2a acute limb ischemia due to a right popliteal aneurysm and associated thrombus. In this case, we employed a combined strategy of treatment with thrombolysis followed by bypass.

Case Description

This is a 40 year old male who presented to our emergency department with acute complaints of right lower extremity paresthesias, pain, and coldness. On exam, pulses were absent with no signals auscultated with Doppler, and the leg was cool to the touch. He denied any recent trauma to the extremity, but did have a history of knee trauma 27 years prior. He denied any other medical problems or past surgeries, but was an active half pack per day smoker. A CT angiogram from admission was significant for fusiform dilation of the popliteal artery with an intraluminal dissection and an obstructing thrombus which extended to the bifurcation of the popliteal artery. He was taken to the operating room for catheter directed thrombolysis, which infused tPA for 48 hours. During this time, he underwent mechanical thrombectomy on two consecutive days which restored blood flow to the extremity. Although blood flow had been restored, he remained a high risk patient due to the presence of his aneurysm . Thus, it was determined that the best course of action would be to bypass and exclude the lesion. He returned to the operating room and underwent a successful above-knee to below-knee popliteal artery bypass using reversed small saphenous vein, with ligation of the aneurysm. He recovered with a foot drop after surgery, and was discharged home on postoperative day four.

Discussion

Popliteal artery aneurysms are difficult entities to manage, especially in the setting of complications such as thromboembolism. Treatment includes endovascular stent placement or open with bypass or direct repair. In this case, we explored a combination of endovascular and open bypass techniques to restore blood flow to a threatened limb. In the management of patients with popliteal artery aneurysm, it is important to assess for both contralateral popliteal artery aneurysm as well as abdomen aortic aneurysm.

Abstract #79: CARBON DIOXIDE ANGIOGRAPHY IN THE SETTING OF STAGE IV CHRONIC KIDNEY DISEASE

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Introduction

Catheter-based digital subtraction angiography (DSA) is a diagnostic as well as therapeutic modality in patients with chronic limb threatening ischemia (CLTI). In patients with chronic kidney disease, it is important to minimize use of iodinated contrast in order to prevent worsening of kidney function. We present a case of CLTI of the bilateral lower extremities which was evaluated with catheter DSA using carbon dioxide (CO_2) as the imaging agent.

Case Description

Our patient is a 72-year-old female with chronic kidney disease (CKD) Stage IV, congestive heart failure, hypertension, hyperlipidemia, coronary artery disease, and peripheral arterial disease with a history of right femoral to above knee popliteal artery graft bypass with Dacron and left foot transmetatarsal amputation, who presented with a new wound to the plantar surface of the right great toe and dorsal surface of right second toe. Arterial-Brachial Index (ABI) and waveform analysis were non-diagnostic. Due to her advanced stage chronic renal failure with an eGFR of 24, the patient underwent angiography, using CO_2 as the contrast agent, that demonstrated left above-knee popliteal artery occlusion which was treated with balloon angioplasty. The right femoral-popliteal bypass was also noted to be occluded. Given her leg wounds and no inline flow to the foot, she underwent right femoral to above-knee popliteal artery bypass using reverse saphenous vein with explantation of the graft.

Discussion

Contrast-induced nephropathy from iodinated contrast dye is the third most common cause of hospital acquired acute renal injury. Iodinated contrast dye is considered safe in patients with an estimated glomerular filtration rate (eGFR) of greater than 30. In patients with lower GFR, CO_2 angiography is recommended as it reduces contrast effects and still provides adequate diagnostic information. The images obtained allow for accurate diagnosis of hemodynamically significant stenosis and therefore guide treatment options, including both endovascular and open surgical options. Arterial visualization with C02 imaging can be diminished in small vessels, especially in the setting of proximal stenosis or occlusion, and therefore is considered an inferior imaging modality to iodinated angiography. Thus to better visualize the small vessels (usually below knee) small amount of contrast may be used. Using CO2 limits the use of contrast as is used only when adequate imaging is not obtained and thus helps provide effective treatment without adversely impacting the kidney function.

Abstract #80: CAROTID BLOWOUT IN A PATIENT WITH HISTORY OF TONGUE CANCER

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Introduction

Carotid Blowout Syndrome (CBS) is an uncommon, potentially devastating complication of head and neck cancer. It occurs predominantly near the bifurcation of the common carotid artery (CCA) . CBS is due to arterial wall necrosis causing decreased structural integrity and inability to withstand pressure, mainly in patients who have undergone surgical and radiotherapy procedures for head and neck cancers. There are three types: Type I – threatened, Type II – impending, and Type III – hemorrhage. The overall incidence is 3 – 4.5% of patients that underwent major head and neck oncologic resection and is a major contributor to morbidity and mortality. This case discusses a CBS patient in the acute setting and demonstrates the importance of early recognition and intervention needed to successfully treat this condition.

Case Description

Patient presented as 50-year-old female with a history of tongue cancer status-post modified radical neck dissection and adjuvant neck radiation therapy, resulting in a chronic open wound over her carotid artery. She presented to an outside facility with profuse, pulsatile left neck bleeding. That physician stated that the patient had a tracheostomy with a possible left carotid artery stent. Upon accepting the transfer request, vascular surgery and the operating room were notified. The patient received three units pRBC in transit, with a fourth unit ongoing. Upon arrival to our emergency room, direct pressure was held on her carotid artery. She was hypotensive and she was brought directly to the operative suite. After anesthesia induction, she suffered cardiac arrest; spontaneous circulation return occurred after one round of ACLS. Endovascular access was obtained through the right femoral artery and a covered stent was placed across the perforation at the left carotid bulb, controlling the bleed. The patient was transferred on the first postoperative day for muscle flap coverage of her chronic open wound to a head and neck team where her previous neck surgery was done.

Discussion

CBS is a surgical emergency, necessitating immediate intervention. Goals are aimed at stopping the hemorrhage and limiting neurological sequelae. Previously, options were CCA ligation or graft placement. With endovascular therapy, embolization and stent placement options exist. Open repair and ligation have a higher mortality compared to endovascular intervention. Following successful therapeutic intervention, main concerns include rebleed, stroke, and/or infectious complications. Hypotension in the patient's clinical course has been shown to be a poor prognostic factor. Early recognition and urgent vascular consultation is critical to successful therapeutic intervention and correction.

Abstract #81: TARGETED TYPE 2 ENDOLEAK COIL EMBOLIZATION VIA ARTERY OF DRUMMOND

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Introduction

Type 2 endoleaks are a common development in patients with abdominal aortic aneurysms (AAA) who have been treated with endovascular aneurysm repair (EVAR). Persistent endoleaks can lead to aneurysm progression and rupture; thus, lifelong surveillance post-EVAR is critical to monitor for endoleaks. We present a case of targeted coil embolization via the marginal artery of Drummond of a persistent Type 2 endoleak warranting repair. The case illustrates the technologic advances in surgical technique when managing Type 2 endoleaks post-EVAR.

Case Description

A 76-year-old male with a history of multiple prior abdominal operations and AAA managed via elective EVAR presents one year post-EVAR with a rapid interval increase in the size of the aneurysm sac due to a persistent Type 2 endoleak, as demonstrated by surveillance imaging. Thus, the patient consented to arteriogram and targeted coil embolization of the aneurysm sac and contributing branches to prevent further expansion. Aortogram and selective angiogram demonstrated filling of the aneurysm sac from a patent inferior mesenteric artery (IMA), maintained through the marginal artery of Drummond. The superior mesenteric artery was selected, and by following the middle colic artery we followed the marginal artery to the IMA and subsequently into the aneurysm sac. We filled the aneurysm with multiple coils, then packed and plugged the IMA. Completion angiogram demonstrated successful embolization of the IMA with no persistent endoleak. The patient was discharged in stable condition that day. At two weeks post-procedure, there was no clear endoleak on imaging, and follow up duplex was scheduled for 6 months.

Discussion

Endovascular repair of aneurysmal disease is preferred over open repair, when anatomically feasible, as endovascular approach is minimally invasive, safe and associated with decreased perioperative and 2-year morbidity and mortality compared to open surgical repair. Lifelong surveillance of patients follow up post-EVAR is mandatory; accurate measurement of the aneurysm sac is crucial to identify endoleaks of all types. Endoleaks are common, occurring in 20-50 percent of EVAR patients, with Type 2 endoleaks reported over 50 percent of the time. Management of endoleaks is based on type, persistence, patient anatomy and surgeon preference. In this case, due to the presence of a rapidly enlarging aneurysm sac from a Type 2 endoleak, endovascular coil embolization with packing and plugging of the IMA to prevent retrograde flow into the sac was necessary to prevent further expansion and potential rupture.

Abstract #82: DUODENAL ULCER AFTER ROUX-EN-Y GASTRIC BYPASS SURGERY: THE VALUE OF LAPAROSCOPIC TRANSGASTRIC ENDOSCOPY

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Introduction

While peptic ulcers can occur after Roux-en-Y gastric bypass surgeries, they are most commonly found as marginal ulcers at the gastrojejunal anastomosis and amenable to standard endoscopy. Peptic ulcers that occur in the gastric remnant and duodenum are less common and pose significant diagnostic and therapeutic challenges due to their inability to be accessed by esophagogastroduodenoscopy (EGD). We report one such case of a woman who presented with CT findings suggestive of a gastric remnant ulcer who underwent laparoscopic assisted endoscopy of gastric remnant and duodenum.

Case Description

A 53-year-old female who underwent a Roux-en-Y gastric bypass nine years prior presented to clinic with three weeks of sharp post-prandial abdominal pain radiating to the back. CT imaging of the abdomen was suspicious for inflammation and a possible ulcer in the anterior antrum of the gastric remnant without any free air. She was placed on a proton pump inhibitor by gastroenterology and then referred to surgery as this area was not accessible by EGD secondary to her gastric bypass. The patient subsequently underwent a laparoscopic lysis of adhesions, laparoscopic assisted endoscopy of gastric remnant and duodenum, and upper endoscopy of esophagus, gastric bypass, and distal extent of roux limb. She was discovered to have a duodenal ulcer. Biopsies taken from the gastric antrum and duodenum were negative for Helicobacter pylori or malignancy.

Discussion

Morbid obesity is a debilitating illness that has resulted in a growing volume of bariatric surgery. Sleeve gastrectomy and Roux-en-Y gastric bypass are the two most predominate weight loss surgeries performed currently in the United States. Proficiency in evaluating and treating complications of Roux-en-Y gastric bypass is imperative for management of bariatric patients, which includes evaluation for peptic ulcers and other pathology in the gastric remnant and duodenum. Endoscopy evaluation of the gastric remnant and duodenum cannot be performed trans-orally. This case demonstrates a laparoscopic assisted trans-gastric access for endoscopic evaluation of the duodenum and gastric remnant for peptic ulcer disease.

Abstract #83: A DIFFERENT PLAN OF CARE FOR SUSPECTED COLONIC FREE AIR

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Introduction

Traditionally, an exploratory laparotomy is indicated with the presumption of an acute bowel perforation in a trauma patient. Additional indications include hemodynamic instability, penetrating abdominal injury, and diaphragmatic injury among others. The following case describes an example of how a thorough history, physical, and review of medical records significantly altered the plan of care for a trauma patient with suspected free air at the splenic flexure.

Case Description

67-year-old female presented to the emergency department after a high-speed motor vehicle accident. On physical exam, there was a prominent seatbelt sign on left upper chest and her abdomen was soft with mild right upper quadrant tenderness. Focused assessment of sonography for trauma was performed, and found to be negative. CT of the chest, abdomen, and pelvis was concerning for free intraperitoneal air suspicious for acute bowel perforation at the splenic flexure of the colon. Past medical records were reviewed, including a colonoscopy completed two years prior with abnormal mucosa consistent with pneumatosis coli at the splenic flexure. A lower gastrointestinal contrast enema was completed and demonstrated an intact colon without perforation. The patient was admitted and monitored with serial abdominal exams. No significant changes were noted at outpatient follow-up two weeks post-discharge. Follow up colonoscopy the next year showed no changes when compared to her previous endoscopy.

Discussion

Pneumatosis intestinalis is defined as the presence of air within the wall of the small or large intestine. Although rare, it is often associated with life threatening pathology[1]. Its appearance often necessitates surgical exploration. This case describes how access to, and review of, past medical records in concordance with a physical exam incongruent with a hollow viscus injury resulted in non-surgical management of a trauma patient despite CT findings suggesting the presence of intraperitoneal free air. This resulted in the avoidance of possible post-surgical complications for this patient who would have likely undergone a negative laparotomy. In a systematic review of 9,817 patients with abdominal trauma who underwent laparoscopy, 26.2% progressed to laparotomy. Of the cases that progressed to laparotomy, 48.7% resulted in a negative laparotomy[2]. In a retrospective cohort study of 1139 patients, common post-surgical complications of exploratory laparotomy included perioperative infection and gastrointestinal malfunction with an overall complication rate of 47% and mortality rate of 20%[3]. This case highlights the benefits of a thorough history, physical, and review of medical records.

Abstract #84: EMERGENT INCARCERATED INCISIONAL HERNIA REPAIR & TRANSJUGULAR INTRAHEPATIC PORTOSYSTEMIC SHUNT IN THE SETTING OF CIRRHOSIS WITH PORTAL HYPERTENSION

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Introduction

Ventral hernia repair in cirrhotic patients is associated with increased morbidity and mortality, especially in the emergent setting. Post-operative complications such as variceal bleeding, ascitic fistula, hernia recurrence, progressive liver failure, and death are concerns in patients with uncontrolled portal hypertension. Procedures to control portal hypertension such as transjugular intrahepatic portosystemic shunt (TIPS) have been proposed to decrease these complications, however management of these patients remains a challenge.

Case Description

A single case was studied, and literature review was performed. A 33-year-old male with alcoholic cirrhosis presented with an incarcerated ventral hernia, altered mental status, and sepsis. He had a MELD of 20, Childs-Pugh Class C cirrhosis, and history of primary umbilical hernia repair. CT scan was concerning for strangulated hernia. He underwent open primary ventral hernia repair without mesh. Significant abdominal wall variceal bleeding required extensive suture ligation and argon beam laser for control. TIPS was performed post-operatively to control post-operative bleeding and decrease potential recurrence. This patient did well. He received a total of two units packed red blood cells and three units of platelets. In addition to bleeding, the patient was treated for sepsis, alcohol withdrawal, and encephalopathy in the ICU. He was transferred out of the ICU on post-operative day 7. His encephalopathy resolved with lactulose and rifaximin. He underwent rehabilitation and was discharged on post-operative day 16. At three weeks follow-up he was healing well without recurrence or ascitic leak. His encephalopathy was grade 1 by West Haven classification. At six weeks follow-up his encephalopathy was grade 0 without hernia recurrence.

Discussion

Literature review demonstrates hernia recurrence rates of 45% with uncontrolled ascites and 4% when controlled. TIPS has been shown to control variceal bleeding refractory to medical and endoscopic management >90% of the time, however, there are no studies that evaluate the use of post-operative TIPS to reduce bleeding. Early TIPS for acute esophageal bleeding has been shown to have shorter hospital stay and decreased mortality when compared to medical management and rescue TIPS. There is a high rate of hernia recurrence and post-operative complications in the setting of uncontrolled portal hypertension, ascites, and cirrhosis. Early post-operative TIPS may help improve outcomes for patients with advanced liver disease who require emergent surgery. TIPS may help reduce post-operative bleeding, ascitic leak, and hernia recurrence, and should be considered in surgical patients with portal hypertension and cirrhosis who present with emergency general surgery problems.

Abstract #85: INTRATHORACIC TRANSVERSE COLON AND CHEST PAIN: MORGAGNI HERNIA PRESENTING IN ADULTHOOD

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Introduction

Morgagni hernias (MH) are congenital anteromedial diaphragmatic hernias that involve abdominal contents herniating into the thoracic cavity. MH are the most rare form of congenital diaphragmatic hernias (CDH); constituting 2%-4% of all CDH. Most MH present in infancy with lung hypoplasia secondary to abdominal contents in the thoracic cavity, however there are occasionally reported adult cases of MH. In adults, patients with MH most commonly present with nausea, vomiting, chest infections and chest pain.

Case Description

A 70 year old male with a past medical history of COPD and tobacco abuse was referred from the VA with non-cardiac chest discomfort and constipation. CT imaging demonstrated a Morgagni anterior diaphragmatic hernia with the transverse colon and omentum herniated into the thoracic cavity, and a relative colonic transition as the colon re-entered the abdominal cavity. The patient underwent a laparoscopic reduction of the colon, omentum, and hernia sac, and repair of the diaphragmatic hernia. The case was completed without event or complication. The patient was ambulating and eating a regular diet and discharged on post-operative day 1.

Discussion

The standard of care for management of MH is surgery however there is no consensus on the surgical approach or method of repair. Current surgical literature describe multiple repair methods for MH, including open abdominal approach, open thoracic approach, or minimally invasive techniques. All of these techniques can be done with and without mesh, although there is limited data to support one method over the other. If mesh reinforcement is used, fixation can be challenging due to proximity of the pericardium. Here we describe a case of a laparoscopic primary suture repair of an MH with excellent results, suggesting the utility of this approach.

Abstract #86: A RARE COMPLICATION OF ACUTE DIVERTICULITIS

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Introduction

Diverticulosis is a condition resulting from the protrusion of the inner colonic mucosal layer through a weakness in the outer muscular layer of the colon. Inflammation of these outpouchings is known as diverticulitis. Over 60% of Americans over the age of 70 have diverticulosis and approximately 5% of these will develop diverticulitis in their lifetime.[1,2] 12% of acute diverticulitis cases will develop complicated diverticulitis, defined by the development of phlegmon (22.3%), abscess (29.5%), perforation (44.5%), obstruction (22.6%), bleeding (4.5%), or fistula formation (10%).[2,3] A fistula is an abnormal connection between two hollow organs or with the skin. Colosalpingeal fistulas, fistulas between the colon and fallopian tube, have only been described in rare case reports.

Case Description

Sixty-five-year-old woman presented to an outside hospital with worsening left lower quadrant abdominal pain, urinary retention, and constipation for five days. Computed tomography scan (CT) demonstrated extensive diverticular disease, inflammation of the sigmoid colon and left adnexa, paracolic fluid, a 2.4 x 2.0 cm loculated fluid collection, and air within the uterus. She denied passing stool from her vagina, foul odor, or previous episodes of diverticulitis, but endorsed white milky vaginal discharge for one year. Transvaginal ultrasound was obtained, but was of poor quality due to patient's body habitus. She was discharged on antibiotics after improvement in symptoms, but presented nine days later with abdominal pain, fever, and intermittent diarrhea. CT re-demonstrated the above findings. Barium enema revealed only diverticulosis. Colonoscopy showed a heavy burden of diverticula in the sigmoid colon. The patient underwent successful sigmoid colectomy, total abdominal hysterectomy, and bilateral salpingo-oophorectomy. Intraoperatively, dense adhesions were encountered between the sigmoid colon, the pelvic side wall, and the left fallopian tube. Pathology revealed chronic active inflammation of the colon, an organized pericolic abscess, and chronic salpingitis with associated hemorrhage. Her postoperative course was complicated by small bowel obstruction and medical comorbidities resulting in discharge on postoperative day fifty-eight in good condition.

Discussion

Colosalpingeal fistulas are an unusual complication of complicated diverticulitis secondary to an extension of localized inflammation. Typical symptoms include vaginal discharge, recurrent urinary tract infections, low-grade fevers, and abdominal pain.[3] Although pelvic ultrasound, CT, colonoscopy, and barium enema have been described in the work-up of colosalpingeal fistulas, there is no evidence-based algorithm for imaging. In our experience, CT was the only imaging modality to suggest fistulization. Additionally, CT is widely accessible and reliance on this method may reduce time to definitive care.

Abstract #88: CHALLENGING ENDOVASCULAR RETRIEVAL OF MULTIPLE WELL INCORPORATED INFERIOR VENA CAVA FILTERS

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Introduction

Inferior Vena Cava (IVC) filters are placed in patients to prevent pulmonary embolism in patients with recurrent deep venous thromboembolism or in high risk patients who cannot tolerate anticoagulation at their initial event. IVC filters are designed as either optional (retrievable) or permanent, and filter selection is based on the indication for placement. We present a case of complex retrieval of two IVC filters from the same patient with a history of chronic venous thromboembolism and post thrombotic syndrome.

Case Description

Our patient is a 63 year-old male with a remote history of trauma that resulted in chronic venous thromboembolism and post thrombotic syndrome of left lower extremity. He presents a rare case where he had two separate IVC filters placed during his treatment; initially, a permanent filter was placed, with an additional retrievable filter placed due to recurrent pulmonary emboli. He eventually tolerated anticoagulation, and wanted these filters removed due to their possible contribution to his chronic leg swelling and pain.

From a right internal jugular vein approach, the retrievable superior filter was removed with the conventional snaring technique. We were unable to remove the second filter using conventional snare technique, as well as a through and through “flossing” approach from both jugular and femoral vein access points. We then proceeded with using a 16Fr laser extractor sheath with multiple laser treatments, followed by large aortic balloon expansion from the femoral access site, in an attempt to loosen the filter from the IVC sidewall. This combination of approaches did free the filter from the IVC wall, but the filter remained outside the sheath. Under fluoroscopic visualization, we brought the dislodged filter into the internal jugular vein and, after surgically exposing the vein, successfully removed the filter. Completion venogram confirmed removal of both filters without venous extravasation.

Discussion

This case illustrates the complexity in removing permanent IVC filters in select patients wherein the legs of the filter have embedded into the IVC wall. In patients with higher complexity of IVC filter removal, various methods have been described. Two advanced modes of extraction which are popular are the Endobronchial Forceps Extractions and the Laser-Assist Snare Extraction. Different devices have their unique characteristics and different failure modes. In patients with filter legs embedded in the vessel wall, a more robust approach with laser-assist, balloon endotraction, and external traction to free it from the IVC sidewall may be required for successful retrieval, as in this patient.

Abstract #89: GASTRIC VOLVULUS IN HIATAL HERNIA

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Introduction

Gastric volvulus is defined as a 180 degree rotation of the stomach and develops due to laxity in the stomach's peritoneal attachments and subsequent rotation of the gastric fundus on the organoaxial or mesenteric axis. It can present as a complication secondary to a hiatal hernia with dreaded complications including strangulation, ischemia, necrosis, perforation, and mortality in 30-50% of cases. Emergent surgical repair is required in these patients and early surgical consultation and evaluation can facilitate optimal outcomes in these patients.

Case Description

Patient presented as a 66-year-old female with a history of a hiatal hernia, chronic obstructive pulmonary disease, pulmonary embolism with IVC filter placement, hypothyroidism, anxiety, and hypertension who presented with chest pain, abdominal discomfort, nausea, and vomiting. After cardiac etiology was ruled out, surgical consultation was obtained and gastric decompression was recommended. An upper GI series demonstrated a paraesophageal hiatal hernia containing the distal gastric body, antrum, and duodenal bulb. Upper endoscopy demonstrated viable gastric mucosa; the scope was unable to be advanced to the duodenum due to hiatal narrowing. Clinical findings demonstrated ongoing obstruction and a laparoscopic hiatal hernia repair with partial fundoplication was recommended. Intraoperatively, a type four paraesophageal hernia was appreciated with an organoaxial volvulus of the distal stomach secondary to omental adhesions to the anterior crural ring. The hernia contents and sac were reduced after complete mediastinal dissection and a Toupet fundoplication was performed. The patient was discharged home on post-operative day two with resolution of her obstructive symptoms and pain.

Discussion

Gastric volvulus is a known possible complication in patients with paraesophageal hernias and maintaining a high index of suspicion for obstruction active volvulus in a patient is critical to successful therapeutic interventions. Surgical repair of asymptomatic Type I hiatal hernias is generally not recommended. However, symptomatic types II-IV leading to decreased quality of life and possible life-threatening complications benefit from operative intervention and correction. Early surgical referral of symptomatic patients to surgeons who have expertise in management of paraesophageal hernias may facilitate repair prior to acute incarceration and obstruction requiring Emergency Room presentation. Minimally invasive repair is considered the mainstay of treatment in hiatal hernia repair and the majority of patients describe an improved quality of life postoperatively. This case highlights the importance of identifying gastric volvulus in a timely manner in order to successfully treat this condition and improve patient outcomes.

Abstract #90: BLUNT IVC INJURY RESULTING IN TRAUMATIC PERICARDIAL TAMPONADE

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Introduction

In a traumatic event, injury to the inferior vena cava is quite rare. It is even less common during a blunt mechanism of injury such as a motor vehicle accident. Blunt injury to the inferior cava usually results in life-threatening hemorrhage. Rarely, if the intrathoracic inferior vena cava is injured a different, yet equally lethal complication can occur – cardiac tamponade. Rapid surgical repair is often the only hope to prevent imminent death, and even then, intrathoracic injury to the inferior vena cava carries a high morbidity and mortality.

Case Description

A sixty one year old male presented to the trauma service after his car struck the side of another vehicle that had pulled in front of him. He was hypotensive but responded to blood transfusion. The FAST exam was positive for pericardial fluid. The CT scan also showed pericardial fluid, but also reflux of contrast into the liver suggesting tamponade physiology. An emergent echocardiogram was obtained which also demonstrated cardiac tamponade, and likely clot in the pericardium. This was highly concerning for cardiac injury, and he was taken to the operating room for emergent sternotomy. It was discovered there was actually no cardiac injury, but rather an intrathoracic IVC injury, with near avulsion from the right atrium. While the tamponade was relieved, the injury pattern and resulting exsanguination was too severe and proved fatal.

Discussion

Injury to the IVC is incredibly rare in blunt trauma, accounting for <1% of blunt trauma cases. These injuries are highly fatal, ranging anywhere from 60% to 90% fatality, depending on the area of IVC injured, the degree of injury and time until medical treatment is obtained. Typically, these injuries can result in rapid exsanguination and death. The least commonly injured portion of the IVC is the intrathoracic portion. Rather than rapid exsanguination, this injury pattern results in pericardial tamponade. While this in itself can be fatal, they are also very difficult to repair, as once the tamponade is relieved, exsanguination then continues to be a life-threatening injury. Typically, traumatic cardiac tamponade is caused by penetrating injury to the heart itself. A high level of suspicion for IVC injury must be maintained when a traumatic pericardial effusion is encountered from a blunt mechanism of injury.

Abstract #91: ENDOMETRIOSIS WITHIN AN UMBILICAL HERNIA

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Introduction

The prevalence of endometriosis is thought to be 6-10% in US females, and the incidence of umbilical hernia in the general adult population is 2%. While both these conditions are common, endometriosis within an umbilical hernia is a rare occurrence, and typically occurs in patients that have undergone a prior surgical procedure. Primary umbilical endometriosis, which occurs spontaneously, is even less common, with less than 10 cases reported in the literature.

Case Description

The patient was a 37 year old female with a past medical history of cerebral palsy who presented with a bleeding umbilicus. The drainage had been present for over two years, was intermittent and worse with straining. She reported that the drainage was usually serosanginous, but occasionally dark brown. She reports associated periumbilical pain, worse with palpation, and denies fevers, chills, nausea or vomiting, changes in bowel habits, or urinary symptoms. CT of the abdomen showed an umbilical hernia with a small bowel loop as well as a soft tissue density structure within the distended umbilicus without inflammatory changes. She proceeded to the operating room for umbilical hernia repair and excision of umbilical mass. Pathologic assessment of the mass determined it to be extensive endometriosis.

Discussion

Primary umbilical endometriosis is a rare condition, and consequently, the duration of symptoms until diagnosis can be significant. Diagnosis is made on clinical presentation and confirmed with by histopathological analysis. The gold standard of treatment is complete surgical excision. Though umbilical endometriosis is an uncommon disease, it should be included in the differential diagnosis of women with umbilical nodules.