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A Shocking Pattern: Type 1 Brugada Syndrome in the Setting of Acute Chest Pain

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Introduction: Brugada syndrome is an extremely rare, and many times fatal, autosomal dominant cardiac arrhythmia with variable expressivity. The reported prevalence is roughly between 0.012 to 0.4% in the United States. Brugada syndrome can lead to syncope, ventricular arrhythmias, and even sudden cardiac death (SCD), and this syndrome is mostly seen in mostly adult-aged, male individuals with otherwise previously normal cardiac functioning. The diagnosis is made by noting its characteristic electrocardiogram (ECG) finding of incomplete right bundle branch block (RBBB) pattern with J-point elevation in leads V1-V3. Of the few published reports available, approximately 20-25% of patients with Brugada syndrome have genetic mutations in SCN5A, a myocardial sodium channel. The clinical importance of identifying this unusual, and oftentimes mortal arrhythmia, is to ultimately prevent SCD. Therefore, this case report is aimed at increasing clinical awareness of Brugada syndrome in hopes of making a positive impact on overall patient outcomes and survival.

Case Description: Our patient is a 54 year old male with past medical history of hypertension, dyslipidemia, anxiety, and alcoholic hepatic steatosis, who presented to our hospital's emergency department (ED) complaining of a four day history of constant epigastric abdominal pain with associated nausea. The epigastric pain radiated to the right upper quadrant of the abdomen, near the right side of the chest. The chest pain was intermittent in nature and occurred both on exertion and at rest; it was relieved by sublingual nitroglycerin in the ED. Routine chest x-ray was unremarkable, first troponin undetectable, brain natriuretic peptide within normal limits. ECG obtained by paramedics was noted to have ST-segment elevation of greater than 2 mm in leads V1-V3, with T-wave inversions in the same leads. Urine drug screen was positive for benzodiazepines. Of note, the patient mentions he had 2 episodes of non-prodromal syncope with mild injury within the last week. Due to the ST-segment elevation and chest pain resolving with sublingual nitroglycerin, on-call interventional cardiologist took him to the cath lab emergently straight from the ED. Left heart catheterization report shows his coronary vessels were anatomically unremarkable and there was no evidence of occlusive atherosclerotic disease to explain the chest pain and ST-segment elevation. Routine post-cardiac cath ECG revealed the same 2 mm ST-segment elevation at the J-point with T-wave inversion in leads V1-V3. The ECGs were consistent with Type 1 Brugada pattern, and therefore we placed a transcutaneous pacer at bedside in the event the patient developed a mortal arrhythmia or had sudden cardiac death. As soon as Brugada pattern was identified, we discontinued any offending agents that may predispose patient to Brugada pattern; one of which was a beta blocke the patient was taking outpatient for blood pressure control. Electrophysiology was emergently consulted for further management and confirmation of Brugada syndrome. Due to history of two non-prodromal syncopal episodes, the patient was scheduled for AICD placement for primary prevention of sudden cardiac death. Prior to discharge home, the patient was educated about the likely genetic component of Brugada syndrome and we advised him to relay information to his first degree relatives. Although the patient did not have any mortal arrhythmias while in the hospital, there is no objective evidence to
suggest that his syncopal episodes were related to other factors except the Brugada syndrome. This patient is fortunate that his epigastric pain and nausea brought him to the hospital and led to the incidental discovery of Brugada syndrome, as this would have ultimately led to his untimely death.

**Discussion:** This case aims to highlight the importance of diagnosing Brugada syndrome through ECG findings, even if it happens to be an incidental diagnosis. Additionally, in our case, a detailed history revealed syncopal episodes which are a typical presentation of Brugada syndrome. However, our patient initially presented with acute chest pain relieved by sublingual nitroglycerin, which has never been reported in previously published reports. It is crucial to not simply discard the ECG patterns as an ST-segment elevation myocardial infarction, and thereafter making the appropriate therapeutic decisions which can ultimately prevent SCD by implanting an AICD.
Title: Painful penile plaques: A rare case report of rectal adenocarcinoma with cutaneous metastasis to the penis

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Introduction: Cutaneous metastases to the penis and scrotum arising from primary colorectal adenocarcinoma are extremely uncommon. There have been 70 cases of such reported in the literature, with only 12 of these being within the past 10 years. These lesions often represent advanced stage malignancy and yield a poor prognosis for the patient.

Case Presentation: We report a case of a 51-year-old Caucasian male who presented to the emergency department with severe groin pain for the past 5 days. The patient also complained of multiple, painful, subcutaneous nodules to the penile shaft and scrotum. Physical examination demonstrated two well-demarcated, indurated, painful plaques involving the glans of the penis. The penile shaft was diffusely swollen. A markedly painful, subcutaneous nodule was also present in the perineum. Patient denied symptoms of discharge, dysuria, hematuria, proctalgia, and constipation.

Ultrasound of the testicles showed normal appearance of the testicles with no evidence of any intratesticular mass. Computed tomography of the abdomen and pelvis revealed 2 rim-enhancing hypodense ovoid shaped lesions in the central and left lateral aspect of the perineum, inferiorly and left laterally adjacent to the root of the penis. Incidentally, it also revealed asymmetric wall thickening of the rectum highly concerning for malignancy, and likely metastatic masses of the right lower pole of the kidney and left hepatic lobe. Carcinoembryonic antigen (CEA) level was elevated at 21.5 ng/mL (reference range 0.0-5.0 ng/mL). AFP and CA19-9 were both within normal reference range. Serological studies for syphilis, gonorrhea, chlamydia and HIV were unremarkable. Cystoscopy revealed an extrinsic urethral mass with obstructing erosion into the urethra. Both a cutaneous and transurethral biopsy were performed. Immunohistochemical staining of the penile mass and paraurethral mass were positive for Cytokeratin 20 and CDX-2, and negative for Cytokeratin 7, GATA-3, and PAX-8. The above clinical and histopathological findings were consistent with high grade, invasive adenocarcinoma favoring a colonic primary. Follow up colonoscopy demonstrated a 5 cm ulcerated necrotic mass in the rectum. The biopsy showed moderately differentiated rectal adenocarcinoma. Due to the urethral obstruction, a suprapubic catheter was placed. The patient declined a penectomy despite the intractable groin pain. The patient was referred to outpatient oncology for the initiation of palliative systemic chemotherapy.

Discussion: Despite the rich vascularization of the penis, cutaneous manifestations of metastatic disease to the penis are an uncommon occurrence. While the majority of primary malignancies arise from the genitourinary tract, we present a unique case of penile metastasis of primary rectal adenocarcinoma. With cutaneous metastasis yielding a dismal prognosis, early detection and appropriate treatment modalities may enhance patient outcomes.
Title: The Importance of Consideration & Prompt management for IgG4-Related Disease

Authors: Matthew Apicella OMS-III, Shawn Alonso OMS-III, Luis Alva OMS-III, Dr. Marc Kesselman D.O.

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Introduction: IgG4-related disease (IgG4-RD) is a multi-organ immune-mediated condition that mimics many malignant, infectious, and inflammatory disorders. The diagnosis links many conditions that until recently were regarded as single-organ diseases without any known underlying systemic condition. Any organ system can be affected, such as the biliary pathways, salivary glands, lacrimal glands, kidneys, lymph nodes, thyroid gland, and blood vessels. These diseases may often times be associated with autoimmune pancreatitis and can also result in diffuse organ swelling and the formation of pseudo-tumorous masses. Although it is most commonly seen in middle-aged men, disease involving the head and neck area appears to affect women and men in an equal distribution. Common symptoms seen involving the head and neck presentations are fatigue, malaise, arthralgias, periorbital swelling, proptosis, and lacrimal gland enlargement. In addition, many patients have history of allergic features such as rhinitis, nasal polyps, chronic sinusitis, nasal obstruction, asthma or atopic dermatitis. Awareness of IgG4-RD is essential, especially because the disorder is treatable and the therapeutic approaches contrast harshly with some of the disorders found in the differential diagnosis.

Case Description: We present the case of a 24-year-old Caucasian woman with a past medical history of Asthma and an unknown “autoimmune disorder” who presented to our Rheumatology Office with complaints of aches, sinus pressure, shortness of breath, difficulty sleeping and polyarthralgia. She states that the arthralgias in her hands/wrists/ankles/elbows and bilateral legs have been present for the past year without relief. She also admits to an episode of proptosis and lacrimal gland obstruction earlier this year and was seen at an Eye Institute, where they did a biopsy of her lacrimal gland that returned negative results for lymphoma. Her family history is positive for Rheumatoid Arthritis. Upon review of systems, she denied any photosensitivity, gastrointestinal issues, cardiac issues, clotting issues, Raynaud's, skin rashes, serositis, or patchy hair loss. X-rays were taken of her feet/ankles/hands/wrists/chest and deemed negative. Her labs revealed Negative results for ANA/RF/ANCA, however it did demonstrate Elevated Eosinophil levels at 540 cells/uL (N:15-500), and an Elevated IgG4 level at 119.2 mg/dL (N:4.0-86.0) and IgG4:IgG1 ratio of .18. The differential diagnoses for her case is comprised of IgG4 Disease, Idiopathic Hypereosinophilic syndrome, Eosinophilic Granulomatosis with Polyangitis (Churg Straus) and Eosinophilic Asthma. The combination of her clinical presentation of sinusitis, history of asthma, lacrimal gland obstruction, and labs that show an elevated IgG4 and IgG4:IgG1 ratio would make IgG4-RD a likely candidate, pending another biopsy with this diagnosis now in mind. At this point she has been started on low dose oral prednisone 5 mg po bid, as well as other respiratory medications and has since been improving. She was also referred to an ENT for evaluation and biopsy and scheduled for follow up.

Discussion: The significance of this case stems from the fact that while the diagnosis of IgG4-RD is becoming more popular in recent years it still needs more consideration by physicians. As in this patient’s case, if she would have had her lacrimal gland biopsy already
stained for IgG4-RD initially she would not require another biopsy now to confirm her diagnosis and her treatment would not have been delayed. The emphasis on prompt recognition and treatment for this disorder is noteworthy because without it the inflammatory changes may progress to that of an acellular fibrosis which may be refractory to treatment. She would also warrant further monitoring for pathology in other organ systems which are common with such a diagnosis.
Psuedoachalasia as a late complication of posterior cruroplasty.

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Introduction: Pseudoachalasia, also known as secondary achalasia, is a condition that mimics the primary esophageal motility disorder, achalasia, but is due to a secondary underlying process. Achalasia has an incidence of 1.6 cases per 100,000 people and a prevalence of 10 cases per 100,000 people. Of these, 2.4-9% qualify as having pseudoachalasia.

There is a broad spectrum of secondary causes, highlighting the importance in distinguishing the root cause of the patient’s symptoms as treatment and prognosis may change drastically. Much of the pseudoachalasia discussion surrounds the condition as it relates to neoplastic processes. A handful of case reports have been published regarding the condition as it relates to Nissen Fundoplication and other abdominal surgeries.

The case presented here is unique in that collaborative intraoperative diagnosis allowed the Nissen fundoplication to remain intact, while only partially taking down the posterior fundoplication and providing complete relief of the patient’s symptoms.

Case Presentation: Here we present the case of a 78 year old male who presented for evaluation of debilitating epigastric pain, reflux, dysphagia, and a persistent cough. The patient is 19 months post Nissen fundoplication and posterior cruroplasty. Other medical history is significant for coronary artery disease and hyperlipidemia. Past surgical history includes three vessel cardiac bypass at age 42, and cardiac catheterization at ages 62 and 66. Diagnostic upper endoscopy was performed to rule out peptic ulcer, H. pylori, malignancy, or Barrett esophagus. Examination of the esophagus revealed a tortuous distal esophagus with mild esophagitis. Upon passing the scope into the stomach, diffuse gastritis was noted and biopsy was taken. Retroflexion showing the gastric fundus noted an intact fundoplication. Gastric biopsy results showed antral mucosa with mild chronic gastritis.

Based on these upper endoscopy results, general surgery was consulted. This patient was ultimately found to have pseudoachalasia due to scarring and stricture formed around the posterior cruroplasty and Nissen Fundoplication 19 months prior. Because the Nissen fundoplication was intact and uninvolved in the scarring, it was left intact and the posterior cruroplasty was only partially taken down. Following the operation, the patient had complete resolution of symptoms and made an uneventful recovery.

Discussion: This condition presents a diagnostic and therapeutic challenge, as radiographic evidence is of limited value and identification of the condition is based upon a high index of clinical suspicion. Maintaining awareness of pseudoachalasia is particularly important for surgeons performing gastric operations, as proper and prompt diagnosis may relieve a patient’s dysphagia or heartburn, without the need for unnecessarily undoing previous surgical management. Patients undergoing operations of the esophageal hiatus, distal esophagus, and stomach should be made aware of the possibility of developing pseudoachalasia following these procedures. The importance of this cannot be minimized as the patient is put at risk of subsequent operation and hospitalizations, increasing chances for complications for the patient.
Title: “Embolization of Bio-Alcamid Gluteal Injections in a Female Patient with Patent Foramen Ovale Leading to ARDS and Embolic Stroke”

Author: James Bolduc OMS-III, Beshoy Abdalla OMS-III, Mansoor Choudhry OMS-III, Danial Muhammad OMS-III

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Introduction: Bio-Alcamid is a non-FDA approved permanent dermal filler used mainly to treat a multitude of soft tissue defects, most commonly facial lipoatrophy and lipodystrophy, with extensive use in patients with HIV. Well known adverse effects of Bio-Alcamid have been documented in the literature including: granuloma formation at injection site, skin infections, abscess and painful inflammation. This case describes the use of Bio-Alcamid in gluteal injections for cosmetic purposes in an HIV-negative female without lipodystrophy who developed serious life-threatening complications due to embolization of the compound. Embolization of Bio-Alcamid has not been reported in and likely represents a very rare complication.

Case Presentation: We present the case of a thirty-one-year-old female who presented to her local community hospital emergency department with cough, dyspnea, hemoptysis, fever, and pleuritic chest pain several hours after receiving Bio-Alcamid gluteal injections. The patient’s symptoms progressed rapidly and within three days she developed acute respiratory failure requiring intubation with a chest x-ray consistent with acute respiratory distress syndrome (ARDS).

She was subsequently transferred to the Intensive Care Unit at a Level 1 Trauma Hospital for further management. At this time, a 2D echocardiogram revealed a patent foramen ovale (PFO) and severe pulmonary hypertension. Throughout her stay in the ICU department the patient experienced DIC, thrombosis, and a series of hypoxic events including bilateral pneumothoraces requiring chest tube placements. Five weeks after initial presentation to the emergency department, the patient demonstrates flaccid quadriplegia, is poorly responsive when sedation is held, and CT scan of the brain showed multifocal infarcts involving bilateral cerebral hemispheres. CT of the abdomen reveal renal and splenic infarcts.

Discussion: This case study presents a rare complication of a nonbiodegradable dermal filler, Bio-Alcamid. Embolization of Bio-Alcamid has not been observed in the literature. However, the use of temporary fillers, namely hyaluronic acid, has been associated with embolization. The embolization of Bio-Alcamid resulting in ARDS is a radical manifestation not commonly observed in other cases of temporary dermal filler embolization. In the setting of a previously unknown PFO, the results were catastrophic for this patient resulting in multiple cortical infarcts and severe encephalopathy. The PFO seen in this patient complicated the clinical ramifications of embolization because it allowed for a paradoxical embolus to enter arterial circulation into the brain supply which further adds to the uniqueness of the case. In this case, it is not known how much Bio-Alcamid filler was used nor the exact location of the injections.
Introduction: Kienbock’s Disease is a rare and commonly misdiagnosed cause of hand and wrist pain, characterized by vascular insufficiency and subsequent osteonecrosis specific to the lunate carpal bone. The etiology is suspected to be multi-factorial, including discrepancies in lunate shape or vascular supply, negative ulnar variance, prior trauma, arthritic changes, and various forms of autoimmune vasculitis leading to thrombosis of the associated small vessels. Common symptoms present as arthralgia’s, decreased wrist mobility, decreased grip strength, wrist swelling, and pain on extension of wrists. Unfortunately, X-rays are often not sensitive enough to appreciate the earlier stages of osteonecrosis. If findings of osteoarthritis or trauma are supported with radiography, further work-up with MRI imaging is often not considered.

Case Presentation: We present a case of a 56-year-old Middle Eastern female with a history of longstanding osteoarthritis, who notes years of slowly progressive left-wrist pain, low back pain, bilateral knee pain, and generalized fatigue. She presented to multiple physicians, had repeat X-rays, and was being treated with pain management medications for her worsening osteoarthritis.

On interview, she notes a fall onto her left wrist several years prior, while living in the Middle East, led to a small, non-displaced fracture of an unknown wrist bone, and was treated with temporary immobilization of her wrist. Upon examination, she had limited range of motion of her wrists and decreased hand grip strength bilaterally, thought notably worse on her left. In addition, she experienced pronounced pain on extension and supination of her left wrist, and point tenderness on the dorsal aspect of her wrist, just superficial to her lunate and scaphoid bone. She appeared to grimace with any passive or active movement of her left wrist; more than with movement of any other joint. Repeat wrist X-ray was unremarkable with the exception of already-known arthritic changes, including joint space narrowing and subchondral sclerosis. Further work-up with non-contrast MRI revealed osteonecrosis and marrow edema of the lunate bone, most prominent on the dorsal and medial surface, which led to the diagnosis of Kienbock’s Disease. Imaging also helped to rule out an atypical presentation of Carpal Tunnel Disease, unhealed ligamentous tears or bone fractures, and anatomic anomalies such as negative ulnar variance. In addition to a CBC and CMP, laboratory testing with ESR, CRP, RF, ANA, and ANCA were all negative, thereby ruling out autoimmune etiologies. A workup for thrombophilia was also performed, including detecting levels of protein C, Protein S, Anti-thrombin 3, Factor V, and homocysteine. Further, an Ankle-Brachial Index was performed, in addition to radial and ulnar patency tests and capillary nail refill tests to rule out peripheral artery disease as a cause. We are now coordinating an MR Angiogram for the patient to determine if there are any anomalies in anatomic vasculature which may have further predisposed her to this condition. Upon the results of her MRA, the first step of her treatment will be to attempt a vascularizing graft procedure to preserve the lunate bone. If this is unsuccessful, the patient may need to undergo a proximal row carpectomy.
or carpal fusion, which will provide immediate pain relief, but will inevitably lead to a partial loss in wrist motion and strength.

Discussion: Based on a literature review, incidence for this disease is highest in males, between ages 20-40 years old\(^1\). Furthermore, negative ulnar variance, identifiable via X-ray and associated with up to 75% of Kienbock’s cases\(^2\), was also not seen in our patient. Of the autoimmune conditions associated with Kienbock’s, Systemic Lupus Erythematosus is the most prevalent within literature. Given a lack of history to be suspicious for SLE or another vasculitis, our patient was also unique from this subset demographic. Lastly, given the additional finding of osteoarthritis and diffuse joint pains, this further convoluted the focus to the left-wrist. Above all, the patient’s history, given prior left-wrist trauma and slowly progressive pain worst within this wrist, were the factors which most reasonably led to such a work-up and diagnosis of Kienbock’s Disease. In any patient with progressively worsening wrist pain, even in setting of a diagnosis which may already explain such pain, Kienbock’s Disease should be considered within the differential, as delayed identification of this disease may result in a significant, irreversible loss in quality of life.
Introduction: Cerebral palsy is the most common motor disability in children. The CDC reports it affects 1 in every 323 children in the US. Although spastic diplegic CP (SDCP) is one of the most common subgroups of CP, its presentation of lower extremity deformities can vary drastically. Thus surgical interventions of lower limb deformities in pediatric patients with SDCP are commonly multilevel and uniquely tailored to the deformity. Unfortunately, lower limb deformities have a high recurrence rate in these patients, necessitating revision surgery. Firth et al. reported recurrent equinus deformity rate (35%) and rate of surgical revision for recurrent equinus (12.5%). Although high recurrence rates, numerous studies have demonstrated that surgical intervention continues to be significantly beneficial in short, medium and long term management when compared to controls (no surgery).

Case Description: The patient is a 10-year-old female with a past medical history of spastic diplegic cerebral palsy (SDCP) that presented to Shriners-Tampa Hospital in June 2018 for evaluation and surgical planning. She underwent chemo-denervation to the right peroneal and right extensor digitorum muscles for equinovalgus foot at Shriners-Tampa in 2014. In 2015, she underwent left Achilles tendon lengthening, split tibialis anterior tendon transfer and split tibialis posterior tendon transfer at Shriners-Tampa for left equinovarus foot. Upon evaluation in June 2018, she wore bilateral ankle-foot orthoses (AFOs), ambulated for short distances with a Kaye posterior walker and used a wheelchair for long distances. She complained of pain in current AFOs and some bilateral foot pain while walking. On physical exam neither foot dorsiflexed to neutral, her right foot was in planovalgus position and left foot in equinovarus position, confirmed by X-ray. With ambulation, she had significant pronation and midfoot break on the right and equinovarus on the left. Due to the anticipated length and complexity, two surgeries were planned for September 2018. The goal of surgery was to allow for more brace-able feet and to facilitate household ambulation. In addition to the likelihood of recurrence, studies have shown that some adolescents with cerebral palsy have a decline in function. The family was made aware and agreed. The patient presented on 09/28/2018 and underwent uncomplicated left deep medial release with pinning of the talonavicular joint, gastrocnemius recession and short leg cast application for left equinovarus deformity. On 10/4/2018 she underwent right calcaneal lengthening osteotomy, gastrocnemius recession, peroneus brevis lengthening, talonavicular capsular plication and short leg cast application for right planovalgus deformity. Follow-up visits in November 2018 confirmed bilateral correction and the patient will be re-evaluated in 3 months following physical therapy.

Discussion: This case highlights the diversity of the orthopedic surgical interventions associated with lower extremity deformities in a pediatric patient with spastic diplegic cerebral palsy. Furthermore, it can be used as a learning tool for future surgical interventions in this population.
Introduction: Majocchi’s Granuloma (MG) is a dermatophytic infection that reveals hyphal elements within the cornified cells of follicles and is most commonly caused by Trichophyton rubrum. However, occasionally other Trichophyton spp., Trichosporon spp., and Aspergillus spp. are involved. There are typically two forms of MG, (I) the small, perifollicular papular form which is usually localized to the dermis and occurs in immunocompetent individuals and (II) a deep form featuring subcutaneous plaques and nodules that generally occur on the hair-bearing surfaces in immunosuppressed hosts. Majocchi’s granuloma also commonly occurs as a result of the use of potent topical steroids on unsuspected tinea.

Case Presentation: A 38 year-old male was seen with a 4-month history of a persistent pruritic nodular plaque on the proximal right index finger. He admitted to pruning roses in the garden but denied trauma. The patient had previously been treated by another clinician with topical fluocinonide 0.05% and clobetasol 0.05% creams, intramuscular methylprednisolone, and oral doxycycline hyclate 100 mg with no improvement. Potassium hydroxide preparations were performed twice, as well as a bacterial culture and sensitivity, with all results returning as negative. Physical examination revealed a 2 cm pink to purple, scaly nodular plaque (Figure, A and B). A punch biopsy was obtained for histopathology with hematoxylin and eosin (Figure, C and D).

Histopathologically, MG generally presents as granulomatous inflammation with perifollicular neutrophilic infiltration. This polymorphonuclear cell infiltrate was visible clinically as a single pustule overlying the nodular plaque, a clue appreciable only on close inspection. Notably, KOH preparations are unreliable diagnostic aids in Majocchi’s granuloma, as evidenced by the 2 negative KOH preparations in this case. According to Chou et. al, because KOH preparation can only detect fungi located in the stratum corneum, the result may be negative for Majocchi’s granuloma due to deeper invasion of the fungi into the dermal follicular component. In fact, KOH preparations of Majocchi’s granuloma may reveal no hyphae in 23.3% of cases. The initiating factor in MG is not entirely known but is thought to be physical trauma that either directly or indirectly leads to follicle disruption and passive introduction of the organism into the dermis. Other proposed mechanisms include the presentation of the membrane-associated ABC transporter on the surface of T. rubrum.

Discussion: Clinicians should note that MG could demonstrate repeated false-negative KOH preparations, so these tests should not be relied on as the sole determination of a diagnosis. While other mycoses such as chromoblastomycosis, sporotrichosis, and M. marinum may all present as nodular plaques with granulomatous pathology, a follicular pustule may be a clinical clue to Majocchi’s Granuloma, as its mimics typically lack folliculocentric neutrophils. The case demonstrates an accurate diagnosis of Majocchi’s Granuloma with resolution of infection after optimal treatment.
Title: A Hiccup in Determining Rare Etiologies of Cholangitic Jaundice: Type 1 Autoimmune Hepatitis


Program: Nova Southeastern University, Dr. Kiran C. Patel College of Osteopathic Medicine, Fort Lauderdale, FL

Introduction: Autoimmune hepatitis (AIH) is a chronic, inflammatory disease that is characterized by damage to the liver as a result of circulating autoantibodies. This disease may progress to chronic liver disease, cirrhosis, hepatocellular carcinoma, and eventual fulminant hepatic failure. Present at any age and in all ethnic groups, AIH occurs predominantly in women. Some patients with AIH may be asymptomatic, but the afflicted may have a variety of different symptomatology, including right upper quadrant pain, jaundice, hepatosplenomegaly and ascites. Other patients may present with non-specific symptoms such as fatigue, anorexia, nausea, abdominal pain, and pruritus. The current accepted pathogenesis of autoimmune hepatitis involves a two-hit hypothesis. An environmental trigger in a genetically predisposed individual leads to presentation of the disease. The diagnosis of AIH is mostly determined by characteristic and serological features, and can be confirmed with a liver biopsy.

Case Description: We present the case of an eighty-year old Egyptian male with a past medical history of type II diabetes mellitus and hypothyroidism, who presented to the emergency department with 5 days of intractable hiccups and fatigue. The patient had just returned from vacation. He initially went to Egypt, during which he had gone swimming in multiple bodies of water and later developed testicular edema. A local physician gave the patient an injection of an unknown medication for his testicular swelling, after which the swelling resolved. Then, while on a 2-week cruise through the Mediterranean, he began to experience symptoms including excessive hiccupping that progressed to projectile non-bilious, non-bloody vomiting. He continued to have 2-3 days of emesis, decreased oral intake and weakness. At that time, he was diagnosed in the cruise ship infirmary with renal failure and sepsis and given unknown antibiotics for 3 days both by mouth and intravenously. After docking, the patient went directly to the emergency department, presenting with scleral icterus, jaundice, and pitting edema in all four extremities. Initial blood work revealed a leukocytosis, transaminitis and normochromic, normocytic anemia. His respiratory viral panel was also positive for enterovirus/rhinovirus. The patient was started on empiric antibiotics. Imaging via ultrasound, ERCP and MRCP was performed revealing stenosis of the biliary papilla. Given the patient’s clinical picture and extensive recent travel history, due diligence was performed to rule out both parasitic and other infectious sources underlying patient’s presenting condition. Serology for anti-smooth muscle antibody was positive with a titer of 1:80.

Discussion: Though liver biopsy would add evidence, compatible clinical presentation, presence of elevated serum aminotransferase, positive autoantibodies with elevated titer, and exclusion of disease with similar presentation is enough to confirm our presumed diagnosis of Type 1 Autoimmune hepatitis. There are no characteristic features on routine imaging, as was consistent with our patient. Initial treatment of individuals with autoimmune hepatitis is with corticosteroids. Immunomodulatory drugs may be used to induce remission and to reduce the side effect profile of systemic steroids. Prognosis for individuals with autoimmune hepatitis is fairly good though they are at increased risk of hepatocellular carcinoma.
Introduction: Merkel cell carcinoma (MCC) is a rare and highly aggressive neuroendocrine carcinoma with etiology related to the Merkel-Ranvier tactile epithelial cells necessary for light touch (Mescher 2016). Approximately ⅔ of Merkel cell carcinomas are caused by Merkel Cell Polyomavirus (MCV) which incorporates itself into the genome of cancerous Merkel cells leading to a monoclonal proliferation - a pattern indicating the virus initially integrates into a single cell (Feng et al 2008). Furthermore, Shuda et al in 2008 demonstrated MCV infected Merkel cells may contain specific T-antigen specific mutations rendering them susceptible to MCV infection and progression to carcinoma (Shuda 2008). Direct evidence for an oncogenetic basis of tumorigenesis was further provided by Houben et al who found via inactivation of protein expression in MCV infected Merkel cells that protein expression was necessary in order to “maintain the tumor phenotype - the so-called oncogene addiction” (Houben et al 2010). The ⅕ of cases not attributable to MCV have an unknown etiology (Schrama 2012), but evidence exists for UV associated mutations “underlying the etiology of MCV-negative Merkel cell carcinomas” (Wong 2015). Although MCC is not a common cancer, incidence in the US has “tripled between 1986 and 2001” to approximately 1400 cases per year (Bichakjian 2007). Merkel Cell carcinomas commonly occur on sun exposed areas such as the head, neck, extremities (8-12), and major risk factors include UV light exposure, advanced age, and immunosuppressed states (Schadendorf 2013). “Immunodeficiency conditions are related both to polyomavirus-associated and to UV-associated MCC, suggesting that immune system’s alteration plays a role in the pathogenesis of both types of MCC” (Barksdale 2017). This case study serves to raise awareness of a rare condition and describe how MCC may be mistaken for similarly presenting neuroendocrine tumors.

Case Description: We present a case of a 78 year old Caucasian woman with past medical history significant for cerebral palsy, CHF, HTN, and DM II who was admitted for evaluation of a mass to the anterior surface of the left mandibular angle and left submandibular area present for the past 1 year with rapid acceleration of growth over 3 weeks prior to admission. The 3 week period resulted in the tripling of size, onset of violaceous coloring, and onset of severe pain. On examination, there was an immobile, erythematous, edematous, and violaceous mass with telangiectasias to the anterior left mandibular angle without fluctuance, bleeding, or discharge. No lymphadenopathy was appreciated on exam. In order to evaluate for metastasis, imaging was performed. CT of the neck found a 4.7 cm x 3.7 cm x 4.6 cm mass without any glandular or bony involvement. MRI of the neck revealed left supraclavicular adenopathy. MRI of the brain revealed no intracranial metastatic disease and no small vessel disease. CT of the chest, abdomen, and pelvis revealed no metastatic disease. A renal ultrasound was significant for a 3.3 cm left renal cyst but no tumor-like masses. An incisional biopsy was performed without complication: a 3cm x 2cm piece of the inferior border of the tumor was excised as a specimen. Initial pathological interpretation of the specimen resulted in a diagnosis of poorly differentiated neuroendocrine carcinoma (small cell carcinoma). CD56, chromogranin, synaptophysin, and pankeratin immunostains were positive in tumor cells.
CD3 immunostain highlighted reactive small T-cell lymphocytes and CD20 immunostain revealed few reactive B-cell lymphocytes. Oncological consult resulted in plan for Carboplatin/ Etoposide therapy and a peripherally inserted central catheter (PICC) was placed for administration of chemotherapy. A 3 day course of Carboplatin/ Etoposide therapy was initiated with plan for subsequent therapy every 3 weeks for a total of 6 cycles. Patient was prophylactically started on a 5 day course of Filgrastin for prevention of neutropenia. Radiation oncology consultation was obtained, resulting in plan for outpatient irradiation of the mass. Dermatological evaluation revealed lesion was suspicious for Merkel cell carcinoma and the pathology specimen was re-analyzed. Histologic sections showed a proliferation of small round blue cells with high N:C ratio and extraordinarily scant cytoplasm. The nuclei were round with stippled chromatin and focal nuclear molding. Additional CK7, TTF1, and CK20 immunostains were performed. TTF1 and CK7 immunostains were negative. CK20 immunostaining was positive for a perinuclear dot-like pattern (figure 2) resulting in an amendment of the diagnosis to Merkel cell carcinoma. Patient was educated, and discharged to a nursing home with plan for irradiation, chemotherapy, and outpatient follow up.

Discussion: Histologically, MCC appears as small, round, blue cells with sparse cytoplasm, medium to large-sized hyperchromatic nuclei, multiple small nucleoli, delicately granular chromatin, abundant mitoses and numerous apoptotic figures. “MCC is occasionally mistaken for other histologically related cutaneous tumors such as small cell lung carcinoma or extra skeletal primitive neuroendocrine tumors” (He 2015). This case study presents an unusual progression of a soft tissue mandibular Merkel cell carcinoma mistaken for poorly differentiated neuroendocrine carcinoma (small cell carcinoma). Once thought to be a benign tumor, Merkel cell carcinoma is a rare malignant neuroendocrine tumor of the skin commonly presenting in elderly males of European descent in areas of UV light exposure. MCC commonly presents as a rapidly growing, violaceous, dome-shaped mass. In 2008, a cohort study following 195 patients found 88% of MCCs were nontender (Heath 2008). Our patient was an elderly female who unusually presented with an initially stagnant phase of growth followed by a rapid enlargement. In addition, the mass was initially painless for approximately an entire year after which it rapidly became painful commensurate with growth. The patient did not suffer from any primary cancers; a characteristic which has been known to significantly increase the risk of MCC (Howard 2006). The patient was not immunosuppressed, another quality which can increase the risk of MCC “up to 24-fold increase compared to the general population” (Clarke 2015). The increased incidence in immunosuppressed patients provides further evidence for a viral etiology of MCC. Due to its atypical clinical picture and positive neurofilament and neuroendocrine markers like synaptophysin and chromogranin, the diagnosis of small cell carcinoma (SCC) was made as it could not be ruled out and is a more common condition than MCC. Due to the suspicious presentation, further testing was done to reveal positive cytokeratin immunohistochemistry (CK20) which is characteristic of MCC and excludes SCC (Shah 1993). Histologically, MCC appears as small, round, blue cells with sparse cytoplasm, medium to large-sized hyperchromatic nuclei, multiple small nucleoli, delicately granular chromatin, abundant mitoses and numerous apoptotic figures. “MCC is occasionally mistaken for other histologically related cutaneous tumors such as small cell lung carcinoma or extra skeletal primitive neuroendocrine tumors” (He 2015). This case study presents an unusual progression of a soft tissue mandibular Merkel cell carcinoma mistaken for poorly differentiated neuroendocrine carcinoma (small cell carcinoma).
Introduction: Substernal goiters are common, with a reported incidence of 1−20% of all patients undergoing thyroidectomy [1,2]. They are typically diagnosed in the 5th and 6th decades of life with a 4:1 female to male ratio. A differential diagnosis of the most common lesions occurring in the anterior mediastinum are often referred to as the "terrible Ts": thymoma, teratoma/germ cell tumor, (terrible) lymphoma, and thyroid tissue. Regardless of pathophysiology or etiology ultimately the management of a mediastinal mass falls to surgical resection.

Case Description: We present the interesting case of a 71-year-old Hispanic female who came to MSMC for evaluation of an anterior mediastinal mass. She complained of SOB and intermittent cough. Her past medical history includes DM-II, Asthma, and airway obstruction. No family history of malignancy. She was a former cigarette smoker with a 40 pack-year history who quit 10 years ago. Vital signs were WNL and the physical exam was unremarkable for pertinent findings. Thyroid panel labs were also WNL. CT showed an 8cm heterogenous mass with calcification in the anterior mediastinum and a PET-CT showed increased FDG uptake by the mass concerning for malignancy.

It was determined to proceed with a Left Robotic VATS with resection and possible sternotomy. The mass was noted to start at the base of the aorta and pulmonary arteries. The dissection was carried up anterior to the innominate vein with all structures preserved until reaching the base of the neck. Two large feeding vessels were noted coming off of the lower pole of the right thyroid that had not been visualized on CT. At this point there was concern that this being a large vessel it would be difficult to ligate it from within the chest and if control was lost the vessel could retract into the neck. The decision was made that a sternotomy was not necessary and that the mass and its blood supply would be removed through a lower cervical collar incision. Both recurrent laryngeal nerves were identified and preserved, and the mass was delivered to pathology. They later confirmed that the mediastinal mass contained thyroid tissue with nodular hyperplasia with extensive sclerosis, hyalinization, and calcifications as well as focal degenerative changes. The patient was discharged on POD#5 with Oscal and Synthroid with no reported complication during her stay.

Discussion: We believe that there is a lesson to be learned from both the unusual presentation of the patient and the prototypical management of it. The pertinent positives and negatives, the imaging and labs, and the physical exam findings all seemed to suggest that this was something other than a goiter. The decision to go straight to resection without prior biopsy of the mass was due to the fact that the patient did not have systemic symptoms worrisome for a lymphoma and on presentation no palpable cervical mass was appreciated (Most patients with substernal goiter (77 to 90%) also have visible goiters [3,4]). This approach reduces the likelihood of worsening the prognosis of thymoma due to seeding 2/2 to biopsy, at the potential increased risk of unnecessarily resecting a lymphoma[5-7]. For these reasons a thoracic approach was chosen over the cervical approach which is the usual indicated procedure even for substernal goiters.
**Title:** Stage 1A Ovarian Cancer and Incidental Finding of an Ectopic Pregnancy in a Nulliparous Woman

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**Introduction:** It is estimated that 5% to 10% of women in the United States will undergo a surgical procedure for a suspected ovarian neoplasm during their lifetime. Of these cases, approximately 13% to 21% will be diagnosed with a malignant ovarian neoplasm (1). With a finding of an adnexal mass in the presence of an elevated beta-hCG, ectopic pregnancy must always be considered. While unreported outpatient treatment makes establishing a true incidence rate difficult, approximately 2% of all reported pregnancies are ectopic (2). Due to the atypical presentation of adnexal masses, maintaining an encompassing differential diagnosis throughout the diagnostic workup is essential for establishing the most appropriate treatment regimen. Furthermore, understanding the surgical indications and requisites for subspecialty consultation of an adnexal mass are essential to ensuring adequate care in these patients.

**Case Presentation:** We present the case of a 35-year-old nulliparous Hispanic female who presented to our facility with a complaint of severe right lower quadrant abdominal pain, which she described as sharp in nature, with radiation to the back. On physical examination, her presenting vital signs were within normal limits, however, severe right adnexal tenderness with guarding on mild palpation was appreciated. The uterus was normal in size, mobile, non-tender with a smooth contour. There was no cervical motion tenderness or vaginal bleeding present. The remainder of the physical exam was unremarkable. Laboratory analysis revealed a mild leukocytosis of 17.0, with a normocytic normochromic anemia (Hgb 10.7g/dL, Hct 30.7%) and an elevated beta-hCG of 3,206.2 MIU/L. Transvaginal ultrasound revealed a complex cystic mass measuring approximately 8.6 x 8.0 x 9.9 cm, with associated fluid within the dependent portion of the pelvis and Morison's pouch. Given the large size of the complex adnexal mass and the presence of a substantial elevation in beta-hCG, a high index of suspicion for an Ovarian Germ Cell Tumor was maintained. The patient was scheduled for ovarian cystectomy with possible ovarian cancer staging. Intraoperative findings revealed 1 liter of hemoperitoneum, a 10 cm right complex ovarian mass adjacent to a ruptured right fallopian tube, consistent with an intratubal ectopic pregnancy. A laparoscopic right salpingo-oophorectomy, omental biopsy, pelvic and para-aortic lymph node biopsy was subsequently performed. Inspection of the abdominal cavity appeared normal, with no evidence of gross metastasis. Post-excision inspection of the cystic mass revealed clear-yellow fluid with white appearing nodularity of the mucosal lining. Pathology confirmed diagnosis of a Serous Borderline Tumor/Atypical Proliferative Serous Tumor with Microinvasion – Stage 1A Epithelial Ovarian Cancer, in addition to an Intratubal Ectopic Pregnancy, Hematosalpinx and Benign Paratubal Cyst.

**Discussion:** The most common adnexal mass in young reproductive age women is Ovarian Germ Cell Tumors (4). Based on our patient’s presentation, this would appear to be the most likely diagnosis. However, adnexal masses may present with atypical signs and symptoms which ultimately raise diagnostic and therapeutic dilemmas. It is imperative that the clinician maintains a comprehensive differential diagnosis, as to ensure that the appropriate diagnostic modalities and treatment regimens are implemented.
Title: Unusual Presentation of BPH: Lower Urinary Dysfunction and Obstruction lead to Bilateral Hydronephrosis and Severe Acute Kidney Injury in Diabetic Male

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Program: Nova Southeastern University Dr. Kiran C. Patel College of Osteopathic Medicine, Fort Lauderdale, FL

Introduction: Benign prostatic hyperplasia (BPH) is one of the most common urological conditions that affect men. Its pathogenesis is linked to aging and the continued prostatic growth within the deep bony pelvis, as it affects 40% of men in their 50s and 90% of men over 90 years old. Clinical manifestation includes urgency, frequency, urinary incontinence, and slow urinary stream. Complications include lower urinary tract symptoms (LUTS), urinary tract infections (UTIs), hydronephrosis, acute urinary retention, and renal failure. The latter problems are especially problematic in diabetic patients, who are already high risk for chronic kidney disease in later life. The mainstay of BPH management includes surgical intervention and pharmacotherapy, however Rezum is a novel, minimally-invasive water vapor procedure that utilizes thermal energy for treatment. This is the case of a diabetic man with BPH, bilateral hydronephrosis, acute kidney injury, and severe urinary retention who was treated with Rezum.

Case Description: This is a case of a 72-year-old Caucasian male with a history of hypertension, hyperlipidemia, hypothyroidism, and diabetes mellitus who presented to the clinic with a chief complaint of intermittent urinary retention and frequency for some time which had gotten worse in the past month. He said that he experiences urgency and frequency to the point where he urinates frequently with low volumes. On questionnaire, the patient had an American Urological Association Symptom Score (AUASS) of 32/35. He stated that his most recent A1c was 6.4.

Upon clinical examination, his testes were palpable bilaterally and were not enlarged. On digital rectal examination, his prostate was enlarged, symmetrical, non-tender, and smooth with no nodules. The patient had an elevated prostate specific antigen (PSA) of 8.8 ng/mL and ultrasound showed 1100 cc of urine in his bladder. A basic metabolic panel showed a blood urea nitrogen (BUN) of 35, creatinine of 2.71 and estimated glomerular filtration rate (eGFR) of 22.

The presentation of acute urinary retention necessitated a prompt urethral catheterization, which drained over 1500 cc. The patient was then managed through medication, a Spanner Prostatic Stent, and decided to undergo Rezum Steam Ablation Therapy of the Prostate. During this procedure, a transrectal ultrasound indicated a 138.58 cc prostate. The patient underwent 15 nine second treatments with the Rezum Steam Ablation Technology. At his 4-month follow-up, this procedure provided symptomatic and functional relief to his problems, as he now has an AUASS of 3/35, a post-void residual of 155 cc, BUN of 21, creatinine of 1.30, and eGFR of 55. He also had follow up renal ultrasounds which demonstrated resolution of his right hydronephrosis, and ultimately a Mag 3 Renal Scan with Lasix demonstrated a non-obstructed left collecting system. The patient is currently being followed up to ensure normalized lab values and clinical stability.

Discussion: This case demonstrates a complicated manifestation of BPH that was treated with the Rezum procedure. Not a current mainstay in treatment, this procedure is gaining traction as a first-line therapeutic solution, as it is cost-effective, low-risk procedure with immediate effects carried out in an outpatient setting. Current literature demonstrates that it can significantly improve quality of life, urinary symptoms, urinary flow rate, and LUTS. Thus, this case provides an example of how the Rezum procedure can treat complicated BPH and provide a viable alternative to surgery and pharmacotherapy.
Title: Stevens-Johnson syndrome in the setting of Sickle Cell Anemia
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Introduction: Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) are a group of rare disorders varying in severity and characterized by extensive necrosis and detachment of the epidermis. SJS and TEN are most commonly caused by antibiotic medications and frequently associated with severe mucocutaneous lesions in the oral, ocular, and genital regions. The pathogenesis of SJS/TEN is a drug-specific reaction of CD8+ cytotoxic T cells against keratinocytes. Mortality rates vary based on the severity of the disease. For patients with SJS, there is a 23% mortality rate, while for patients with SJS/TEN overlap and TEN, the mortality rates were 43% and 49% respectively.

Sickle cell patients develop ischemia when their red blood cells polymerize under conditions of deoxygenation and stress leading to the occlusion of blood vessels. Infarction can cause damage to the spleen, leading to auto-splenectomy and thus increased susceptibility to encapsulated bacterial organisms such as S. pneumoniae, H. influenzae and E. coli. Sickle cell patients are inherently at increased risk of complications from SJS such as multiorgan failure due to vaso-occlusive events and septicemia, this makes the early diagnosis and treatment crucial to decreasing mortality.

Case Description: We present a case of a 38-year-old African American female with sickle cell anemia who presented with 5 days of fever and odynophagia. Odynophagia was characterized as burning with sensation of occlusion in her upper throat upon p.o. food or fluid intake. In addition, she complained of ocular and generalized pruritus. Previous medical history included infection 2 months prior to admission treated with piperacillin/tazobactam and ceftriaxone.

Lab results indicated anemia (hemoglobin 7.8) due to sickle cell crisis. Throughout course of hospital stay, she developed eye redness, hemoptysis and worsening odynophagia. Patient was prescribed Erythromycin optic drops, IV azithromycin and Mycamine for suspected infection. Endoscopy was performed but showed no evidence of pharyngeal abscess. Upon completion of the procedure, the facial skin was easily removed by anesthesia tape and physical exam revealed diffuse hyperpigmented circular rashes on her back that were slowly coalescing. SJS was suspected and the patient was then transferred to the ICU for aggressive IV fluids, IVIG and pulsed steroids. Punch biopsy confirmed extensive necrosis of the epidermis, with vacuolization at all levels of the epidermis, indicative of SJS/TEN spectrum.

Discussion: SJS/TEN is a life-threatening disorder that can lead to massive dehydration, hypovolemic shock and death. A high clinical index of suspicion should be raised in sickle cell patients with symptoms from multiple mucocutaneous regions in order to facilitate prompt treatment.
Title: An Opportunistic Infection in a Patient with Psoriatic Arthritis treated with Apremilast

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Program: Rheumatology Fellowship, Larkin Community Hospital, South Miami, FL

Introduction: Apremilast (Otezla) was first marketed in March of 2014 for the treatment of adults with active psoriatic arthritis. To date, there is no inclusion statement in the package insert stating the possibility of increased opportunistic infection while on the drug based on the Psoriatic Arthritis Long Term Assessment of the Clinical Efficacy (PALACE) study. The PALACE study demonstrates a non-significant, 0.6 and 0.0 exposure-adjusted incidence rate/100 patient years of opportunistic infection in placebo vs Otezla, respectively. The ACTIVE trial produced consistent safety profile results. Apremilast is an immunomodulating drug, which is a small molecule inhibitor of phosphodiesterase 4(PDE4) specific for cyclic adenosine monophosphate (cAMP), administered orally. By inhibiting PDE4, intracellular cAMP levels are increased. Though the exact mechanism of action is not known, the PALACE study evaluation of biomarkers revealed an increase in anti-inflammatory mediator (IL-10) and a decrease in pro-inflammatory mediators TNF-alpha, IL-17A and IL-23. Although no increased risk of opportunistic infections was identified, alterations in inflammatory cytokine levels were observed. There is a potential this alteration of the inflammatory milieu has immunosuppressive effects.

Case Presentation: A.P. is a 71 year old male with PMHX of psoriatic arthritis, psoriasis, a history of aortic valve replacement (2015), maxillary osteotomy (1983), and tonsillectomy (1952), who presented with opportunistic Streptococcus salivarius bacteremia while on Otezla. Pt was initially diagnosed with psoriatic arthritis in 1981 and previously had been on multiple NSAIDS, Methotrexate (2-3 years), and Humira (starting in 1995). Humira was stopped for patient preference as he was concerned for potential cardiovascular side effects. He was switched to Otezla on 6/10/2015. Five months later he had an aortic valve replacement for symptoms that predated Otezla initiation. The procedure was performed without incident. Pt remained on Otezla with no noted toxicities or side effects until three years later. With no provoking factors, he developed low grade fever and chills in July of 2018. Blood cultures were performed and he was found to have Streptococcus salivarius bacteremia, a known opportunistic pathogen. He was placed on IV Rocephin from 7/25/18 thru 9/7/18. TEE and TTE were both negative. Otezla was withheld 8/29/18 while on treatment for bacteremia. This potential side effect was reported to the FDA by MedWatch.

Discussion: This case identifies an opportunistic infection in a patient on Otezla. Contrary to previous thought, the decrease in pro-inflammatory mediators TNF alpha, IL-17 and IL-23 in Apremilast may create immunosuppressant effects. Caution should be used and further studies should be performed in this area.
Title: Squamous Cell Carcinoma of the Vagina: A Routine Way to Diagnose a Rare Carcinoma

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Program: Nova Southeastern University, Dr. Kiran C. Patel College of Osteopathic Medicine, Fort Lauderdale, FL

Introduction: The majority of malignancies associated with the vagina arise from metastases from distant sites, most typically the cervix and endometrium. Thus, primary neoplasms of the vagina are less common, encompassing only 3% of cancers affecting the female genital tract. Squamous cell carcinoma of the vagina, one subtype of such primary vaginal cancers, is a rare, malignant condition that affects the skin and mucosal membranes of the vagina. It is diagnosed in one out of every 100,000 women and found in either women in their twenties or those who are older than sixty years of age. HPV infections are commonly seen alongside squamous cell carcinoma of the vagina, as well as cervical cancer. HPV subtypes 16 and 18 are present in about 50 percent of individuals with these cancers. Both vaginal and cervical cancers also share many other risk factors, such as history of smoking and having multiple sexual partners throughout one’s lifetime. Although about 20% of women with vaginal squamous cell carcinoma do present asymptptomatically, the most common clinical sign is vaginal bleeding, typically following sexual activity or menopause. Some women have also noticed a mass in their vagina, although these tumors can present in various ways, such as nodular, indurated, endophytic, exophytic, or ulcerative. As a rare disease with a wide variety of presentations, understanding the complexity of vaginal squamous cell carcinoma can aid in early detection and better patient outcome.

Case Presentation: We present a 56-year-old Caucasian female with a past medical history significant for a 20-year history of HIV, as well as high grade squamous intraepithelial lesions (HGSIL) of the cervix, and cervical squamous cell carcinoma in situ, both of which were diagnosed in June 2017. The patient underwent a total abdominal hysterectomy (TAH) and bilateral salpingo-oophorectomy, however, she did not obtain further evaluation of her gynecological conditions until June 2018. At that time, she was assessed by her primary care physician and received her annual Pap smear which indicated HGSIL with moderate and severe dysplasia, graded CIN 2/3. The patient presented to the gynecology clinic at Broward Health Medical Center for a follow-up appointment and scheduled colposcopy.

Upon colposcopy, patient was found to have a large, papillomatous lesion on her vagina, of which three biopsy samples were obtained. Per pathology, the vaginal biopsies showed an extensive presence of squamous cell carcinoma, encompassing the entire specimen. In situ invasion was unable to be excluded. Patient was discharged prior to biopsy results and scheduled for follow-up in a few weeks.

Discussion: Although our patient has a history of a TAH, what makes this case of significance is that it was imperative that she receive her routine Pap smear as it led to a positive colposcopy result for squamous cell carcinoma of the vagina. As per ACOG guidelines, patients who have had prior cervical carcinoma with subsequent TAH should receive routine Pap smears as they are at increased risk for vaginal cancer. However, this patient lacking many of the risk factors that would increase her chances of contracting vaginal cancer, including her asymptomatic presentation, negative tobacco history, and young age, makes the case even more unique. Encountering cases such as this emphasizes the importance of performing routine vaginal screenings for patients who have a history of a TAH.
Gastrointestinal stromal tumor of the rectum with metastasis to the liver in a patient with high grade endometrial carcinoma: report of an unusual case

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Introduction: Gastrointestinal Stromal Tumors (GIST) are the most common type of mesenchymal neoplasms of the gastrointestinal (GI) tract, yet only account for 1% of all primary GI cancers. Most occur in the stomach (60%) or small intestine (35%), but rectal GIST account for only 4% of all cases. The aggressiveness and malignant potential of GISTs are highly variable based on size, location and mitotic activity, but advances in molecular profiling (including identifying KIT and PDGFRα mutations) have helped develop targeted chemotherapy to improve prognosis in patients with this mesenchymal neoplasm.

Case Description: We present the case of an 82-year-old Caucasian female who initially presented with severe posterior abdominal pain, as well as a 6-month history of postmenopausal vaginal bleeding. Further workup revealed a large pelvic mass that was associated with the rectosigmoid junction and uterus. Subsequent biopsies of this pelvic mass and a liver mass (that was discovered on PET-CT), were consistent with GIST of the rectum with metastasis to the liver. Immunohistochemistry revealed a spindle cell neoplasm that was positive for CD 34, CD 117 and caldesmon. The proliferation rate with Ki-67 was 3% and mitoses were inconspicuous, with no tumor necrosis recorded. Flow cytometry did not reveal any immunophenotypic abnormalities. At this point, the patient opted to undergo elective surgery, involving total abdominal hysterectomy and bilateral salpingo-oophorectomy, and resection of the pelvic mass. Deep pelvic exploration during resection of the rectal GIST indicated the need for a Hartmann procedure and creation of an end colostomy. Re-anastomosis was not possible due to the fact that only 2 cm of the rectal stump remained. Other indicated procedures included bilateral internal iliac lymph node dissection, incidental appendectomy and liver biopsy. Surgical pathology revealed high grade carcinoma of the endometrium with serous and clear cell features involving the right and left ovary, high grade GIST of the 12.3 cm pelvic tumor arising from the rectal wall with benign pelvic lymph nodes, benign right and left iliac lymph nodes, benign liver biopsy, and benign appendix with acute serositis. With an uncomplicated post-operative course, the patient was discharged with instructions to follow-up with surgery, gynecology and oncology. Because this patient's GIST was positive for CD34 and CD117 with an exon 11 KIT mutation that is characteristically more responsive to tyrosine kinase inhibitor therapy, oncology recommended starting adjuvant chemotherapy with imatinib for at least 6 months, as well as seeking out clinical trials at tertiary cancer centers for her unique clinical diagnosis.

Discussion: This case highlights a unique presentation of rectal GIST metastatic to the liver, in conjunction with high grade endometrial carcinoma. Treatment included surgical resection, adjuvant imatinib, and ongoing clinical trials. A clinical hallmark our patient exemplified is the fact that many pelvic GISTs initially present as gynecologic malignancies, frequently leading to misdiagnoses and differentials that exclude mesenchymal neoplasms of the GI tract. Our case also demonstrates the utility of current treatment guidelines recommending resection of large tumors that are symptomatic. Advances in molecular profiling that allow for tailored chemotherapy are highlighted here, as well.
Introduction: Epiploic appendages are 1-2 cm wide to 0.5-5.0 cm long, fingerlike projections, composed of fat. The average adult has 50-100 such appendages which are located throughout the colon, running parallel on both sides to the taenia coli. Each appendage is vascularized with 1-2 arterioles and one venule with its function currently unknown at this time. Epiploic appendagitis (EA) is an ischemic infarction resulting from torsion or venous thrombosis of an appendage that presents with non-specific symptoms. EA presents more commonly in men with an average age in the 40s. Patients most commonly present with abrupt onset of lower abdominal pain with potential symptoms of fever, nausea, vomiting, and early satiety. Though no specific laboratory findings, leukocytosis may be present. Diagnosis is primarily made via CT scan with US and MRI also being utilized. With non-specific symptoms and the nature to mimic acute appendicitis or diverticulitis, a correct diagnosis is made approximately 2.5% of the time.

Case Description: A 47 yo female with PMHx of paroxysmal atrial fibrillation with alternating sinus bradycardia presents to the ED with a 5-hour history of progressive, diffuse abdominal pain. The patient reported nausea, pain relief with meals, and normal bowel movements. Patient risk factors include obesity and noncompliance with daily aspirin. Abdominal exam was soft with significant tenderness of lower left, suprapubic and left lateral periumbilical region, obesity and no rebound or guarding. The patient was admitted due to minimal pain relief with IV morphine. Labs were within normal limits with exception of hemoglobin 11.4 and AST 64. Abdominal CT showed inflammatory stranding in the lower left quadrant, a nodular density of 18mm cephalad to the stranding, and a normal sigmoid colon. Comparison to a previous CT study revealed the same finding was present, but larger and not inflamed. Subsequent MRI showed enhancement and edema in lower left quadrant mesentery corresponding to the CT study and suggesting the diagnosis of EA. On hospital day 2, the patient’s pain was controlled with toradol. However, it became worse 1 hour after eating solid food. The patient was initiated on steroids to reduce inflammation, IV morphine for pain, and NPO diet with resultant pain tolerability. The next day, the patient tolerated liquids well and rated pain as 4/10 with mild nausea. The patient was discharged after tolerating bland diet. At a follow up visit 6 days post-discharge, patient reported resolution of abdominal pain.

Discussion: EA is a rare condition that is commonly missed. Prompt imaging studies and the ability to rule out acute appendicitis and diverticulitis should raise suspicion for EA. This patient’s unusual presentation and progression shows the elusiveness of EA. In the literature, Sand et al has also reported patients diagnosed with EA presenting with abdominal pain without nausea, vomiting, fever, or abnormal lab values. Because of its benign and self-limiting nature, proper diagnosis is essential in order to avoid unnecessary surgery. Conservative management with anti-inflammatory medications and non-surgical options are generally accepted treatments and resulted in the proper treatment regimen for this patient. With a self-limiting course and a low risk for further complications, patients are able to return to full function within 14 days.
**Title:** Cerebrovascular Accident Secondary to Left Ventricular Noncompaction Cardiomyopathy: A Case Report of a Rare Disease

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**Introduction:** Left Ventricular Noncompaction (LVNC) is a rare disease with a reported prevalence of ~0.014%. Although, it is important to identify the disease, avoiding complications such as arrhythmia, AV block, cerebrovascular accident (CVA), or death is essential. With a potential congenital cause for cardiomyopathy, screening family members and follow up care with a cardiologist helps avoid life-threatening symptoms or hospitalization. Complaints of dyspnea or symptoms indicating a CVA may be complications secondary to LVNC. Thus, identifying and management of the primary disorder could prevent these occurrences.

**Case Description:** This is a 26 year-old male with a past medical history of asthma and unexplained TIA/CVA 6 years ago, who presented to the emergency department with slurred speech and right arm numbness. On arrival, his neurological symptoms had resolved. The patient had complained of worsening shortness of breath on exertion for two weeks, with generalized weakness and fatigue, increasing the use of his inhaler. He admitted to experiencing chest tightness. He denied any prior history of cardiac disease aside from a cardiac murmur present since childhood. The patient also denied any family history of heart disease but stated his father had a CVA at 40 years of age with an unspecified cause.

The patient underwent CTA head and neck which were negative for any acute intracranial abnormality. It showed no acute infarct or hemorrhage, dissection, stenosis, aneurysms, or occlusions. CTA did not show any signs of pulmonary embolism but demonstrated a prominent cardiomegaly with asymmetric left atrial enlargement and small right pleural effusion with bilateral interstitial and alveolar pulmonary edema. Chest x-ray was suggestive of cardiomegaly. Troponin on admission was found to be 5.4, which prompted a consultation to cardiology. NSTEMI protocol was initiated and left heart catheterization was performed, which revealed non-obstructive disease of his coronary arteries.

Transthoracic echocardiogram was suggestive of Left Ventricular Non-Compaction cardiomyopathy with severely reduced EF < 20% with LV apical thrombus measuring 1.3 x 0.8 cm. Cardiac MRI was performed and confirmed the diagnosis of LVNC cardiomyopathy with increased trabeculations in the apex of the left ventricle. Further workup with MRI brain revealed acute to subacute CVA in the left peninsular region extending to the frontotemporal cortex and subacute infarcts in the right posterior parietal lobe and middle frontal gyrus. Per cardiology, patient was started on HFrEF therapy for LVNC.

**Discussion:** This case illustrates the need of working up and screening for LVNC, in particular in a patient with a family history of unexplained CVA.
Title: “Knot” expected – knotted femoral transvenous pacing catheter requires surgical removal

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Introduction: Temporary cardiac pacing utilizes electrical stimulation to treat bradyarrhythmia or tachyarrhythmia. Temporary pacing is most commonly used for patients with symptomatic bradyarrhythmias, most frequently atrioventricular block [1]. The list of indications for temporary cardiac pacing includes acute, reversible causes such as: myocardial infarction, electrolyte disturbances, cardiac trauma, and heart block. Temporary pacing via a transvenous approach is the preferred method for most clinicians. The transvenous approach offers advantages such as improved patient comfort and improved durability as compared to transthoracic or epicardial approaches [2]. Complications with temporary cardiac pacing can be associated with vascular access, the transvenous leads, or electromagnetic interference.

Case Presentation: A 74 year-old female was brought to the ED due to unresponsiveness and bradycardia. The patient had been transcutaneously paced en route to the hospital by emergency medical services. Upon arrival to the ED the patient’s vitals were as follows: heart rate 40 bpm and blood pressure 96/44. Following admission cardiology was consulted and recommended transvenous pacemaker implantation. At some point within 24 hours of the patient being admitted she was paced transvenously through the right femoral vein using a PACEL flow directed pacing catheter. Following right femoral vein access, there were some difficulties and adequate pacing was not achieved. Cardiology proceeded to access the right internal jugular vein in an effort to pace the patient transvenously. After stabilizing the patient and successfully pacing her transvenously via the right internal jugular vein, an attempt was made to withdraw the initial PACEL catheter from the right femoral vein. Due to difficulty in the removal process, the decision was made to consult vascular surgery to remove the catheter intraoperatively. Once in the operating room, an incision was made in the right groin and the pacing catheter was identified and noticed to be traversing through the right femoral artery and into the right femoral vein. There was an attempt to remove the catheter with gentle traction but the catheter was not moving. A longitudinal venotomy and small arteriotomy was done and the PACEL catheter was found to be in several knots and was removed in one piece (Fig. 1). The artery and vein were repaired and the patient was taken to the recovery room in stable condition.

Discussion: The scenario presented in this case is unique, as many clinicians involved in the case had never encountered this complication previously. There are several possibilities for the catheter knotting, including operator failure of the guide wire’s orientation, leading to coiling. There may have lack of ultrasound guidance usage to identify the femoral vein and the guide wire advancement. There are also several possibilities for the catheter traversing femoral vein and artery, including incidental puncture of the femoral artery via trocar needle. Also, a post-procedural chest radiograph may have identified catheter coiling, allowing clinicians to anticipate a complicated removal.
Introduction: Schwannomas are defined as benign tumors derived from Schwann cells within the peripheral nerve sheaths. They are typically found within cranial nerves, peripheral nerves, or spinal roots. Histopathologic characteristics include presence of alternating areas of compact spindle cells arranged in fascicles divided into Antoni A or Antoni B. A systemic review by Bohlok et al reported that schwannomas of the gastrointestinal tract account for 2-6% of all mesenchymal tumors. Schwannomas within the gastrointestinal tract are more commonly found 80% of the time within the stomach, and 10-15% within the small intestine. They are very infrequently found within the colon or rectum. We present the case of an 88 year old female with a known sigmoid mass who underwent a laparoscopic surgical resection and was diagnosed histologically with a schwannoma of the sigmoid colon.

Case Description: We present the case of an 88-year-old woman who presented to the office a year and a half ago and was found to have a sigmoid mass while undergoing work up for complaints of chronic abdominal pain. Patient was reluctant to undergo surgery at that time but eventually underwent laparoscopic rectosigmoid resection. Past medical history was significant for diverticulitis, breast cancer, atrial fibrillation, hypertension, and obesity. Surgical history included coronary stents, atrial fibrillation ablation, hysterectomy, and left breast mastectomy. Physical examination during the visit was benign and demonstrated no tenderness. Most recent CT scan with contrast revealed a 6 cm lobular mass extending from the sigmoid colon along with sigmoid diverticulosis. Patient underwent a laparoscopic rectosigmoid resection with low pelvic anastomosis. Histologic evaluation of the mass described a spindle cell neoplasm consistent with schwannoma. Immunostaining was positive for S100, SOX10, CD56, and beta catenin. Negative for SMA, myosin, CD117, Dog1, pancytokeratin, CD34, and Calretinin. Staining pattern practically excludes the possibility of a gastrointestinal stromal tumor. Gross examination of the mass reveals a nodular, bilobed mass measuring 6 x 2.5 x 2.5 cm.

Discussion: As previously discussed, schwannomas are rarely found within the gastrointestinal system, and least likely to be found within the sigmoid colon. Schwannomas within the gastrointestinal tract often present as spindle cell tumors and originate from Auerbach’s myenteric plexus more often than Meissner’s submucosal plexus. Grossly, the origin may be determined based on the character of the mass. Schwannomas derived from Auerbach’s plexus present as non-pendunculated, oval-shaped, submucosal masses. Whereas they present as pedunculated polypoid lesions masses if originating from Meissner’s plexus. Through this case report we hope to shed light on the slow progression of the disease by the demonstrated by minimal growth on serial CT scans. Progression of the disease is poorly understood due to limited long term data and case reports. Though typically benign, there is a 2% incidence of progression to malignant transformation and therefore surgical resection is typically indicated as the primary treatment.
**Title**  
Epidural Abscess secondary to BCG Instillation Therapy for Transitional Cell Carcinoma In Situ

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**Introduction:** Bacille Calmette-Guérin (BCG) is a live-attenuated strain of *Mycobacterium bovis* that historically been used for immunization against tuberculosis. Since 1971, it has gained more prominence and has become the mainstay of superficial non-invasive bladder cancer. The treatment is considered safe; however, adverse reactions do occur including fever and cystitis. Other systemic complications, although less common, include sepsis, hepatitis, pneumonitis, osteomyelitis, abscess, and prosthetic joint infections. Here we present a case of vertebral abscess with cord-compression in a patient with a known history of BCG intervention for his bladder cancer treatment.

**Case Description**  
Here we present the case of aged 86 white male with known osteoporosis; untreated vertebral compression fractures; and transitional cell carcinoma in situ treated with multiple fulgurations and intravesical BCG therapy immunotherapy (3 year duration). The patient did not report any fevers, chills, night sweats, hematuria, and/or or any iatrogenic operative complication post-BCG therapy. He denied having radiation, chemotherapy or other surgical intervention and was in remission at time of presentation. He endorsed progressive weakness of two weeks’ duration and experienced multiple falls; he required full ambulatory support. He denied incontinence of urine and stool. Physical exam revealed markedly decreased lower extremity muscle strength with decreased reflexes bilaterally, and intact sensation and anal sphincter tone. MRI studies demonstrated subacute compression fractures of T10 and T11, most severe at T10, with a ventral epidural mass causing severe spinal canal stenosis and thoracic spinal cord compression. He underwent an emergent decompressive thoracic laminectomy (T9-T11) in addition to having a resection of his ventral epidural mass (T10-T11). The surgical pathology report noted a necrotizing granulomatous inflammation with acid fast organism, negative for fungal and carcinoma. Pathology report demonstrated rare acid-fast bacilli with immunostaining Mycobacterium species and molecular evidence of M. tuberculosis complex. A nine-month treatment was initiated with first two months of rifampin, ethambutol and isoniazid; the remaining seven months’ treatment included rifampin and isoniazid.

**Discussion**  
To date, 22 cases of BCG-related infection have been reported with varying time-frame with respect to BCG treatment and onset of symptoms. Reported risk factors for complications include transurethral resection of the prostate or bladder, trauma from catherization, deep bladder tumor resection, hematuria, bladder outlet obstruction, and radiation to the pelvis. The only notable risk factor here is advanced age. Fulguration therapy for urothelial tumors has been in practice since the early 1900s and is considered low risk for bladder wall damage as it delivers heat current to a targeted area. It minimizes uroepithelial lining breaks as occurs with surgical excision, and also does not pose any immunosuppressive effects as with chemotherapy. Thus fulguration therapy, although the least damaging, most likely created the necessary conditions that induced the hematogenous spread of *M. bovis* from the BCG vaccine. It is documented in the literature that breaks in the urogenital epithelium lining is a risk factor for disseminated infection with BCG. As a risk mitigation strategy, BCG doses could be reduced, but long-term
outcomes have not been adequately studied and warrants further investigation. Additionally, while there have been case-reports which highlights risk-factors, to-date, a retrospective analysis of dose-response, dose-duration, risk factors, and development of disseminated BCG have not properly investigated. Further analysis into treatments of bladder tumors as risk factors with concurrent intravesical BCG therapy is necessary and may help to lessen the occurrence of disseminated BCG infection.
Paraplegia Following Endovascular Aneurysm Repair of Abdominal Aortic Aneurysm

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Introduction: Endovascular aneurysm repair (EVAR) of abdominal aortic aneurysm (AAA) is a less invasive alternative approach to open abdominal surgery in which a stent graft is placed in the aorta to act as an artificial lumen and exclude the aneurysmal sac utilizing minor surgical incisions and following the venous supply. It has become first line therapy for elective repair of AAA due to the significant decrease in perioperative morbidity compared to open abdominal surgery. However, there is risk of rare and devastating complications including spinal cord ischemia (SCI) resulting in paraplegia. The current literature reports the incidence of paraplegia secondary to SCI as approximately 0.21% after EVAR. We report a case of a patient who suffered immediate paraplegia secondary to SCI after an elective EVAR.

Case Description: A 62 year old male with a history of tobacco abuse, coronary artery bypass graft, and hyperlipidemia was found to have a 6 cm infrarenal AAA on outpatient ultrasound screening. The patient complained of mild abdominal pain as well as claudication. Computed tomography angiography (CTA) confirmed a fusiform infrarenal AAA with symmetric thrombus and extensive calcified and noncalcified atherosclerotic plaque throughout the aorta and its branches. There were no signs of dissection. EVAR was performed under general anesthesia using a Unibody bifurcated device and proximal extension prosthesis. The device was deployed just below the level of the renal arteries obtaining a complete seal of the AAA with no evidence of residual blood flow in the aneurysm sac. There were no complications or signs of hypotension during the procedure. Immediately post-op, the patient was unable to move his lower extremities bilaterally, however, sensation was intact. CT brain, chest, and abdomen revealed no acute process. MRI of the thoracic spine revealed spinal cord infarct at T8 with hemorrhagic conversion. A lumbar drain was placed to maintain an intracranial pressure between 5-15mmHg and steroid therapy was initiated. Subsequent physical exam revealed absent reflexes, motor activity, muscle strength, and decreased sensation to the lower extremities bilaterally. The patient also endorsed paresthesias, urinary, and fecal incontinence. Physical therapy was initiated with minimal improvement in motor function. The patient was transferred to an inpatient rehabilitation facility to undergo aggressive therapy and medical observation with the attempt of regaining some motor function and muscle strength.

Discussion: The mechanism of SCI resulting in paraplegia is not fully understood, however, it is thought to occur as a result of occlusion of the artery of Adamkiewicz (the primary blood supply to the anterior two-thirds of the spinal cord), prolonged aortic clamping, intraoperative hypotension, atherosclerosis, embolization, and interference with the collateral circulation from the pelvis. The management of SCI is based on our current understanding of thoracoabdominal aorta repair and includes cerebrospinal fluid drainage, steroids, and preventing hypotension with the goal of improving spinal cord perfusion and reducing edema. As EVAR has become a valuable alternative surgical intervention in treating AAA, it is important that we understand the pathophysiology and risk factors for the rare complications that may occur.
Introduction: Malignant hyperthermia is a rare, hypermetabolic phenomenon most often associated with volatile general anesthetic gases and/or succinylcholine during the perioperative or postoperative period. Affected patients have an inherited mutation of the ryanodine or dihydropyridine receptor gene causing excessive skeletal muscle contraction and overheating, leading to a hypermetabolic state with sympathetic nervous system activation which manifests as increased heart rate and respiratory rate. If untreated, malignant hyperthermia can lead to disseminated intravascular coagulation, multi-organ failure and death. Thyrotoxicosis, or “thyroid storm” can similarly present with increased heart rate, respiratory rate, and body temperature. In a patient with undiagnosed hyperthyroidism disease, it may be difficult to distinguish from malignant hyperthermia in the perioperative setting.

Case Presentation: We present a case of a 32-year-old female who was scheduled for a bilateral tubal ligation in an outpatient ambulatory care center. Patient denied any pertinent past medical or family history. Review of systems was grossly unremarkable aside from anxiety and depression, for which she was on a daily antidepressant and Xanax as needed. On primary survey, her airway was patent with a Mallampati score of 2, full ROM of cervical spine, and an oxygen saturation of 97% on room air. Heart rate was 89 bpm with a blood pressure of 137/77 mmHg. Clinically, the patient appeared calm and hemodynamically stable. Patient was given Propofol and Succinylcholine with Midazolam and Fentanyl on induction. General endotracheal intubation was attempted by the nurse anesthetist but was unsuccessful and was followed by a drastic drop in O2 saturation to 70%. Her heart rate jumped to 135 bpm and blood pressure rose to 160/106 mmHg. A repeat intubation was attempted by the anesthesiologist followed by insertion of a Laryngeal Mask Airway. Her heart rate continued to climb into the 170s and end-tidal CO2 rose to 85 mmHg. No arrhythmias were noted and temperature remained stable throughout the case. The patient was hyperventilated and additional Propofol and Fentanyl were given. The patient's general practitioner was contacted and a history of thyroid disease was revealed. Upon initiation of beta blockers, the patient’s status returned to baseline and the case was completed in 10 minutes.

Discussion: Malignant hyperthermia and thyroid storm may present similarly in a perioperative setting. It is crucial to differentiate between the two as both are life-threatening and require different treatment modalities. The patient’s stable temperature and lack of cardiac instability such as arrhythmias suggested a diagnosis of thyroid storm rather than malignant hyperthermia.
Title: A Rare Case of Metastatic Vaginal Melanoma
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Introduction: Melanomas are aggressive, malignant tumors that arise from pigmented cells called melanocytes. Cutaneous melanomas are the most common subtype of melanoma and sun exposure is known to be the major risk factor in its development. However, melanomas can arise from any site with melanocytes, including mucosal tissues of the respiratory, gastrointestinal and genitourinary systems. Among melanomas, primary melanomas of the female genital tract account for 1%. Vulvovaginal melanomas have a worse prognosis than other cutaneous and mucosal melanomas, with the 5-year survival ranging from 27% to 58% for vaginal and vulvar melanomas, respectively. Up to 40% of patients present with metastasis, due in part to the vast lymphatic and vascular network of the vaginal mucosa, contributing to the poor outcomes. The most common sites of metastasis are to the pelvis, lungs, liver and brain. Vulvovaginal melanomas have increased gene mutation rates of BRAF (26%), KIT (22%) and adenomatosis polyposis coli (APC) (10%). If resection is possible, surgery remains the primary treatment strategy for vulvovaginal melanoma. It is frequently combined with adjuvants such as radiotherapy, chemotherapy and immunotherapy for advanced disease. In poor surgical candidates, these modalities are the mainstay of treatment; though survival remains dismal despite choice of treatment.

Case Presentation: We present a case of a 93-year-old Hispanic female who presented for evaluation of post-menopausal bleeding. On examination, a 3.3cm ulcerated lesion was found in the distal, posterior right labia majora. The lesion was biopsied and found to be malignant melanoma, epithelial type – Stage 1B (cT1b cN1 cM0). Upon diagnosis, a metastatic work-up including CT and PET scans were completed – there was no evidence of metastatic disease, nodal involvement, or areas of hypermetabolic activity. She promptly began radiation therapy and immunotherapy with Pembrolizumab. Five months after diagnosis, a PET-CT scan was done to evaluate response to radiation and immunotherapy – a new hypermetabolic right inguinal node, liver and bone metastases were found, consistent with progression of disease. Ipilimumab and Nivolumab immunotherapies were added after the discovery of the new metastatic lesions. The patient was tolerating all therapies well, except six months after diagnosis, she began to have abdominal pain, headaches, and weight loss. Abdominal pain became intolerable for the patient, she was admitted to hospital, and found to have elevated liver function enzymes. A CT scan found extensive hepatic metastatic lesions with associated focal acute hemorrhages and a right perinephric metastatic lesion with associated hemorrhage. She was closely monitored and remained hemodynamically stable, therefore embolization was not recommended. To evaluate etiology of her headaches, MRI brain was done – it showed small lesions in right frontal and left parietal calvarium, right middle cranial fossa and right anterior clinoid concerning for intracranial metastasis. Patient opted to be discharged, discontinue immunotherapy and care was assumed by the Palliative Care team.

Discussion: This case demonstrates the insidious nature of metastatic vaginal melanoma. Traditionally, the medical community emphasizes the ABCDEs of melanoma and the correlation of ultraviolet exposure to skin cancer. This case challenges this approach and raises awareness to the somewhat “unconventional” presentations of melanoma. Awareness of the range of presentations of melanoma and how to approach work-up of neoplastic lesions is crucial, as early recognition, diagnosis and treatment leads to improved patient outcomes.
Introduction: Prostate cancer is the most common cancer amongst males aged 65 yoa and older. While prostate cancer itself is considered very common amongst males, only 6% of individuals will present with progression to metastatic prostate cancer. While the incidence of low-risk prostate has gradually decreased in the recent years, the annual incidence of metastatic prostate cancer has increased. Due to the rarity of metastasis, the diagnosis for this disease may be difficult to make. Presentation is typically asymptomatic, but could present with hematuria, hematospermia, or rarely, bone pain. Workup includes modalities such as PSA levels, MRI, and Transrectal Ultrasound with the gold standard for diagnosis being biopsy. Treatment consists of chemotherapy and surveillance of PSA levels every 6 months for the first 5 years and every year after. Undiagnosed prognosis of the disease could present to be grim as the 5-year survival rate for patient with bone metastasis is only 3%.

Case Presentation: Herein we present a case of a 64-year-old Caucasian male who presented to the hospital with severe dyspnea on exertion, progressively getting worse for the previous 3 weeks. Associated symptoms included bilateral leg edema, leg cramps and red-colored urine. Initial vitals were a HR of 103, RR 27, BP 111/98 and O2 sats of 92% on room air. Exam revealed an obese male in moderate distress, conversational dyspnea, tachypneic, and decreased breath sounds at bilateral lung bases. Patient is also noted to have obvious scleral icterus, jugular venous distention, hepatomegaly and 2+ pitting edema of lower extremities. Investigative diagnostics included an EKG which showed an S1, Q3, T3 pattern and right axis deviation. An echocardiogram showed severe pulmonary hypertension of 80 mmhg and enlarged hypokinetic right ventricle. CT angiogram showed nodules in the right lung apex and the lingula, along with airspace infiltrates bilaterally. Nuclear medicine bone scan found uptake in the calvarium, jaw, shoulders, right humeral shaft, ribs, left forearm, sternomanubrial region, thoracolumbar spine, femoral shafts, proximal femur, anterior pubic rami, and urinary bladder. Prostate Specific Antigen (PSA) levels were 16ng/ml. The patient was diagnosed with metastatic prostate cancer. The patient was initiated on chemotherapy with abiraterone and was also started on allopurinol and furosemide. At last follow up, patient continued to do well with a normalized CT scan of chest, and PSA had remained less than 1 ng/ml.

Discussion: The increased incidence rates of metastatic prostate cancer along with the obscure and the generalized presenting symptoms of this case illustrate the necessity for physicians to accurately recognize and manage advanced prostate cancer.
Title: Kaposi Sarcoma and Cytomegalovirus: Concurrent AIDS-defining Illnesses Within a Single Patient


Program: Nova Southeastern University Dr. Kiran C. Patel College of Osteopathic Medicine, Fort Lauderdale, FL

Introduction: Kaposi Sarcoma is caused by human herpes virus 8 (HHV8) which affects immunocompromised individuals. Cytomegalovirus (CMV) is an opportunistic infection that is a risk for both transplant patients and immunocompromised patients. The presentation of each of these diseases is unique and can be diagnosed with PCR testing and biopsy. If these processes are occurring acutely in the same patient, the pursuit of one diagnosis can delay the diagnosis of the other. We present a patient with diagnosed Kaposi sarcoma who developed a rectal mass. The etiology of the rectal mass was equivocal, however, the possibility of a concurrent AIDS-defining illness was not considered at the time of presentation. Biopsy later revealed that the mass was of CMV etiology. In the future, clinicians should have a high index of suspicion for concurrent presentations of AIDS-defining illnesses within the same patient.

Case Presentation: We present a 38-year-old male with a past medical history significant for HIV, on HAART therapy, but noncompliant for the past year, with an AIDS-defining illness of Kaposi sarcoma status-post chemotherapy for 3 months. Patient presented to Broward Health Medical Center complaining of 1-month history of progressively worsening nausea, vomiting, and inadequate P.O. intake, with at least six episodes of non-bloody, non-bilious emesis daily in the few days leading up to admission. CT of the abdomen revealed fullness of the rectum and pelvic floor concerning for malignancy, and splenic enlargement. An upper GI series was performed that showed a high-grade obstruction of the fourth aspect of the duodenum.

Upon further questioning, the patient also revealed to be experiencing bright red blood per rectum and darkened stools for the past few months; a fecal occult blood test was negative. Colonoscopy revealed a distal rectal mass which, after biopsy, was positive for cytomegalovirus. Patient was subsequently started on an induction dose of Ganciclovir for 14 days, before being transitioned to a 4-week course of Valganciclovir BID. The patient was extensively counseled on the importance of remaining compliant with his medications, most importantly his HAART therapy.

Discussion: Our patient presented with a variety of symptoms related to his HIV and later AIDS diagnosis. Despite the obvious Kaposi Sarcoma lesions on his skin, his gastrointestinal lesions were caused by another AIDS-defining illness. Our patient was also infected with Cytomegalovirus which had formed large masses in multiple parts of his intestinal tract, specifically the fourth part of the duodenum resulting in malabsorption. Having two opportunistic infections occur at the same time delayed treatment of the second infection. This poses a question to physicians in the future. When an HIV patient presents with one opportunistic infection, should we be screening for a wide variety of other opportunistic infections or are the chances of having two opportunistic infections at the same time too rare for this to be the standard of care? On the other hand, delaying treatment, by missing a second infection, in such sick patients can prove to be detrimental.
Dabigatran Induced Acute Interstitial Nephritis: An Important Complication of Newer Oral Anticoagulation Agents.

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Introduction: Acute kidney injury (AKI) due to an acute interstitial nephritis (AIN) is common and can lead to increased morbidity and mortality. Medications such as antibiotics, nonsteroidal anti-inflammatory drugs (NSAIDs), proton pump inhibitors (PPI) and rifampin are common offending agents. Anticoagulant associated AIN is more frequently reported with the use of warfarin, however, only few case reports have reported an association with the use of novel oral anticoagulants (NOACs). Herein, we report the case of a 59-year-old male who developed acute kidney injury after initiating dabigatran for the treatment of atrial fibrillation.

Case Presentation: A 59-year-old male, with a past medical history of paroxysmal atrial fibrillation, hypertension, diabetes mellitus, chronic kidney disease stage 3, and osteomyelitis was referred from the outpatient clinic to the hospital for evaluation of increased blood urea nitrogen (BUN) and creatinine (Cr). Patient was receiving warfarin, but four weeks prior the medication was changed to dabigatran for better compliance. A repeat of renal functions in the office showed markedly elevated serum Cr level of 4.7 mg/dL. At the time of admission, the patient was asymptomatic with no evidence of hematuria, dysuria and oliguria. He had no nausea, vomiting, diarrhea, chest pain, shortness of breath, or changes in mentation. Initial laboratory investigation upon hospitalization revealed a BUN of 115 mg/dL, serum creatinine of 5.06 mg/dL, and eGFR of 14 mL/min. Patient also demonstrated serum potassium of 4.2 mmol/L and phosphorus of 6.4 mmol/L. Urinalysis revealed protein of 30 gm/l, large leukocytes, and epithelial cells. Patient’s INR was elevated at 4.01, and patient was anemic with a hemoglobin level of 9.5 g/dL (which was around his baseline). Patient was treated with sevelamer carbonate for hyperphosphatemia. A renal biopsy was scheduled, and a urine microscopy was repeated because of a persistently elevated Cr level. Urine microscopy revealed numerous eosinophils. Following the kidney biopsy, the patient was empirically started on prednisone for presumed AIN. Within few days of prednisone therapy, renal function started to improve and repeat urine microscopy did not display any eosinophils. Renal biopsy confirmed a diffuse tubulointerstitial nephritis, acute and chronic, with a patchy increase in eosinophils and focal granulocytic tubulitis, tubular atrophy, and interstitial fibrosis. Patient also had underlying nodular diabetic glomerulosclerosis secondary to type II diabetes mellitus, with moderate arteriolosclerosis and hyalinosis.

Discussion: Direct oral anticoagulants, specially dabigatran, are increasingly used for better patient compliance for the treatment of venous thrombosis and atrial fibrillation. Nephropathy associated with its use needs to be further researched and controlled trials for the benefit of corticosteroid therapy in the management of these patients is necessary.
Extrapontine Osmotic Demyelination Syndrome in the Setting of a Viral Illness

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Introduction: In patients with severe hyponatremia (sodium <120 mEq/L), rapid correction of sodium (Na), (more than 8 mEq/L in 24 hours), may produce a rare and life-threatening complication called osmotic demyelination syndrome (ODS). Affected neurons are commonly isolated to the pons, referred to as Central Pontine Myelinolysis; however, brain demyelination may be more diffuse involving the neurons of the midbrain, thalamus, and basal ganglia, referred to as Extrapontine Myelinolysis. Features include dysarthria, dysphagia, visual changes, behavioral disturbances, seizures, encephalopathy, and rapidly progressive paraparesis or quadriplegia. In a large retrospective cohort study of hospitalized patients admitted with a Na <120 mEq/L, rapid correction at 24 hours was identified in 41 percent of patients, of which, one percent developed osmotic demyelination syndrome.

Case Description: A 47 year old female with ovarian failure on hormonal replacement presented to the emergency department (ED) with a four day history of subjective fevers, chills, cough, nausea, and vomiting. The patient was discharged from the ED after intravenous fluid hydration with the diagnosis of an upper respiratory viral illness. Two days later, the patient returned to the ED after a witnessed tonic-clonic seizure and was found to have profound hyponatremia of (Na 100 mEq/L) and white blood cell count of 17.12x 10^3 uL. Her Na was 110 mEq/L 48 hours prior during her last ED visit. The remaining electrolytes were within normal limits, except a bicarbonate level of 14 of mEq/L. Urine electrolytes were consistent with hypoosmotic, normovolemic hyponatremia likely secondary to syndrome of inappropriate antidiuretic hormone (SIADH). Toxicology studies were negative, along with influenza A/B antigen. The patient was promptly given 200cc of 3% NaCl and 2L of normal saline boluses, started on a bicarbonate drip, and antibiotics for presumed aspiration pneumonia given her imaging findings. She was intubated, sedated for airway protection, and transferred to the ICU. Two hours later, repeat labs showed a Na of 109 mEq/L, and 124 mEq/L 24 hours after admission. Dextrose in 5% free water in addition to desmopressin was administered due to the concerns of ODS given the rapid correction of sodium levels. Imaging of the brain did not show any acute findings suggestive of ODS. The patient’s Na levels were maintained between 125-130 in the following 24 hours, and desmopressin and IV fluids were discontinued. The patient was extubated and there were no focal neurological deficits on physical exam, or encephalopathy. During the following days the patient endorsed slightly delayed speech and visual disturbances. Visual field tests were consistent with a partial left homonymous hemianopsia. MRI of the brain revealed areas of cortical hyperintensity most prominently involving the right occipital lobe, bilateral lenticulocapsular regions, and left perirolandic gyri, suggesting a diagnosis of resolving extrapontine myelinolysis.

Discussion: SIADH is one of the most common causes of hyponatremia in hospitalized patients. Several viruses have been reported to cause SIADH, however, only rarely has it been reported with upper respiratory tract illnesses and influenza. Moreover, patients who develop ODS as a consequence of hyponatremia require intensive supportive therapy. Our case demonstrates that it is imperative to identify the patients who are at risk for ODS early so they can receive the appropriate medical intervention to prevent this rare and devastating complication.
Title: Downstream Effects of Inadequate Patient Handoffs & Diagnosis of Intrauterine Fetal Demise
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Program: Nova Southeastern University Dr. Kiran C. Patel College of Osteopathic Medicine, Fort Lauderdale, FL

Introduction: The importance of effective communication and the detrimental effects of communication failures have been repeatedly stressed in healthcare settings. Regardless of the countless efforts and reform initiatives addressing this matter, ineffective communication remains the leading cause of preventable medical errors and poses a significant risk in patient safety. Effective communication is hindered by many factors such as lack of time, hierarchies, varying communication styles, distractions, fatigue, and conflict in the workspace. Research has shown that the most critical time for communication errors to occur is during the patient “Handoff.” An ideal patient Handoff includes an opportunity for discussion between the “giver” and the “receiver” to ask questions, clarify, and confirm the information being transmitted. Standardization of communication methods for patient Handoffs should be considered in all healthcare settings. Standard methods should emphasize Interactive communications, minimal interruptions, verification requirements, and an opportunity to review any relevant history.

Case Description: 41-year-old G1P1001 African American female complaining of abnormal menorrhagia presented to the Labor and Delivery Unit by ambulance as a transfer patient from a nearby Emergency Department. EMS informed the lead nurse that the patient was diagnosed with an intrauterine fetal demise at 18 weeks gestation. The patient was unaware of her pregnancy. She presented with heavy vaginal bleeding and states having had a history of heavy menstrual periods for the past three years and a recent increase of painful uterine cramps and dyspareunia. The patients last menstrual period was 11 days before this visit, her cycles have always been regular, and she usually uses 4-6 pads per day. She denies past episodes of epistaxis or uncontrolled bleeds, SOB, Chest pain, nausea, vomiting, diarrhea, hematochezia, hematuria, fever, or chills. On admission, the patient vitals were BP: 120/70 mmHg, HR: 76 bpm, RR: 16 bpm, and Temp: 98.3° F. The patient appeared to be in no apparent physical distress, but she was anxious and restless, which she attributes to the recent news of unexpected fetal demise. She is a well-kept woman who is very friendly and cooperative. On physical exam, a soft pelvic mass in noted with palpation and a measure of her fundal height yields 19” cm and an inhomogeneous uterine enlargement. The pelvic exam revealed no abnormalities and healthy vaginal mucosa. Transabdominal and transvaginal pelvic ultrasounds both report the presence of an unborn fetus along with the absence of a fetal heartbeat. MRI reports state the presence of what seems to be an unborn fetus with bone fragments. Labs were ordered, and results were pending.

It was determined that the best choice for management would be to induce labor with vaginal Misoprostol. The patient was induced for 48hrs with no evidence of progress. It was then decided to combine induction efforts with mechanical cervical ripening using a balloon dilator. After 15hrs of combined induction methods, the patient had not shown any progress. At this point, a D&C was scheduled to remove the demised fetus. 30min before the scheduled D&C an ultrasound was obtained to assess the patient’s current state. Much to the physicians’ surprise, the ultrasound report stated there was no
evidence of fetal tissue anywhere within the uterine cavity. The only findings were three large uterine fibroids.

The physician quickly realized this patient’s labs had not been reviewed since her arrival. All of her blood work was within normal limits; the only remarkable result was a negative serum Beta-hCG. With this new information, the physician consulted all the personnel involved in this patient’s care to discuss the case. It was then revealed that the first ultrasound was conducted by a novice technician who based her finding of an intrauterine mass to the diagnosis of intrauterine fetal demise and assumed her findings must be the fetus. The radiologist admitted to having doubts on the presence of a fetus, but calcifications within the uterine fibroids were confused for bone fragments when the MRI was assessed for the diagnosis of Intrauterine fetal demise.

Discussion: Rejection of quality improvement measures, such as the standardization of communication for patient handoffs, occurs in large part because of individual’s denial of committing any fault. There is evidence to support the claim that standardization of communication for patient handoffs results in a significant improvement of patient care. [3] This case presents the events of a particular scenario where multiple small faults in communication throughout the progression of care culminated in a 3-night hospital stay, inadequate use of medication and invasive measures, and could have possibly resulted in life-threatening surgical intervention.
Title: Pericardial Tamponade Secondary to Stage IV Adenocarcinoma of the Lung


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Introduction: Pericardial tamponade is a medically emergent condition that occurs when fluid in the pericardial sac accumulates causing intrapericardial pressure to increase. The heart is surrounded by the pericardium, a fibroelastic sac that contains a thin layer of fluid. If abnormal amounts of fluid enter this sac, the ventricles can become compressed, comprising the diastolic filling of the heart. This can lead to decreased cardiac output, potentially leading to cardiac arrest. In the United States, incidence is approximately two cases in ten thousand people. 14% of cases are idiopathic while 61% are either malignant, bacterial or tubercular, with malignant causes being the most common. Dressler syndrome was only 1-2% of cases. Symptoms include pleuritic chest pain and dyspnea. Exam findings include sinus tachycardia, elevated jugular venous pressure, decreased heart sounds, pericardial rub, and pulsus paradoxus. EKG may show sinus tachycardia and low voltage QRS, as well as electrical alternans, a specific but not sensitive finding. Diagnosis is clinical, and is only confirmed by hemodynamic response to pericardiocentesis or pericardial window.

Case Description: A seventy-seven year old Caucasian male with past medical history of hypertension and stage IV metastatic adenocarcinoma of the lung with lymph node involvement presented to the ED with acutely worsening chest pain. He became tachycardic and hypotensive requiring three vasopressors. The patient continued to decline and later exhibited altered mental status and underwent rapid sequence intubation to maintain patent airway. The echocardiogram showed a large pericardial effusion as well as diastolic compression of the right ventricle suggestive of cardiac tamponade. A therapeutic bedside pericardiocentesis was performed during which a considerable amount of fluid was removed. Following this procedure the patient’s hypotension and tachycardia resolved and vasopressor support was discontinued. A pericardial window for definitive treatment was performed the next morning. Fluid studies and pericardial sac biopsy were positive for adenocarcinoma consistent with metastases of patient’s stage IV adenocarcinoma of the lung.

Discussion: Pericardial tamponade can be emergent when it deranges normal hemodynamics and leads to obstructive shock. Nonspecific symptoms usually precede these events, and in the setting of intrathoracic malignancy, can raise the suspicion for this diagnosis. The higher the suspicion the more efficiently a diagnosis can be achieved, with the use of simple, cost-effective bedside imaging like an echocardiogram. This method is the best imaging study to determine presence, size, and hemodynamic effect of a pericardial effusion. Adenocarcinoma of the lung (ADC-L), compared to all other cancers types, caused 58% of pericardial effusions in one study. As with our patient, hemodynamically unstable patients should have an urgent pericardiocentesis or pericardial window. This generally results in immediate symptomatic relief. ADC-L was also associated with 35% recurrence of pericardial effusion in 3 months, and 78% after one year. Pericardial window procedures have lower risk of effusion occurrence, compared to pericardiocentesis alone. Effusion recurrence rates without surgical intervention are as high as 90% in patients with malignancy. In addition, although recurrence rates in ADC-L patients are high, survival is also high, at 75% after 6 months. Given these statistics, we recommend...
that in patients with intrathoracic malignancy who present with pleuritic chest pain or dyspnea, that pericardial effusion diagnosis be suspected, and bedside echocardiogram be performed to rule this out. Definitive treatment would be pericardial window, regardless of hemodynamics, to prevent recurrence, as long as the malignancy is still present.
Title: Overcompensated ventriculoperitoneal shunt resulting in subdural hematoma and subarachnoid hemorrhage

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Introduction: Ventriculoperitoneal shunt is the current treatment of choice for hydrocephalus and complications are frequently encountered in the ER. Due to its high rate of complications, including but not limited to infection, obstruction, pseudocyst, bowel perforation and subdural hematoma, lifelong monitoring and subsequent revision may be required (1). The most commonly observed complication within one year of placement is shunt overdrainage. This may result in a subdural hematoma, due to tearing of bridging veins as a result of overdrainage (3, 4). Surgical intervention may be required for subdural hematomas depending on the size and patient’s neurologic exam (2).

Case presentation: We present a case of a 47 year old female with past medical history atrial fibrillation on Xarelto, normal pressure hydrocephalus, status post ventriculoperitoneal shunt with multiple shunt revisions (most recently revised 5 months prior) who developed a severe headache 6 hours prior to arrival. She was on the bus when she suddenly developed sharp neck pain, a disabling headache, and bilateral lower extremity weakness.

On initial evaluation, the patient was hypertensive to 193/83, tachycardic to a rate of 101, respiratory rate of 18 breaths per minute, afebrile and saturating 98% on room air. Clinically, she was altered, moaning, refusing to lay flat and became acutely agitated in the CT scanner requiring intramuscular lorazepam. Afterwards the patient was alert and oriented x 3 and was able to move bilateral lower extremities a few inches off the bed. The left frontal shunt site was clean, dry and non-tender to palpation. The patient displayed significant nuchal rigidity but no focal neurologic deficits. The remainder of the exam was not significant.

Noncontrast head CT showed a subdural hematoma along ventral epidural space with slit-like ventricles, suggesting over shunting. On MRI, there was a new region of subarachnoid hemorrhage at the left aspect of the medulla within the posterior fossa. The patient was admitted to the ICU with frequent neuro checks, blood pressure control. Her shunt was adjusted to prevent any further overdrainage. She improved over the next three weeks and her headache responded to topiramate. Transcranial dopplers and CT angiogram did not show any evidence of vasospasm. Repeat imaging showed interval increase in size of the ventricles and reabsorption of the acute blood products.

Discussion: This case illustrates symptomatic subdural and subarachnoid hemorrhage as a complication of ventriculoperitoneal over-shunting in a patient on blood thinners. Subdural hematoma formation may occur with over-draining in cases of low or normal pressure hydrocephalus. While subdural hematomas have previously been reported, this patient presented with the worst headache of her life and was found to also have a subarachnoid hemorrhage. This case is also unique in that the patient was taking Xarelto, further placing her at risk for a bleed. A high index of suspicion led to a quick diagnosis and an excellent outcome for this patient.
“Ur-ine” Trouble – A case of amyloidosis mimicking bladder cancer
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Introduction: Amyloidosis is a disease process characterized by extracellular deposition of amyloid protein within tissues, which can eventually lead to symptomatic dysfunction. Primary and localized bladder amyloidosis is a rare clinical entity, with only about 200 cases reported. Bladder amyloidosis can often mimic bladder neoplasia, making it difficult to diagnose. It can present with similar symptoms, including hematuria and irritative urinary symptoms. It is imperative to understand the clinical presentation of this condition because primary amyloidosis affecting the bladder can be mistaken for malignancy based on its appearance on cystoscopy and imaging, leading to a misdiagnosis.

Case Presentation: A 75 year old male with a past medical history of overactive bladder and hypertension, presented to the clinic for gross painless hematuria for approximately one week. The patient also complained of urinary urgency and frequency; he denied any fevers, chills, or flank pain.

The results of a urinalysis were positive for occult blood and negative for an infection. The patient had a subsequent cystoscopy done in the office, which revealed a very erythematous, bullous bladder mucosa, very suspicious, but not definitive for any malignancy. Cytology analysis using fluorescence in situ hybridization (FISH) of cells recovered from a urine sample indicated a positive result for chromosomal abnormalities associated with bladder cancer. A CT urogram showed progressive bladder wall thickening and irregular polypoid contours. It could not however differentiate between an inflammatory process and transitional cell carcinoma. It was recommended the patient have biopsies from the bladder collected and evaluated. The patient underwent cystoscopy and transurethral resection of the bladder tissue. The urethra showed no strictures and a very small nonobstructing prostate was noted. The entire bladder wall except for part of the right lateral wall and dome was engulfed with very bullous, erythematous, and edematous mucosa, clinically suggesting possible malignancy. The ureteral orifices were surrounded by the edema, warranting bilateral retrogrades, which were negative for any obstruction or filling defects. Deep resection biopsies were taken from the left lateral wall, posterior wall, and the floor of the bladder, where most of the lesions were. They revealed positive apple-green birefringence with Congo red immunostaining upon polarization. Amyloid deposition was found in the subepithelial connective tissue, lamina propria, consistent with the diagnosis of amyloidosis. Associated acute hemorrhagic and eosinophilic cystitis was also found. Reactive changes included hemorrhage, edema, and inflammation of the bladder wall. Furthermore, there was no evidence of malignancy.

Discussion: While primary amyloidosis of the bladder is a rare occurrence, its signs and symptoms can often mimic bladder cancer, and laboratory results and imaging can often be misleading. Therefore, it should be considered as a differential diagnosis when suspecting painless hematuria to be a sign of bladder malignancy.
Introduction: Smith-Magenis Syndrome (SMS) is a rare developmental disorder that affects many systems of the body. The major features of this disorder are highly variable but can include intellectual and behavioral disabilities, distinct facial features, sleep disturbances, and delayed language formation. In 90% of cases, SMS is caused by an interstitial deletion in chromosome 17p11.2, which houses the RAI1, TNFRSF13B, and AKAP10 genes, as well as many others. Studies have demonstrated that the RAI1 gene deletion is the major contributor to SMS by being responsible for bone and skeletal formation, neurodevelopment, behavioral functions, and circadian activity. The TNFRSF13B gene deletion is often linked to immunodeficiency and congenital cardiac defects, while the AKAP10 gene is a major contributor to the cardiac conduction system and can lead to arrhythmias if absent. Children with SMS have a wide array of medical problems due to the multiple genes affected; therefore, it is important to examine different case presentations of SMS to understand the complexity of phenotypes seen in this rare syndrome.

Case Presentation: We present the case of a 4-month old African American female who at birth was noted to have dysmorphic features, including low set ears, overlapping toes, microcephaly, and bilateral polydactyly. Echocardiogram revealed a large perimembranous ventricular septal defect (VSD), patent foramen ovale, patent ductus arteriosus (PDA), and left heart enlargement. These congenital anomalies prompted evaluation for a genetic condition. A single nucleotide polymorphism (SNP) microarray detected a 3.74 Mb interstitial deletion of 17p11.2 region, which included the RAI1 gene. These findings, along with her distinct physical features, led to the diagnosis of Smith-Magenis Syndrome. Her chromosomal deletion furthermore included the TNFRSF13B gene, which was consistent with her cardiac malformations noted on the echocardiogram, and also AKAP10 gene, which led to further assessment of her cardiac conduction system using a Holter monitor. The monitor revealed four beats of atrial tachycardia and junctional rhythm, neither of which were of immediate concern to her health.

Surgical correction of our patient’s cardiac anomalies was accomplished with a PDA ligation followed by a VSD closure using a Gore-Tex patch. Postoperative transesophageal echocardiogram revealed good biventricular function and no residual VSD. Although our patient’s cardiac health was stabilized by the surgery, she will continue to follow up outpatient for her additional SMS-related concerns.

Discussion: Considering Smith-Magenis Syndrome’s variable presentations, it is crucial to assess potential links to cardiac malformations in all affected patients. Studies have shown that roughly forty percent of patients affected by SMS will have an associated congenital heart defect, such as valvular defects, septal anomalies, and/or Tetralogy of Fallot. In addition, if the chromosomal deletion includes the AKAP10 gene, it can further complicate the patient’s cardiac health by increasing the risk of various arrhythmias and sudden cardiac death in affected patients. Therefore, it is imperative to note that a potential complication of a VSD repair is damage to the heart’s bundle branches, provoking changes in the heart’s rhythm and possible heart block. This complication in a patient with SMS can be fatal and is reason enough to further investigate different case presentations of this rare, multifaceted syndrome.
Marfan Syndrome, Malignancy, and Metastatic Mutations

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Introduction: Marfan syndrome is a multifactorial condition characterized primarily by inherited connective tissue defects that are associated with increased rates of malignancy and other disorders of the skeletal, cardiovascular, and ocular system. Recently, some studies have shown a positive correlation between Marfan syndrome and the incidence of stomach, colon, liver, and rectal cancer. Marfan results in deficiency of fibrillin-I extracellular matrix component. Deficiency of fibrillin within microfibrils causes a decreased ability to sequester TGF-b. This causes overactivation of the TGF-b signaling pathway that aids in malignant transformation. Increased TGF-b signaling upregulates matrix metalloproteinases which facilitates disruption of intracellular attachments and tumor growth. This also affects vascular smooth muscle cells which will also result in a higher likelihood of metastatic cancer.

One of the most promising next steps in the treatment of patients with both Marfan syndrome and cancer is the pharmacological control of the TGF-b signaling pathway via angiotensin II type 1 receptor blockers. This class of blood pressure lowering drugs can play a secondary role in mitigating TGF-b signaling. Another step that needs to be implemented in patients with Marfan syndrome is the modification of existing cancer screening guidelines. Patients with Marfan syndrome should be screened for malignancy at a younger age and more frequently than the standard United States Preventative Services Task Force guidelines currently recommends. This would hopefully catch suspicious lesions before they became severe and minimize the number of highly advanced cases such as the one presented in the following patient, where he presented with stage IV adenocarcinoma and a very poor prognosis. This case aims to increase awareness of this correlation, so patients with Marfan syndrome can be screened more adequately and disease can be found at earlier stages.

Case Description: This is a 42-year-old male that presented to the emergency department with epigastric abdominal pain for two days. He has a past medical history of Marfan syndrome, thoracic and abdominal aorta aneurysm, aortic dissection and hernia repair. CT of the abdomen revealed multiple liver masses concerning for metastatic disease. Thus, a liver biopsy and GI consult were ordered. The liver biopsy results showed findings that were compatible with colon adenocarcinoma. Tumor markers CEA, CA 19-9 and AFP were all found to be elevated. A colonoscopy was then performed and it was found that there was a colon mass extending from the descending colon to the transverse colon. KRAS, RAS and BRAF markers are still pending, but the patient was confirmed to have a normal mismatch repair gene profile. Due to the size and history of this case, the patient was diagnosed with Stage IV adenocarcinoma of the transverse colon that is metastatic to the liver. Treatment with FOLFOX every 2 weeks had begun. There is currently no drug added to FOLFOX, but Avastin is contraindicated due to our patient’s history of aortic dissection and Panitumumab is typically added for the KRAS wild type.

Discussion: This case illustrates the necessity for early diagnosis of malignancy in patients with Marfan syndrome to hopefully prevent the occurrence of late staged and well-developed carcinomas. The patient was monitored by the surgical team, GI, and heme/onc
to determine the best course of action for her. This case solidifies the growing body of
evidence of this correlation between Marfan syndrome and increased malignancy chance.
Initial presentation of a patient that is found to have metastatic cancer is unacceptable, and
screening guidelines need to be adjusted so that we catch at-risk patients much sooner than
initial presentation with advanced disease.
Title: An Unusual Presentation of Pediatric Fever: a rare diagnosis of PFAPA syndrome

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Program: Nova Southeastern University Kiran C. Patel College of Osteopathic Medicine, Fort Lauderdale, Florida

Introduction: Periodic fever, aphthous stomatitis, pharyngitis, cervical adenitis (PFAPA syndrome) is a rare inflammatory pediatric disorder that usually presents in early childhood (ages 2-5 years). The illness has a slight male predominance and typically resolves spontaneously by puberty with no evidence of abnormal childhood development between episodes. The exact etiology of PFAPA has yet to be elucidated, however several studies have suggested a familial link, possibly involving complex inheritance patterns of gene variants. Patients with PFAPA syndrome present with high fevers (over 39°C) that last for about a week and recur monthly. These patients must have at least one other typical or atypical symptom. Typical symptoms include aphthous stomatitis, pharyngitis, or cervical adenitis, while atypical symptoms may include joint pain, abdominal pain, or vomiting. Proper diagnosis of PFAPA is essential because the fever and additional symptoms do not respond to common antipyretic therapy or antibiotics. Treatment is with glucocorticoids for episodic therapy or tonsillectomy for curative therapy but most cases resolve spontaneously by puberty.

Case Discussion: We present the case of a 12 year old boy who presented to the pediatric Emergency Department (ED) with a one day history of fever (Tmax 104˚F), headache and bilateral achy joint pain in his legs. His mother noted no improvement of fever or other symptoms with administration Ibuprofen. Patient denied vomiting, diarrhea, sore throat, meningismus, or recent sick contacts. The patient has a history of these same symptoms recurring for the past year. The symptoms periodically occur monthly and always start with joint pain and high fever that are not relieved with antibiotics or NSAIDS; however, a single dose of prednisone completely relieves his symptoms within the hour. There has been no definite diagnosis despite many ED visits throughout the past year. Upon physical examination, patient had no erythema, edema or exudate in the pharynx or tonsils and no lymphadenopathy. No ulcers were noted in the buccal mucosa or gingiva. He had tenderness to palpation of bilateral lower extremities. Lab values showed mild leukocytosis with left shift along with mildly elevated Erythrocyte Sedimentation Rate (ESR) and C-Reactive Protein (CRP) levels. Patient was given 2 mg/kg of oral prednisone for episodic treatment. Patient was evaluated a couple of hours after treatment and was noted to be afebrile with a subjective decrease in joint pain and headache.

Discussion: PFAPA syndrome is a childhood illness that continues to be extremely difficult to diagnose because it is so rare and since the symptoms can manifest very differently between patients. Although there is no universally accepted diagnostic criterion for PFAPA, the original criteria published in 1989 required onset of disease in early childhood (ages 2-5) and presence of aphthous stomatitis, pharyngitis or cervical adenitis during flares. It was only in 2017 that a survey of pediatric rheumatologists and infectious disease specialists found that many cases of PFAPA include atypical symptoms without typical symptoms. The survey also recognized that cases of PFAPA can present later in childhood. This case illustrates the importance of recognizing various possible atypical presentations of PFAPA which can ultimately help lead to a faster diagnosis and recovery time for the patient.
Title: The Zebra of Urethral Masses
Program: Nova Southeastern University Dr. Kiran C. Patel College of Osteopathic Medicine, Fort Lauderdale, FL

Introduction: A periurethral mass in an adult woman is a rare complaint that often bewilders most medical professionals. The most common pathologies include a caruncle, inflammatory polyps and cysts, prolapse of the urethra, and a urethral diverticulum. However, the differential is broad and should include leiomyomas, urethrocele, cystocele, ectopic ureterocele, and urethral or vaginal carcinoma. It is challenging to differentiate many of these pathologies from one another solely upon physical exam, therefore diagnostic procedures are usually carried out. We present the case of a 45-year-old African American female with an infected, necrotic prolapsed ureterocele.

Case Report: A 45-year-old African-American female was referred to the Broward Urology Center by her gynecologist with complaints of severe urinary urgency and worsening urge incontinence that began six months prior. The patient also complained of dysuria, left flank pain and chills that has been worsening over the past five days. On examination, the patient was febrile with a temperature of 103.6 degrees Fahrenheit, had mild left costovertebral tenderness and a non-tender 5 x 2 cm dark purple urethral mass with fluctuance. Upon incision of the cystic mass with an 11 blade, it drained about 5 mL of purulent fluid. At this point, the patient was referred to a local hospital with plans for a CT Urogram and examination under anesthesia with further surgical management. Upon presenting to the hospital, the patient’s fevers broke, and she was started on broad spectrum antibiotics. The computed tomography imaging revealed a prolapsed left ureterocele with associated left kidney hydronephrosis and pyelonephritis. The examination in the operating room with rigid cystoscopy confirmed the diagnosis of an infected, necrotic prolapsed left orthotopic ureterocele. Transection of the necrotic prolapsed component of the ureterocele was performed with scissors. The intravesical component was excised with a transurethral resectoscope. A left ureteral stent and a Foley catheter were placed to decompress the infected left renal collecting system. The patient responded well to the surgical and medical management and was discharged from the hospital. The ureteral stent was removed ten days post operatively. The patient is currently three months post-op without complaints of urinary urgency, incontinence or recurrent cystitis or pyelonephritis.

Discussion: Ureteroceles pose significant challenges in management due to their rarity, location, size and associated urinary system anomalies. This case exemplifies the complicated and emergent presentation of a necrotic, orthotopic ureterocele that prolapsed through the urethra. There are only four other similar cases reported in the literature worldwide. This case demonstrates a blueprint for successful surgical management, a rationale for the treatments used, and appropriate follow-up recommendations.
Introduction: In the United States, approximately twenty-one of every one thousand pregnancies result in ectopic implantation of the fetus. Ectopic pregnancies are also the leading cause of first-trimester mortality. Incidence of ectopic pregnancy increases with age, as well as numerous notable risk factors, including: prior history of ectopic pregnancy, sexually transmitted diseases, and structural uterine anomalies. We discuss a case of newly diagnosed Fitz-Hugh-Curtis and endometriosis in a patient with multiple prior ectopic pregnancies.

Case Description: We present a case of a 26-year-old African American female, G3P0020, with a past medical history of spontaneous abortion, previous ectopic pregnancy, and previously treated chlamydial infection who presented to her OB/GYN with complaints of abdominal pain, vaginal bleeding, and lightheadedness. Last Menstrual Period was six weeks prior. Her B-HCG was 2603 mIU/mL and transvaginal ultrasound showed no intrauterine pregnancy with free fluid in the pelvis. The patient elected to have surgical management for suspected ectopic pregnancy due to strong desire for definitive treatment. The patient underwent a diagnostic laparoscopy for suspected missed abortion vs ectopic pregnancy. This procedure revealed positive hemoperitoneum, a large fibroid uterus, and an enlarged right fallopian tube consistent with ectopic pregnancy. Significant adhesions were noted around the uterus and along the ascending bowel to the pelvic wall near the liver, perihepatic lesions on the anterior aspect of the liver, and an endometrioma on the left cornual region. A right salpingectomy and lysis of adhesions was performed, along with a Dilatation and Curettage. The patient tolerated the procedure well and presented for follow up with no further complaints.

Discussion: In this patient with multiple risk factors for ectopic pregnancy, the likelihood of her having a subsequent healthy pregnancy after these events has been significantly compromised. Having a previous history of ectopic pregnancy increases one’s chances of having another ectopic pregnancy three- to eight-fold; resolution via salpingostomy further increases this risk when compared to treatment with methotrexate. Furthermore, having multiple ectopic pregnancies exponentially increases the risk of ectopic pregnancy. Sexually transmitted infections, namely chlamydia and gonorrhea leading to pelvic inflammatory disease, increase the risk of ectopic pregnancy by approximately 31%. Lastly, females with structural anomalies such as endometriosis are approximately 2.70 times more likely to have an ectopic pregnancy than those with no uterine abnormalities. Thus, to avoid the devastating outcomes of ectopic pregnancy, primary prevention is key. As most females with sexually transmitted infections are asymptomatic, regular screening for chlamydia and gonorrhea is indicated to prevent the infection from progressing to pelvic inflammatory disease. Prompt treatment of these infections can prevent the fibrosis and extensive scarring seen in advanced pelvic inflammatory disease. This in turn can prevent the formation of an inhospitable uterine environment for a fetus, allowing for a healthy pregnancy.
An Early Diagnoses of Unstageable Klatskin Tumor

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Introduction: Cholangiocarcinoma (CCA) accounts for about 2% of all cancer diagnosis. It can occur anywhere along the biliary tract from ampulla of Vater to the intrahepatic biliary ductules. Klatskin tumor or perihilar CCA is a rare, fatal cancer that occurs at the hepatic duct bifurcation with an incidence of 2-4 cases per 100,000 population per year. More than 95% of these tumors are ductal adenocarcinomas and many patients present with unresectable or metastatic disease. Common symptoms include jaundice, abdominal pain, fever, weight loss, weakness, and itching. Complete surgical resection of the bile duct is the only definitive diagnosis for CCA.

Case Description: A 44-year-old Caucasian male with past medical history of GERD, anxiety, PTSD, and polysubstance abuse presented to the emergency department with 8/10 intermittent, sharp, stabbing right lower quadrant pain for two weeks. Two days prior, he developed severe itching, pruritus, scleral icterus and jaundice. He lost five pounds within the last two months. In the emergency department his alkaline phosphatase, ALT, AST, and CA 19-9 tumor marker were elevated, with positive hepatitis B core IgM reactive antibody. CT of the Abdomen/Pelvis showed extrahepatic biliary obstruction with findings suspicious for pancreatic mass. An MRI with and without contrast revealed marked dilatation of the right and left hepatic ducts with abrupt cutoff at the confluence. There was no defined mass distal to that point. ERCP was performed to rule out CCA/Klatskin tumor, which showed irregular narrowing of the distal common hepatic duct with dilatation of the left and right hepatic ducts. Right hepatic duct stent was placed to alleviate the obstructive jaundice. Brushings from the common hepatic bile duct revealed adenocarcinoma. Triple Phase CT revealed no obvious mass in the common bile duct, hence we were unable to stage the Klatskin tumor. He developed severe pancreatitis secondary to ERCP, for which he was given supportive treatment which delayed the surgical intervention.

Discussion: Klatskin tumors usually present in the 7th to 8th decade of life, and are more prevalent in Asian and Pacific Islander males, whereas our patient is a Caucasian male in his fourth decade of life. Associated risk factors include: primary sclerosing cholangitis, parasitic infections, biliary-duct cysts, hepatolithiasis, and toxins. Other less-established potential risk factors include, hepatitis C virus, hepatitis B virus, cirrhosis, diabetes, obesity, alcohol drinking, and smoking. Although he did not have any high risk factors, he did have many less established factors such as binge drinking from a young age from 17 to 22, a 32 pack year, and recreational drug use such as cocaine, molly, and heroin.
Title: A troubling case of troponinemia: diagnostic dilemma of ECG negative coronary vasospasm with elevated troponins and seizures in a young woman.


Program: Nova Southeastern University Dr. Kiran C. Patel College of Osteopathic Medicine, Fort Lauderdale, FL

Introduction: Cardiac troponins (cTns) are cornerstone of the workup of chest pain due to their sensitivity and specificity for myocardial injury. Although rare, troponinemia with negative cardiac workup may be attributed to coronary artery vasospasm. Coronary artery vasospasm is a sudden constriction of coronary arteries which results in transient myocardial ischemia leading to release of troponins. Risk factors of coronary artery spasm include young age, female, smoking, drug addiction, alcohol use, hyperventilation, beta blockers, emotional stress and anxiety. This is a case of prolonged troponinemia in an otherwise healthy woman with negative cardiac workup who later developed pseudoseizures. We are proposing that her underlying psychological stress attributed to coronary vasospasm and pseudoseizures.

Case Description: A 25 year-old hispanic female with past medical history of anxiety and MVA two weeks prior came to the emergency department with an acute episode of atypical left sided chest pain which was pleuritic in nature. Her pain was associated with blurred vision, dizziness, palpitations and shortness of breath. She was admitted for chest pain rule out. Her initial troponins were elevated to 1.07 and repeat ECGs showed normal sinus rhythm and an incomplete right bundle branch block. Her chest X-Ray showed no abnormalities, Pulmonary CT Angiography ruled out pulmonary embolism, Cardiac CT Angiography showed no evidence of plaque or occlusion. Echocardiogram and cardiac stress test was negative. Cardiologist was treating her for possible myocarditis or coronary vasospasm. Two days after admission, she had a brain attack which was diagnosed as a psychogenic seizure. MRI of the brain with and without contrast was negative. Five days after admission she had another episode of seizure-like activity with chest pain. Overnight EEG was found to be normal. She had five other episodes of seizures, which were diagnosed as pseudoseizures. Her seizures resolved after she was started on Keppra and lacosamide. During her duration of stay in the hospital, her troponin I (cTn I) was constantly elevated around 3. Her entire cardiac and rheumatologic workup was negative. She is currently being treated on an outpatient basis for coronary artery vasospasm and pseudoseizures. On one week follow up, she did not complain of any chest pain or seizures.

Discussion: Although elevated troponins are specific for myocardial damage, they are not diagnostically specific for any single disease process. Physicians need to have an array of differential diagnosis while encountering patients with elevated troponins.
Pulmonary Hypertension in Myelofibrosis

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Introduction: Myelofibrosis is a unique myeloproliferative disorder characterized by bone marrow fibrosis, ineffective hematopoiesis, and very rarely pulmonary hypertension (PH). PH is a major complication of chronic myeloproliferative disorders (CMPD) and occurs in one-third of patients with myelofibrosis. Moreover, the prevalence and incidence of PH in patients with CMPD may be underestimated as the clinical signs of the disease (dyspnea, fatigue, weakness, lower extremity edema) may not occur until later in the disease process.

Case Description: A 69 year old female with a long standing history of Polycythemia Vera (JAK2 positive) with progression to myelofibrosis three years ago, and recently diagnosed pulmonary hypertension and right heart failure presented to the emergency department with a three week history of worsening shortness of breath on exertion associated with fatigue and bilateral lower extremity edema. The patient has a history of medication non compliance with medications and takes hydroxyurea on an intermittent basis. Significant labs on admission include a white blood cell count 62 x 10^3 uL, Pro-B type natriuretic peptide 7,082 pg/ml, Hemoglobin 7.1 g/dl Hematocrit 24.3%, Platelet 855 x 10^3 uL, LDH 643 U/L, Uric Acid 14.6 mg/dl, and an arterial blood gas suggestive of metabolic alkalosis. 2D Echocardiogram revealed an estimated right ventricular systolic pressure of 80-85 mmHg, consistent with severe pulmonary hypertension with a severely dilated right atrium and trace pericardial effusion. CT Pulmonary Angiogram showed enlargement of the pulmonary arteries, significant hepatosplenomegaly, hepatic congestion, and a 3 mm ground glass pulmonary nodule in the left upper lobe of the lung, and a 5 mm ground glass pulmonary nodule in the right middle lobe of the lung.

The patient was admitted to the intensive care unit for acute respiratory failure, metabolic alkalosis, and severe anemia. The patient was started on hydroxyurea, allopurinol, and ruxolitinib. As a result, her white blood cell count and platelets trended down with the consequence of worsening anemia, requiring multiple blood transfusions. The patient remained hypoxic throughout the hospital course despite many respiratory interventions and ultimately decided to transfer to hospice care given her worsening prognosis.

Discussion: CMPD associated with PH is included in group five of the World Health Organization clinical classification of PH which corresponds to PH with unclear or multifactorial etiology. The pathophysiology behind CMPD associated PH is not clearly understood and there is no established standard of care in treating PH in patients with myeloproliferative disorders. There are three identified clinical forms of PH in patients with CMPD: chronic thromboembolism PH, precapillary PH, and drug induced PH. Therapy is currently being targeted and studied in these specific clinical forms, however, there is still scarce data available. The interval between the development of dyspnea (leading to the diagnosis of PH) and death is described less than 7 months, related to cardiopulmonary failure. New-onset or progressively increasing dyspnea in a patient with CMPD should prompt clinicians to investigate for PH to ensure the timely and adequate medical intervention for these patients.
Introduction: Thoracic and abdominal aortic aneurysms are a significant cause of death in the United States. Their morbidity and mortality is enhanced with certain risk factors such as hypertension, smoking, and prior aortic repair. Coarctation of the aorta, one of the most common congenital abnormalities of the cardiothoracic system, has been found to have an increased risk of aortic aneurysm formation post repair. One study found that aortic aneurysm risk increased the later in life an aortic coarctation was corrected. Here we present a case of an individual born with coarctation of the aorta who developed an extensive aortic aneurysm early in life.

Case Description: This is a case of a 30-year-old female patient who presented to the emergency department with complaints of a heavy chest pain and shortness of breath with onset 5 days prior to arrival. These symptoms began without any precipitating factors. The chest pain was intermittent and exacerbated with coughing. Patient’s history was significant for congenital aortic coarctation which was surgically repaired at the age of sixteen. In the emergency department, vital signs were stable as the patient had a blood pressure of 121/88 mmHg and pulse of 92 bpm. Hemoglobin and hematocrit were also within an appropriate range. CT of the chest was completed which displayed a 4.5 cm diameter descending aortic aneurysm and extensive 6.5 cm saccular proximal descending aorta aneurysm for a length of 9.4 cm. Patient was admitted for further evaluation and concern for urgent surgical repair. Upon stabilization, aortic aneurysm repair was successfully surgically corrected and the patient was discharged home without any complications. The amalgamation of this patient’s medical history, young age, and presenting complaints exhibited a unique case.

Discussion: Thoracic aortic aneurysms often have no symptoms until they are very large, predisposing the patient to an increased risk of rupture. True aneurysms are defined as a dilation of 50% or more of the aortic vessel from its normal size. On average, the mid-descending aorta measures between 2.45 to 2.64 cm for women while the aorta at diaphragm averages 2.40 to 2.44 cm. Aortic coarctation repair can predispose an individual to increased risk of aneurysm formation if the pathological aortic tissue is not completely removed. More specifically, the medial layer is comprised of very few smooth muscle cells and many elastic fibers – this composition contributes to the formation of an aneurysm. Due to the threatening outcomes of aortic aneurysms, examples of this patient’s symptoms and prompt care are important aspects to recognize and carry out in the successful care of a large aortic aneurysm.
Title: Lemierre Syndrome: Rare but deadly. An unusual case caused by Streptococcus constellatus

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Introduction: Lemierre Syndrome is a rare and potentially life-threatening disease which typically begins with a bacterial oropharyngeal infection, that results in the invasion of bacteria through the pharyngeal mucosal tissue. This primary infection is followed by septic thrombophlebitis, most often involving the internal jugular vein; and can be complicated by septic emboli to the lungs or other organs. The most common causative bacteria are Fusobacterium necrophorum. Patients typically present with high fevers, sore throat, neck pain, and pulmonary symptoms; though the diagnosis is often overlooked as the initial manifestation may be subtle, and non-specific. Prompt diagnosis and treatment with antibiotics are imperative to prevent disease progression and promote quick recovery.

Case description: We present a case of a 40-year old woman who developed Lemierre Syndrome. She presented to the emergency room with odynophagia, dysphonia, and neck swelling. She swallowed a hot meatball several days prior. A bedside flexible laryngoscopy was performed as well as a CT scan. CT showed a large fluid and gas collection originating from the left hypopharynx and extending into the left parapharyngeal space. Imaging also showed focal narrowing of the left internal jugular vein with a flow void indicative of thrombus. Further, a direct laryngoscopy was performed, which revealed erythematous mucosa with a defect in the lateral pharyngeal wall. There was no pus or foreign bodies identified in the defect. An incision was made and dissection was carried down to the left sternocleidomastoid. Finger dissection was carried out into the deep tissues of the neck. Copious foul-smelling purulent drainage was collected and culture revealed Streptococcus constellatus. The patient remained in the hospital for two weeks and responded well to broad spectrum antibiotics, anticoagulation and local wound care.

Discussion: The most common causative microorganism of Lemierre Syndrome is Fusobacterium necrophorum. However, our study reports a case of Lemierre Syndrome where the causative bacteria is Streptococcus constellatus, a member of the Streptococcus anginosus group, and a common component of the oral flora. The most common manifestations of Anginosus group infections are abscesses in the head, neck, lung and abdomen. While the precise virulence factors are not entirely understood, the combination of a mucosal injury in the oropharynx and a bacterial infection could allow local invasion by S. constellatus; which may then have resulted in direct invasion through the connective tissue and spread to other anatomical sites. Our case highlights the importance of quick diagnosis of Lemierre Syndrome, with rapid identification of the causative bacteria and prompt treatment.
Introduction: Artificial methods of conceiving children are becoming increasingly popular as technological advancements make them more affordable and accessible. As the average age for having a first child increases, it is becoming more common for people to harvest their own gametes years in advance. The laws governing the extraction of and use of gametes are behind the times, as are the laws that govern the rights of children created by these methods. We present a unique case in which a request to procure cells capable of creating new life from a brain dead patient revealed uncharted territory with regard to clinical guidelines, medical law and ethical considerations.

Case: We present the case of an aged 47 Caucasian male who developed a subarachnoid hemorrhage after receiving thrombolytics during a cardiac catheterization in the Bahamas. He was intubated, sedated and flown to Fort Lauderdale to our facility for more advanced care. His rectal temperature on arrival was 107°F. The patient quickly developed multiorgan failure and was pronounced brain dead. Prior to withdrawal of care, his wife requested samples of his sperm to be extracted so she could continue her dream of conceiving a child. In the months prior to this, the couple had tried in vitro fertilization at a fertility clinic in the Caribbean, with Testicular Aspiration used as the method of sperm extraction, but this was unfortunately unsuccessful despite multiple attempts. Per the wife’s request, input from multiple specialties was sought, including urology, and our team was informed that sperm extraction would not be feasible due to multiple reasons. Firstly, due to the severe hyperthermic state, the sperm would likely not have been viable for fertilization. Also, sperm is considered viable only if harvested 24 hours after death, and ideally within the first 3 hours. Additionally, there was no consent from the patient for posthumous sperm collection or any collection beyond that which was used for the initial unsuccessful fertilization attempts. After multispecialty input and a review by the ethics committee, the wife’s request was denied and care was withdrawn.

Discussion: Although the technology within the field of fertility medicine continues to advance, the laws governing the actual extraction of gametes and conditions of usage for fertilization purposes remains relatively vague. Currently, an individual must consent for gamete extraction in different settings, both during life and after death. Due to the nature of the process of in vitro fertilization and the possibility of creation of a life, most consent forms at such performing facilities dictate specific clinical conditions under which fertilization can occur, specifically that prospective parties involved are alive and consent at that time. In our case, the patient’s right to autonomy and right to die with dignity was a priority, and this may not have included the process of sperm retrieval, which went against the wife’s wishes. There was also the consideration of the different between organ vs gamete donation: donating an organ preserves life and donating gametes creates life. A survey study of attitudes towards posthumous reproduction among couples looking to conceive, performed at Columbia University, showed that a majority would not agree to such reproduction, likely reflecting what many in today’s society would consider unethical. In addition, the rights of the conceived child should not be overlooked. Federal and Florida laws currently state that unborn or posthumously conceived children have no rights to the deceased parent’s estate, although their already-living siblings would have such rights. We live in a multicultural society that harbors various ideas regarding conception,
and current laws have but touched upon this subject. As artificial conception becomes more common, this issue will increase in incidence and will likely become a hot topic of consideration in the future.
**Introduction:** A Spigelian hernia is a herniation through the aponeurosis of the transverse abdominal muscle (also known as the Spigelian aponeurosis). These hernias occur at the Spigelian hernia belt, a 6 cm wide zone above the arcuate line, located between the umbilicus and interspinal plane. Spigelian hernias are rare, making up only 1-2% of all hernias. Congenital Spigelian hernias are due to a congenital failure of fusion of mesenchymal layers, while acquired Spigelian hernias occur because of small splits in the fascial layers and typically arises in adults during the 4th-7th decades of life. Patients present with sharp pain and/or swelling in the mid-lower abdomen, lateral to the rectus muscles. There is an increased risk of bowel incarceration because of the Spigelian hernia's narrow orifice. CT scan and ultrasonography are used to diagnose Spigelian hernias, but CT scan has far greater sensitivity and specificity.

**Case Description:** A 71-year-old male with PMHx of COPD presented to the emergency department with a 3-day history of RLQ abdominal pain that is intermittent and dull in nature. He reported associated constipation and vomiting. He stated about 6 years ago, after a spin class, he started experiencing a similar abdominal pain in the same area which never completely dissipated. We surmise this may have been the origin of the Spigelian defect in this patient. On abdominal exam, there was moderate tenderness in the RLQ with a reducible palpable mass. Labs were WNL except an elevated WBC of 15.4 x 103/µL. Abdominal CT scan demonstrated findings suggestive of an incarcerated Spigelian hernia with partial small bowel obstruction and a transition zone at the level of the incarcerated distal ileal small bowel loop within the hernia. The patient underwent a hybrid approach consisting of a laparoscopic and open component. The patient’s own parietal peritoneum instead of a prosthetic mesh was used to cover the Spigelian defect. Post-operatively, he developed ileus and bilious vomiting, so a nasogastric tube was placed. He required 2 days of total parenteral nutrition but afterwards began having multiple bowel movements. He was discharged on the 14th day of admission and followed up 4 days later, reporting resolution of his abdominal pain and constipation.

**Discussion:** Spigelian hernia repairs are seldom reported in literature. In a recent case study by Halyk, et al on the repair of a Spigelian hernia, the authors reported using a TAPP approach. Halyk raised the superior and inferior peritoneal flaps to dissect the hernia and closed the neck using intra-corporeal suturing. In this patient, we started with a TAPP approach but transitioned into an open repair due to the significant amount of small bowel present in the hernia. Because of the availability of parietal peritoneum to cover the defect and the increased risk of adhesions associated with mesh placement, we decided not to employ a prosthetic mesh. This is the only reported case in the literature where a Spigelian hernia was repaired laparoscopically without a mesh, instead utilizing the patient’s own parietal peritoneum tissue to cover the defect.
Title: Don't Look Inside the Air Conditioning Unit: Legionnaires’ Pneumonia Complicated by Aspergillosis

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Introduction—Legionnaires’ disease (LD) is caused by an aerobic, nutritionally fastidious, gram negative rod. Legionella organisms can be found in natural aquatic habitats, artificial sources, air conditioning units and compost. Transmission occurs via inhalation of aerosolized mist or aspiration of contaminated water. Incubation period is 2-10 days. Some risk factors are advanced age, smoking, and predisposing underlying condition. An estimated 8,000-18,000 cases of LD are reported in the U.S. each year. It’s the 2nd most frequent cause of severe pneumonia requiring ICU admission. In Florida in 2015, 306 cases were reported, 96.7% hospitalized, and 9.2% died; average incidence rate over the past 5 years has increased by 34.3%. Aspergillus spores are found in the environment indoors and out. Because aspergillosis is not a reportable infection in the United States, the exact number of cases is difficult to determine. Coinfection of Legionella and Aspergillus has been rarely reported.

Case Description—A 61 y/o African American female presented to the ED with a 3-day history of diarrhea, vomiting, fever and chills was initially diagnosed with viral gastroenteritis and discharged. Three days later, she was transported by EMS to the ED because of reported “heart racing”, dizziness and shortness of breath. HPI was significant for a report of working with a friend in attempt to fix her home A/C unit 2 weeks prior which involved partial disassembly of the unit. Medical and social history remarkable for glucose intolerance, and employment as an administrative manager for Waste Management. She had >20 pack year cigarette use.

Patient presented in SVT with a rate of 180 bpm and respiratory insufficiency. Initial labs revealed WBC 13.80, K 6.5, AST 125, ALT 100, and CXR with right pleural effusion. The following day, urine antigen study for Legionella was reported positive. Subsequent CXR revealed severe bilateral pulmonary infiltrates. Heart rate control was achieved rapidly with IV B-blockers but she subsequently experienced episodes of paroxysmal atrial fibrillation. Patient rapidly developed fulminant respiratory failure complicated by ARDS and was intubated. IV antibiotics of Azithromycin and Levofloxacin were initiated. A trial of corticosteroids was initiated on Day 13, and dose was doubled on Day 20. On Day 17, patient was extubated but reintubated on Day 21 due to hypoxia, tachypnea and copious secretions complicated by dysphagia. On Day 30, Aspergillus non-fumigatus was noted on repeat sputum culture and Voriconazole 200 mg IV q12h was initiated. Patient was unable to be extubated, yet stabilized and transferred to a long-term acute care facility for continuation of IV therapy and respiratory rehabilitation.

Discussion—The index of suspicion for Legionella should be elicited by patient history of gastrointestinal symptoms and fever followed by respiratory complaints. Early screening and identification of this organism is essential for prompt treatment and potential avoidance of fulminant disease. Furthermore, repeat sputum cultures of ventilator dependent individuals receiving IV corticosteroid treatment is essential for identification of complicating fungal infections.
**Title:** Hepatocellular Carcinoma with Tumor Thrombus to the Right Atrium: Contrasting etiology and treatment between the Eastern and Western World

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**Introduction:** 50-60% of hepatocellular carcinoma (HCC) cases in the U.S. are due to the Hepatitis C virus. HCV in the U.S. is spread most commonly due to needle sharing by intravenous drug users. In contrast, 75% of HCC cases in Asia are due to the Hepatitis B virus, transmitted sexually and vertically. HCC is prone to vascular invasion, also known as tumor thrombus (TT), but metastasis to the cardiac cavity is rare. Invasion into the IVC and right atrium (RA) occurs in about 0.67-4.1% of HCC patients. When the TT has invaded this far, the prognosis is poor. Treatment options at this stage are limited and not curative.

**Case Description:** We present a case of a 63-year old female with past medical history of Hepatitis C (HCV), HTN, lung nodules, and polysubstance abuse who presented with nausea and non-bloody, non-bilious vomiting for 2 weeks associated with low PO intake. Endorses lightheadedness when changing position from sitting to standing, as well as abdominal distension and two episodes of non-bloody watery diarrhea. On exam, patient appeared jaundiced with abdominal distension and a palpable lobulated liver with 2+pitting edema. No spider angiomas, fluid wave, or jugular venous distension were appreciated. Initial labs revealed hyponatremia with hypochloremia, acute kidney injury, and transaminitis with AST at 99 and total bilirubin 4.2. Ethanol level was within normal limits. A CT of the abdomen suggested a mass in the left lobe of the liver and was followed by an ultrasound revealing a 4.9 x 3.6 x 4.2 cm mass in the left lobe. Follow up labs were significant for increased AFP at 6160.2 and increased lactate dehydrogenase with a low viral load. Follow up with a CT liver triple phase revealed a large liver mass with extension into the RA with TT and necrosis of the liver. An echocardiogram revealed a 6x3 cm RA mass versus thrombus although very likely a mass component. A definitive diagnosis of hepatocellular carcinoma was unable to be obtained with tissue biopsy due to her high risk of bleeding given her thrombocytopenia and mild coagulopathy. Due to her advanced staging, she is not a candidate for surgery or chemotherapy. Palliative care will be managing her pain and transferring her to hospice.

**Discussion:** This case highlights the HCV-related causes of HCC in the United States, specifically due to intravenous drug use. Although HCC is prone to hematogenous invasion, it most commonly spreads to the lungs, lymph nodes and adrenal glands, and an extension to the heart is rare. Surgical intervention is first line with such an extension, and is contingent on an adequate liver function. In contrast with patients in Western countries with HCC, patients in Eastern countries develop HCC as a result of HBV and autoimmune disorders leaving them with better liver function than patients who develop cirrhosis from HCV infections or alcoholic cirrhosis, as seen in the U.S. and other western countries. Resection of HCC with tumor thrombus is rarely performed in these regions due to worse baseline liver function. Screening and prevention of HCV in the U.S. should be a public health priority, as HCV continues to be the leading cause of HCC in the U.S. Reducing morbidity and mortality from HCC should be focused primarily on HCV risk reduction and early antiviral therapy.
The Impact of MDM2 on XIAP expression on various Cancer Cell Lines

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Background: Cancer is one of the leading causes of death in America, which is characterized by uncontrollable cell division, which leads to excessive growth in body tissues and organs. In many cancer types, the MDM2 (Murine Double Minute 2) oncogene is a key component that triggers the development, and subsequent progression of the disease. Chemotherapy is a standard treatment, but for many of the MDM2-dependent cancers, chemo-resistance has been observed. The resistive characteristics of cancer has been correlated to the stabilization of MDM2 via increasing the mRNA of the XIAP (X-linked inhibitor of apoptosis protein) which contains IRES (Internal Ribosomal Entry Site) that can bind to MDM2 and stabilize it.

Objective: The objective of this study was to determine the impact of MDM2 on the XIAP expression level in the following cell lines: LNCaP (prostate), LNCaP-MST (MDM2 transfected cell line), SJSA-1 (osteosarcoma), GI-101A (breast).

Methods: A parallel comparison study was designed for this investigation. Four different cancer cell lines (LNCaP, LNCaP-MST, GI-101A, SJSA-1) were tested in comparison between control and treatment groups. The control group was included to give a basal level of the gene expression XIAP. The treatment groups were incubated with RG-7388 (Idasanutlin) for 24 hrs. Samples from all groups were analyzed using western blotting technique, with 10% and 12% polyacrylamide gels depending on size of the protein that was selected for the analysis. The list of proteins analyzed include: p53, p21, CDK1, BAX, XIAP, and Aurora Kinase B. The changes in the expression levels of protein were confirmed by densitometry analysis of the protein bands using ImageJ software. A survival assay (MTT assay), for all four cell lines (LNCaP, LNCaP-MST, GI-101A, SJSA-1) was performed to determine if the modulation in the expression of XIAP by RG-7388 would induce apoptosis.

Results: In all cell lines, XIAP was moderately expressed at basal levels. The LNCaP-MST cells showed the highest expression. After treatment with RG7388, the XIAP protein levels were lower in all cell lines, with LNCaP and LNCaP-MST showing the most significant reduction in XIAP protein expression. From the survival assay, all cell lines observed underwent apoptosis. The LNCaP-MST and SJSA-1 displayed the most significant level of apoptosis.

Conclusion: The results suggest that inhibition of MDM2, via the small-molecule antagonist RG-7388, does correlate with lowered levels of XIAP expression. Also, activation of p53, a prominent tumor suppressor gene, was seen along with significant upregulation of p21, a downstream regulator of p53 cascade. In addition, the decrease in XIAP and its mRNA resulted in cellular apoptosis. The cell lines LNCaP-MST and SJSA-1, had the exhibited the highest level of apoptosis compared to other cell lines tested.
Methionine is a key nutrient required for the synthesis of S-adenosylmethionine (SAM); SAM is the universal methyl group donor. It is known that in colon cancer cells, the promoter/CpG islands of the repair genes, such as LIG4, are hypermethylated. This activation causes uncontrolled proliferation and division of tumor cells. Methionine gamma lyase deaminase (Mgld) is an enzyme that degrades methionine into alpha-ketobutyrate and methylthiol. In this study, the Mgld gene was cloned into vectors that expressed Mgld in either the cytosol or the nucleus. The colon cancer cell line of interest (T84, ATCC® CCL-248™) and Baby Hamster Kidney Cells (BHK-21) were transfected with vectors containing Mgld. The T84 cells experience more cell death when Mgld is expressed in the nucleus as opposed to the BHK cells, which experience more cell death when Mgld is expressed in the cytosol. Both of these phenomena are reversed in the presence of Proparglycine (Pgly), an Mgld inhibitor. Although hypomethylation typically activates gene expression and induces cell division in normal cells, we observed the opposite effect. In the cytoplasm, methionine is required for forming cysteine; cysteine in turn is required for glutathione (cells redox agent). Both cysteine and methionine are required for protein synthesis. Therefore, cytosolic dwindling of methionine will hamper protein synthesis and it should, in general, affect the growth of Mgld treated cells when compared to controlled cells. The cytosolic treatment of Mgld in the BHK cells caused cell death, whereas the nuclear treatment of Mgld in the T84 cells caused cell death. The addition of Pgly alone or in combination with the cytosolic vector increased proliferation in both cell lines, while the addition of Pgly to the nuclear vector only increased growth in the T84 cells. We conclude that the methylation status of each cancer cell type might be different and uniquely affects their respective growth.
**Title:** Myocardial Infarction Risk Factors in Young Hispanics  
**Authors:** Christopher Foth, DO, Josue Rizo, DO, Marc Iskandar, DO, Jose Paz, DO  
**Program:** Internal Medicine, Palmetto General Hospital, Hialeah, FL

**Background:** Very little research has evaluated myocardial infarction in young patients and even less data exists for young Hispanic patients. Classical risk factors do not appear to have the same magnitude of effect in Hispanic populations leading to what has been termed the "Hispanic Paradox."

**Objective:** The objective of this study is to determine which risk factors are present in young Hispanic patients that have a myocardial infarction.

**Methods:** Data from Hispanic patients age 45 and under that presented with a myocardial infarction during a 5 year period at a community hospital in a predominantly Cuban-American area was analyzed. Charts were reviewed for risk factors and angiographic data. Data was analyzed for statistical significance using IBM SPSS.

**Results:** Dyslipidemia was the most common risk factor with a prevalence of 87.7% and low high-density lipoprotein was the most common abnormality (72.3%). Patients were also more likely to be male (81.6%), hypertensive (68.6%), obese (57.8%) and have a smoking history (50.7%). Men were more likely than women to present with an ST elevation myocardial infarction (52% vs 35%). Uninsured patients represented 37.6% of the population. These patients had similar coronary artery disease risk factors but were more likely than insured patients to abuse cocaine (13% vs 6%) and amphetamines (9% vs 3%), and to present with a total occlusion (73% vs 64%). Patients using amphetamines had an ST elevation myocardial infarction 88% of the time while cocaine use showed no statistically significant difference. Single vessel disease was present in 89% of patients with the left anterior descending artery being the most commonly involved vessel (48%). Patients presenting with multi-vessel disease (> 2 vessels) were more likely to have a higher body mass index, hypertension, and a family history of ischemic heart disease.

**Conclusion:** Dyslipidemia, hypertension, obesity and smoking are the most prevalent modifiable risk factors in young Hispanic patients presenting with a myocardial infarction. Early risk factor intervention should be encouraged in Hispanic communities to reduce the burden of ischemic heart disease.
Title: Post Mastectomy Lymphedema: Surgical, Osteopathic and alternative treatment management
Author: Farnaz Haji, DO, MS. Chelsea Yap, MS4, Elisa Martinez, DO, Mohammad Masri, MD.
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Background: Breast cancer related lymphedema (BCRL) is a disabling complication after breast cancer treatment with long-term impact on quality of life. Previous studies have shown that 3.5-11% of patients that undergo sentinel lymph node biopsy, and >20% of patients that undergo axillary lymph node dissection develop lymphedema. Not only does BCRL have negative effects on a patient’s body image and limb functionality, but more importantly, it puts the patient at a higher risk for complications such as infection. There are several different surgical and non surgical modalities addressing BCRL. Based on our research there is limited and almost no all inclusive study covering various aspects of lymphedema management. This study establishes a centralized source, focusing on all treatment aspects to minimize the confusion for patients and practitioners and facilitate improved management. A treatment plan utilizing non-operative and osteopathic techniques along with surgical therapies has the potential to improve various factors related to overall patient quality of life.

Objective: To establish a central source, detailing all of the current operative, non operative and osteopathic treatment modalities, used in the treatment of Breast cancer related lymphedema.

Methods: A comprehensive search of PubMed was conducted using the term (lymphedema or lymphodema or lymphoedema or elephantiasis or swelling or edema or oedema) AND (“breast cancers” OR “breast cancer” OR “breast neoplasm” OR “breast neoplasms” OR “breast tumor” OR “breast tumors” OR “breast adenocarcinoma”) in title, abstract or keyword. The data were gathered from 2000 up to now. A thorough search was conducted to allow a systemic review and meta-analysis of treatments for BCRL. Three investigators independently selected studies and abstracted the data. We included systemic review or meta-analysis about the treatments for BCRL. Participants were restricted to patients with BCRL. The interventions included all available interventions for BCRL. Two investigators reviewed independently all titles and abstracts for relevant systematic review, resolved differences by consultation with a third reviewer.

Results: Using the data gathered a detailed summary of various surgical, osteopathic and alternative treatments were compiled. Indications, contraindications and complications associated with each modality were discussed.

Conclusion: The results of this study reflect that breast cancer related lymphedema is a significant morbidity observed following treatments for breast cancer. The complexity of breast cancer related lymphedema and its complications necessitate a multidisciplinary approach. This study provides a comprehensive, centralized review for the patients and practitioners to incorporate in their treatment and practice. Additionally it creates a framework for further research in this area in order to investigate a more definitive treatment for BCRL and ways to avoid having patients acquire BCRL as a postoperative complication. We aim to further utilize this study in future projects to develop special guidelines encompassing these multidisciplinary approaches and providing educational and training programs for both the patients and their families.
Objective. This study was to assess osteopathic medical students' (OMS's) perceptions, attitudes, and skills in health information technology (HIT) utilization in clinical practice.

Background. Perceptions and attitudes towards HIT tools may influence OMS's successful adoption of HIT, willingness to learn these emerging technologies, and use them optimally during residency. However, scarce information is available regarding certain attitudes, perceptions, and skills pertaining to HIT, including students’ readiness to utilize it prior to clinical training.

Methods. A cross-sectional study was conducted via anonymous survey administered to online and pen-and-paper format to students attending an osteopathic medical school in south Florida. Descriptive data including results from validated scales assessing students' perceptions and attitudes (i.e., usefulness of mobile technology, benefits of using HIT tools), skills (i.e., technology readiness) and personal characteristics (e.g., flexible thinking, technology self-efficacy) regarding HIT in clinical practice were assessed. Data were analyzed using SPSS v.24.

Results. Ages of the 604 participants who completed the survey ranged from 20-47 years (M= 25.4 years). Only 42% (n=246) had previously used HIT and 80% (n=463) had little or no training in HIT systems (e.g., CPOE, EMR). Regarding feeling “nervous they were not good enough with computers to be able use them to learn HIT (e.g., EMR),” women reported higher being more nervous about it than men (60% vs. 40%; p < .001), even though more women than men had previously used HIT (p < .001). Moreover, men reported more than women that “men are better than computers than women.” (70% vs 30%; p < .001). One-third of participants reported they do not keep up with the latest technological developments in their area of interest.

Conclusion. Understanding characteristics of OMS regarding their attitudes and experiences with technology can help osteopathic medical schools design and teach core informatics competencies that address health information technology (HIT), including explaining electronic medical record systems and computerized provider order entry systems and building self-efficacy in these areas. Comprehensive HIT competencies empower students to be lifelong technology learners.
Title: Patterns of Opioid Prescribing as a First Line Intervention to Patients with Chronic Nonmalignant Pain at a Community Health Center

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Background: The opioid epidemic is one of the most profound public health crises our nation has faced. In 2017 alone, it is estimated that 72,000 people died of drug overdoses, with about 30,000 of the deaths due to synthetic opioids. Assessment of providers’ prescribing habits could help reveal if there is a lack of awareness to appropriate opioid prescribing to evaluate if further provider education is needed to help decrease the current opioid epidemic.

Objective: As part of a Plan Do Check Act quality improvement initiative around opioid prescribing, we identified the number of primary care providers who prescribed opioids as first-line therapy for chronic pain patients. Results of this investigation will direct activities regarding education of guidelines and development of policies around opioid prescribing at a large Community Health Center.

Methods: First, a retrospective data review of CHI’s electronic health record was conducted to understand opioid prescribing practices of CHI providers. Information was obtained from all CHI patient encounters within a year period, June 1, 2017 through May 31, 2018. Inclusion criteria included primary care encounters (CPT 99211-99215) for patients who had a current problem listed in their problem list with any of the following ICD-10 codes: neck pain (M54.2), back pain (M54.9, M54.5), and/or chronic pain (G89.4). Encounters were then sorted based on those who were prescribed opioid medications for fentanyl, hydrocodone, hydrocodone/acetaminophen, hydromorphone, meperidine, methadone, morphine, oxycodone, oxycodone/acetaminophen, and oxycodone/naloxone. Exclusion criteria was then applied based on those who had opioids prescribed for documented acute trauma, recent surgery, hospice care, cancer management, and patients with opioid prescriptions from providers outside of CHI. Data were validated via chart review.

Results: Of the 968 patients, only 13 (1.3%) patients received one or more prescriptions for the opioids medications of interest. Nine patients were excluded because their prescriptions were written by prescribers outside of CHI and 1 patient was excluded due to an active cancer diagnosis. Only one of these patients received multiple opioid prescriptions during this time. Of the 3 patients prescribed opioids, only 1 received prescriptions which exceeded the 3-day limit implemented by Florida’s new drug law designed to make it more difficult for people to take opioids long enough to become dependent.

Discussion: The results of this investigation suggest that the providers at CHI are compliant with Florida’s new opioid drug laws and current recommendations aimed at reducing the use of opioid medications as first line for chronic pain management. In the midst’s of a national opioid epidemic, this study warrants further evaluation on how such compliance was achieved amongst providers, and how these practices can be disseminated to others in healthcare addressing opioid over-prescribing. Next steps include repeating the data analysis using data from CHI’s pharmacy, stakeholder interviews and distribution of a survey to providers to assess attitudes and behavior of opioid prescribing. Survey responses will be recorded and used to identify what alternative pain management options are offered to patients and their perceived effectiveness on managing chronic pain.
Background: More than two-thirds of pregnant women experience low back pain, and almost one-fifth experience pelvic pain. Several studies have identified potential benefit incorporating osteopathic manipulative treatment (OMT) during the management of obstetric patients with little associated risk for the patient. Studying 3 specific OMT techniques can add to this evidence and maximize the time of busy physicians and patients.

Objective: The objective is to determine the change in patient’s pain scale ratings after OMT treatment including innominate muscle energy, thoracoabdominal diaphragmatic release, and sacral frog leg release.

Methods: For this prospective, cohort study, 15 patients at any week of pregnancy were recruited from the family medicine residency clinic. They provided a pain scale ranking (from 0 to 10), and then were treated with OMT, using only the three above techniques. Their post-treatment pain scale was obtained immediately after treatment.

Results: There are 15 participants for the study to be statistically significant. Data will be analyzed using ANCOVA. We will comparison of pre- and post- pain scores with week of pregnancy being the covariate. Additional analysis with a non-parametric paired samples test may also be conducted. The data analysis is expected to be completed by January 21, 2018.

Conclusion: We will add a more specific treatment protocol to the already present body of literature on OMT in pregnant patients. We will also add to the safety profile of OMT in pregnant patients. This population has a dire need for pain control, and this study can provide evidence of the immediate change or lack of change a patient may feel.

Acknowledgements: The authors thank Florida Hospital for their support with this project. The study was approved by Florida Hospital’s Institutional Review Board.
Title: Assessing the Minimum Detectable Change Capability of Tissue Dielectric Constant Values as Applicable to Edema and Lymphedema Measurements

Authors: Alexander T. Mikulka, M.B.S., Don Woody, M.B.S., Harvey N. Mayrovitz, Ph.D.

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Background: Tissue dielectric constant (TDC) values of skin are measures of localized water content and is used as a tool to help characterize edema and lymphedema features, detect its presence, and assess treatment related changes. Although the underlying physics of this technology has been well described in the literature, there has been no systematic study of its in vivo reliability aspects. To further complicate this issue there are now two types of probes in use: one is a more research designed device called the moisture meter D (MMD) and another that is a more compact in design referred to as the moisture meter compact (MMC) A central unanswered question is the minimal detectable change (MDC) that may be ascribed to such measurements as when either of these devices is used to assess TDC values.

Objective: The objective was to determine the MDC of both device types using test-retest measurements from which intraclass correlation coefficients (ICC) could be estimated.

Methods: This study was approved by the NSU institutional review board. All measurements were done in a dedicated research room on the NSU campus. Forty volunteer subjects (20 females and 20 males) aged 19 – 61 years with body mass indices of 14.7 – 47.0 kg/m² and body fat percentages of 12.0% – 48.9% participated. Two measurers (M1 and M2) used each of the TDC devices to measure TDC in triplicate sequentially and bilaterally at three locations; anterior forearm, hand palmar mid-thenar eminence, and dorsum mid-web. These measurements were made by each measurer twice constituting test-retest values (T1 and T2). From these measurements ICC₂,₁ and MDC at 95% confidence were determined for each site and probe for both absolute TDC values and for inter-side TDC ratios.

Results: For both measurers and both measuring devices, differences in TDC values were statistically significant among anatomical sites (p<0.001). Differences in TDC values recorded by the compact probe (MMC) were statistically different from the MMD at all sites and for both measurers. There was an overall statistically significant difference (p<0.001) in TDC values between M1 and M2 at each site. MDC values for absolute TDC values ranged from 2 to 9 TDC units, and for inter-side ratios ranged from 5.3% to 8.0% depending on anatomical site and the specific TDC probe that was used. Values obtained for the ICC₂,₁ ranged from 0.765 to 0.982.

Conclusion: The MDC values obtained provides useful estimates of the MDC that reliably represents a real difference or change when measuring TDC in a research or clinical situation. Without this specification and clarification, not available prior to this study, confidence levels in interpreting measured changes in TDC were open to question. This applies to the measurement of absolute TDC values or their inter-side ratios that are often used for lymphedema assessment and tracking purposes.
Title: Counter-Balance Between Gli3 and miR-7 is Required for Proper Morphogenesis and Size Control of the Mouse Brain

Authors: Taufif Mubarak, Longbin Zhang, Yase Chen, Trevor Lee, Andrew Pollock, Tao Sun

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Background: Brain morphogenesis requires precise regulation of multiple genes to control specification of distinct neural progenitors (NPs) and neuronal production. Dysregulation of these genes results in severe brain malformation such as macrocephaly and microcephaly. Despite studies of the effect of individual pathogenic genes, the counterbalance between multiple factors in controlling brain size remains unclear. Gli3 has also been identified as a pivotal factor related to severe brain malformation, including macrocephaly. Gli3 is known as a suppressor in the Sonic hedgehog (Shh) pathway and plays critical roles in regulating pattern formation of different tissues and controlling cell fate determination. During mammalian neural development, Gli3 has been shown to determine the specification and differentiation of NPs in different regions at different developmental stages (However, how Gli3 interacts with other molecules in controlling brain size is still not clear. MicroRNA (miRNA) miR-7 has been shown to regulate cortical development and protect neurons from apoptosis. Knocking down miR-7 reduces transition of radial glial cells (RGCs) to intermediate progenitors (IPs) and results in microcephaly-like brain defect. Whether miR-7, one of the microcephaly-pathogenic genes, could act as a potential modulator to remedy macrocephaly remains obscure.

Objective: In this study, we investigate whether the counter-balance interaction between Gli3 and miR-7 is sufficient to correct macrocephaly-like malformation caused by Gli3 deficiency.

Methods: In this study, we analyze the function of two pathogenic genes by breeding Gli3 knockout mice with miR-7 knockdown mice. We demonstrate that a counter-balance between Gli3 and miR-7 is crucial in controlling brain size and proper morphogenesis by regulating progenitor specification and neuronal production, particularly, in the cortical midline. Brain tissues were collected and fixed in 4% paraformaldehyde (PFA) in phosphate-buffered saline (PBS) overnight and subsequently incubated in 25–30% sucrose in PBS, embedded in OCT and stored at –80°C until use. Brains tissues were coronally sectioned into 14–16 μm slides using a cryostat. To label proliferative neural progenitor cells (NPCs) in the developing cortex, one dose of BrdU (50 μg/g body weight) was administered by intraperitoneal (I.P.) injection in mice at 1 h before sacrifice. Progenitor cells were observed via immunohistochemistry using Pax6, Tbr1, Tbr2, Satb2. Cells were then counted. Cell counting was performed in minimal three chosen areas from at least three sections for each brain, and at least three brains were analyzed in each group. All data were shown as mean ± SEMT. One-way analysis of variance (ANOVA) with post hoc contrasts were used for statistical analysis. The results were considered significant at a probability of less than 0.05.

Results: Here we show that cortical deletion of Gli3 results in enlarged brain and folding structures in the cortical midline at the postnatal stage, which is mainly caused by the increased percentage of intermediate progenitors (IPs) and newborn neurons. In addition, dysregulation of neuronal migration also contributes to the folding defects in the cortical
midline region. Knockdown of microRNA (miRNA) miR-7 can rescue abnormal brain morphology in Gli3 knockout mice by recovering progenitor specification, neuronal production and migration through a counter-balance of the Gli3 activity. Moreover, miR-7 likely exerts its function through silencing target gene Pax6. Knockdown of miR-7 might release its suppression effect on Pax6, which may potentially restore telencephalon patterning by blocking increased Shh activity. Correction of the Shh activity due to Gli3 deficiency promotes expansion of RGCs, and rescues the elevated neuronal production in the upper layer in the cortical midline, and eventually corrects midline folding defects. Our results indicate that proper brain morphogenesis is an outcome of interactive regulations of multiple molecules such as Gli3 and miR-7. Because miRNAs are easy to synthesize and deliver, miR-7 could be a potential therapeutic means to macrocephaly caused by Gli3-deficiency.

**Conclusion:** In summary, our study demonstrates that Gli3 and miR-7 play a counter-balancing role in regulating morphogenesis of the postnatal brain by predominantly controlling cell fate of RGCs and production of newborn neurons. Besides miR-7, other microcephaly genes might be involved in restoration of macrocephaly defects, which should be revealed in future studies. Nevertheless, our findings imply that counter-balance between multiple genes such as Gli3 and miR-7 might play a general role in regulating cortical development. This research provides a new perspective of consideration of using pathogenic genes with opposite effects for developing a therapeutic strategy to treat brain malformation.
Title: Acceptability of a health education brochure on bowel incontinence to primary care patients

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Program: Family Medicine Residency, Community Health of South Florida, Cutlet Bay, FL

Importance: Bowel Incontinence (BI) is defined as accidental solid and/or liquid leakage of stool or mucus. BI is a devastating disease, which can result in reduced quality of life, financial burden, and it is a primary reason for nursing home institutionalization. While there are no exact numbers of people currently living with BI, it is estimated that between 7-15% of community-dwelling adults have BI. Since patients are often shamed and embarrassed to discuss their symptoms with providers, BI remains undiagnosed, underreported and untreated.

Objective: Develop a patient education brochure in collaboration with a consortium of patients, providers, researchers and stakeholders and assess the feasibility and acceptability of distributing the brochure in primary care settings.

Design: Quasi-experimental post-test design

Setting: The study was conducted in four settings. Three of the settings were primary care offices (a private physician office in Greenville, South Carolina, a university-based clinic in Fort Lauderdale, FL and a Community Health Center in Miami, Florida.) The fourth setting was during a monthly educational program for Foster Grandparents in Broad County, Florida coordinate through the South Florida Institute on Aging.

Participants: One hundred and ninety-two patients were provided the brochure and completed the survey. Patients who completed the survey through their primary care office received a $5 incentive for participation. Participants who completed the survey at the Foster Grandparents educational program did not receive an incentive, though they did receive credit hours towards their Foster Grandparent program ongoing training requirements.

Main outcome: The main outcome was patient assessment of feasibility and acceptability of distributing a patient education brochure in primary care offices

Results: More than 77% of patients had never received information on BI, and more than 92% thought the brochure was important to give to patients. More than 91% said the brochure was easy to understand and 74% thought there are people with BI who are too embarrassed to tell their doctor. More than 85% thought the brochure might help improve discussion between patients and providers about BI. Suggestions to improve the brochure included positive pictures, brighter colors and including information about etiology of FI and treatments.

Conclusions and relevance: Providing patient education about BI in primary care settings is acceptable to patients. It is possible that educating patients about BI will help improve care seeking behaviors and patient-provider communication about BI, potentially leading to increased diagnosis and management in primary care.
**Title:** Evaluation of The Effects of Luteolin Against Ovarian Cancer Cells  
**Authors:** Lorena Rodriguez OMS-II, Issam Beydoun OMS-II, Alex Fong OMS-II, Jayanta Das PhD, Arkene Levy PhD, Appu Rathinavelu PhD  
**Program:** Nova Southeastern University Dr. Kiran C. Patel College of Osteopathic Medicine, Fort Lauderdale, FL

**Background:** Ovarian cancer (OC) is the leading cause of death from gynecologic malignancies in the United States. One of the contributing factors to this high rate of mortality, is the development of platinum resistant disease following standard therapy with cytoreductive surgery and chemotherapy with platinum compounds and paclitaxel. Focal adhesion kinase (FAK) is overexpressed in a variety of ovarian carcinomas which seems to be a major contributor to OC resistance, proliferation, and cell immortality via its downstream signaling molecules such as AKT/PI3K that has been linked to apoptosis inhibition through transcriptional effects of nuclear factor kappa beta (NF-κB) and Y-box-binding protein 1 (YB-1). Luteolin (3’, 4’, 5,7-Tetrahydroxyflavone) is a natural flavonoid present in several plants, fruits, and vegetables which has shown downregulatory effects on other types of cancer, especially breast cancer, by inhibiting similar signaling pathways.

**Objective:** Our goal is to determine the IC50 value of Luteolin against the A2780 ovarian cancer cell line using MTT Assay. Following that experiment we will explore potential synergistic effects of Luteolin with Cisplatin and Y15 against the A2780 cell line using MTT assay as well.

**Methods:** A2780 cells were grown in RPMI-1640 medium. Cells were incubated for 48 hours, seeded in 96-well plates at 5,000 cells per well/100µL including a control with media alone, and incubated for 24 hours. Luteolin was added at concentrations of 0 µM, 10 µM, 20 µM, 40 µM, and 160 µM in triplicate samples. Treated cells were incubated for 24 hours at 37°C and 5% CO₂ under humidified conditions. 20 µL of 12mM MTT stock solution was added to each well, including a reagent blank control with no MTT, and incubated for 3 hours at 37°C. After removal of the medium with MTT, cells and dye crystals were solubilized with 150 µL DMSO, incubated for 30 minutes, and optical density was measured at 450 nm on a microplate reader (VERSA max, Molecular Device, CA, USA). Mean absorbance values were averaged and a percentage of viable cells was calculated and graphed for demonstration. Subsequently, in the second experiment, the same steps above were followed but this time treatment of the individual cell groups was done with the following combinations of chemotherapeutic agents and then incubated for 24 hours: Control alone, Luteolin alone (20 µM), Y-15 alone (40 µM), Cisplatin alone (10 µM), Y-15 (40 µM) + Luteolin (20 µM), and Cisplatin (10 µM) + Luteolin (20 µM).

**Results:** Our initial experiment results revealed 100% live cells at 0 µM of Luteolin, 92.263% live cells at 10 µM, 70.908% live cells at 20 µM, 53.772% live cells at 40 µM, and 35.230% live cells at 160 µM. The subsequent experiment yielded results of 100% live cells with 0 µM (control), 69.241% live cells with 10 µM Cisplatin, 26.998% live cells with 20 µM Luteolin, 75.420% live cells with 40 µM Y15, 29.349% live cells with 10 µM Cisplatin and 20 µM Luteolin, 24.782% live cells with 40 µM Y15 and 20 µM Luteolin.

**Conclusions:** Based on our initial data, we experimentally determined that Luteolin produced a significant and dose dependent reduction in cell viability with an IC50 value of 40 µM. The second experiment showed that the combination of Y15 and Luteolin exhibited greater inhibition effects against the OC cells compared to the other treatment.
groups. Interestingly, the Cisplatin and Luteolin combination displayed slightly worse inhibition than the Luteolin group alone, even though Cisplatin is a well-supported chemotherapeutic agent for ovarian cancer. Further exploration into the intrinsic caspase activating ability of Luteolin as well as potential
Title: Children’s Wellness Program: Enhancing Educational Attainment through Improved School Health

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Background: Healthcare in Haiti, a country which holds some of the worst health indicators in the world, is fragmented and inadequate to meet the needs of its people, especially children. This weak health system can have serious implications for children’s health, leading to decreased attendance in school. Chronic absenteeism means students get less education and are at risk of poorer education outcomes. Since education has the power to change generational cycles of poverty and change life for children who might otherwise be exposed to child labor, gangs, or trafficking, programs to improve school attendance are critical.

Objective: The goal of this study is to determine if implementing preventative and interventional health measures in a primary school setting in Haiti will increase student contact with health care para-professionals and improve school attendance.

Methods: This quasi-experimental pilot study addresses the impact of implementing a wellness program run by lay school health workers to enhance education and wellness outcomes. This study was approved for an IRB Category 4 exemption. The program is being conducted at the Children’s Wellness Program office, on the campus of The Children’s Academy in Baocia, Haiti. Five lay health care workers were trained to oversee classrooms, make home visits for absentees, provide basic wound care, treat common illnesses, and administer over the counter medications. All encounters and patient complaints are being documented in an Excel spreadsheet by complaint category. All encounters are also being recorded in a paper file and children are being referred to Haiti Clinic if further care is needed. Absentee rates were measured at baseline (April to September, 2017) and during a follow-up period (April to September 2018) at the start of the program using school records.

Results: The mean absentee rates (based on total number of students absent for 5 classes each year) decreased for the months of April, May, and June from 7.8% (n=552) in 2017 to 3.8% (n=375 in 2018), p< 0.01 (pearson). Documentation outlining complaints to the Children’s Wellness Program office show 519 encounters, addressing 774 complaints, the most common complaint being “flu-like symptoms,” or the presence of cough, chills, nasal discharge, usually in the absence of fever unless otherwise noted.

Conclusion: The initial decrease in absentee rates may indicate that access to health care providers at a primary level facilitates early treatment and prevention of common childhood acute illnesses; and decreases absences potentially related to such illnesses. The number of complaints addressed by health care workers indicates that children participating in the study had increased access to health care providers after the implementation of the pilot program. The findings of this pilot study may provide insight for implementing care in low health care access areas across the world. The implications of this program may also provide suggestions for a new hierarchy of care within the school system, in order to increase access to education via decreasing absentee rates and increasing the treatment of common ailments.
Title: Comparing Dietary Habits of Health Professional vs. Non-Health Professional Students

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Background: The National Research Council established a minimum of 25 hours of classroom nutrition education during preclinical years of medical school to adequately inform future physicians on healthy eating habits. Previous studies suggest some inadequacy in such programs and some knowledge gaps in student perceptions of nutritional issues.

Objective: We sought to add to the informational database regarding student dietary habits and health awareness and to test the hypothesis that students enrolled in health-related programs would be more attuned to and practice healthier nutritional habits than students enrolled in non-health-related programs.

Methods: A 16 question survey was created and distributed to Nova Southeastern University students enrolled either in the Health Professions Division (HPD) or other non-health-related programs (NHPD). HPD programs included Osteopathic Medicine, Dental Medicine, Nursing, Physical Therapy, Occupational Therapy, Physician Assistant, Pharmacy and Medical Sciences. NHPD programs included Business, Law and Education. The main aim of the survey questions was to get feedback on student habits with respect to consumption of sweets, fast food, red meat, caffeine, protein sources besides red meat, water, fruit, and vegetables and their thoughts regarding healthy food choices. Each question had five options and was worth at most 10 points. Quantification and analysis were based on an assignment of 2 points for the “least nutritionally good” choice, 10 points for the “most nutritionally good” choice and in-between values in steps of 2 points. Scoring was done so that higher calculated values indicate nutritionally better. The number of responses for the planned final analysis is 250/group.

Results: As of now there have been 323 responses (262 HPD and 61 NHPD). Most responses were from females (73.6%). Ethnic distribution of responses was 41.5% Caucasian, 26% Hispanic, 9.3% Asian-Indian, 8.7% Asian, 8.3% African-American and 6.2% other ethnicities. Interim analysis of responses was based on Mann-Whitney non-parametric tests since Normality of score distributions was rejected (p<0.01) using the Shapiro-Wilk test. Differences between HPD and NHPD response scores were considered statistically significant if p < 0.01. Results showed no significant difference (NSD) between HPD and NHPD in any tested parameter. This included their consumption of sweets, fast food, red meat, caffeine, water, fruit, vegetables, considerations of healthy food choices, and protein sources besides red meat. An unexpected result was the finding of gender differences in some parameters. Females scored higher in red meat consumption (7.44 vs. 6.05, p<0.001) but lower in protein intake (4.34 vs. 4.80, p<0.001), and lower in water intake (6.38 vs. 7.01, p = 0.008).

Conclusion: The preliminary results of this study suggest that HPD program students and Non-HPD program students have similar nutritional concepts and eating habits that at this juncture do not appear to be statistically different. It may be the that our initial underlying hypothesis is not correct and if borne out after final analysis may necessitate re-thinking of the role that nutritional education plays in dietary health and wellness considerations among students.
Title: Missed Opportunities for Sexual & Gender Competency in Osteopathic Medical Education

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Background: Recent studies looking at medical student competency in sexual and gender minority persons (SGM) care reflect a lack of knowledge and understanding in treating patients of SGM. At NSU-KPCOM, students care for patients in Florida’s Miami-Dade and Broward Counties, which outrank entire states in incidences of new HIV infections among SGM patients. Safe Zone trainings can improve students’ knowledge and understanding of SGM communities. This study investigated the efficacy of such training to improve SGM health competency of medical students residing within Miami-Dade and Broward.

Objective(s) - If research shows medical students lack sexual health competency, can an optional training improve their knowledge base, and if so, how would such training affect their understanding of patients who identify as sexual and gender minorities.

Methods - Design: Participants were consented and asked to complete an IRB approved pre-training and post-training surveys. Surveys measured competency and understanding using Likert scale questions related to SGM patient care. Setting: Participants for the study were sought out at Nova Southeastern Kiran C. Patel College of Osteopathic Medicine through various social media applications and email. The event took place in a lecture hall on campus. Patients (or other participants): Participants eligible for the survey had to be over the age of 18, enrolled in Nova’s Osteopathic medicine program, plan on attending the training, and be willing to fill out the pre and post training surveys. Interventions: The main intervention of the study was the Safe Zone Training thrown by the school’s Gay and Lesbian Medical Association. The Safe Zone training was planned using the guidelines created by the Safe Zone Training Facilitator Guide made by The Safe Zone Project. Main Outcome Measures: The study aimed to look at the differences between the surveys before and after the Safe Zone Training event to see if knowledge or understanding improved as a result of the training.

Results - Average Percentage Correct improved from from 59% to 68% from pre-event to post-event survey*. A two-tailed T-test yielded a value of -2.45 (p= 0.015634), indicating a significant increase in knowledge after the event. Additionally, almost 80% of participants in the event expressed that the training is relevant enough to be incorporated into their required curriculum, identifying a desire to learn more about the health disparities of SGM communities.

Conclusion - Results of this study showed that not only does education on SGM healthcare lead to a better understanding of the population, but also that students are interested in learning more about the SGM community in order to better serve them as physicians. Extending this one hour training to a component of the Osteopathic curriculum can improve NSU-KPCOM’s, and osteopathic students around the country’s, knowledge and understanding of SGM communities. Future studies could investigate retention with a 6-month follow-up survey.
Title: Modeling Melanoma-induced Monocyte Conversion to Myeloid-Derived Suppressor Cells to Identify Novel Immunotherapies

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Background: Tumors have the capacity to suppress the host immune system. To achieve this, tumors secrete factors that induce the conversion of CD14+ monocytes to an immunosuppressive population of cells called myeloid-derived suppressor cells (MDSC). MDSCs suppress vital immune cells, such as T-cells, by limiting their proliferation and effector cytokine production. Heightened MDSC levels in the blood and tumor microenvironment (TME) of certain cancers correlate to cancer progression.

Objective: The objective of this study is to determine if there is an increase in the conversion of CD14+ monocyte cells to MDSCs in the presence of human melanoma and renal cell carcinoma cells. We will also determine if there are differences in amount of CD14+ conversion to MDSCs between human melanoma and renal cell carcinoma. We would then like to determine if there is a decrease in T-cell proliferation and IFN-gamma production upon co-culture with the MDSCs generated in this model.

Methods: We used a ‘tumor education’ co-culture to model the conversion of CD14+ monocytes to MDSCs upon interaction with patient-derived melanoma and renal cell carcinoma cells, to reflect that which occurs in vivo. We quantified these converted ‘cancer-educated’ MDSCs by Cell Flow Cytometry using markers including CD11b, HLA-DR, and CD33 to distinguish MDSC from CD14+ monocytes. MDSC suppressive effects on T-cell proliferation will be measured by carboxyfluorescein succinimidyl ester and IFN-gamma production, by ELISA.

Results: The data shows that in the presence of human cancer cells, there is an increase in the expression of CD14+ marker, and a decrease in the expression of HLA-DR marker. The data also shows that melanoma cells have a greater effect on HLA-DR and CD14+ expression than renal cell carcinoma in the three donors evaluated. We would expect a decrease in T-cell proliferation and IFN-gamma production upon co-culture with the MDSCs generated in this model.

Conclusion: The data confirms our hypothesis that tumor cells induce the conversion of CD14+ monocytes to MDSC when placed in a co-culture with cell-cell contact. This suggests that tumor cells secrete factors to induce the up-regulation of MDSC in an effort to suppress host immunity. The data also conveys that melanoma tumor cells have a more robust effect on MDSC conversion than renal cell carcinoma cells, which suggests that melanoma may more heavily utilize MDSC to suppress host immunity. By developing this platform to dissect the mechanisms of MDSC generation in the presence of melanoma, we will be able to identify potential therapeutic interventions to decrease MDSC conversion and enhance anti-cancer immunity. With the importance of developing combination cancer immunotherapies that improve T-cell responses and decrease MDSC generation, this tractable model will facilitate this research.
Title: Use of DTI Tractography to Define Target Regions for Radiotherapy for Glioblastoma

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Background: Glioma is a type of brain tumor, originating in the glial cells in the brain and accounts for about one third of all brain tumors. Because glial cells are the tissues that surround and support neurons in the brain, gliomas are called intrinsic brain tumors and tend to grow preferentially along the white matter tracts of the brain. Current treatment methods include surgery for resection of tumor and adjunct chemotherapy with radiation therapy. However current radiation therapy involves wide margins and nonspecific coverage of both white matter and grey matter.

Objective: To implement a new algorithm for more accurate radiation contouring in treating glioblastoma with radiation oncology.

Methods: Patient data was received for three individuals with GBM. MR Imaging was performed using a 3 Tesla scanner with T2 weighting parameters (TR =9800ms, TE=82.1ms, Slice Thickness 2mm and Flip Angle of 90). Acquisition matrix of 128 x 128 was used during image acquisition. Diffusion weighting was set at b-value of 1000 s/mm² with 55 gradient diffusion directions. A FLAIR sequence was run to suppress CSF. Data quality was acceptable in all cases and models for radiotherapy were established using FSL preprocessing, BedpostX and Probtrackx of patient tumor seed.

Results: A total of three patients with GBM were imaged using a 3 Tesla MRI. For patient 1 the DTI method decreased volume of grey matter irradiated by 8.34x10⁴ mm³ while decreasing the volume of white matter irradiated by 1.37x10⁵ mm³. For patients 2 and 3 total volume was increased in the DTI Tractography method by 3.41x10⁴mm³ and 4.43x10⁴mm³ respectively which was the result of making sure our method reached the corpus callosum. We addressed this issue by applying a smoothing kernel, which decreased the total volume radiated compared with the original DTI volume by 1.18x10⁵mm³ for both patient 2 and 3.

Conclusion: Current radiotherapy treatment using a 2cm isotropic expansion of tumor margins is nonspecific and potentially results in over-radiation, especially in areas of the brain responsible for cognitive function. This study utilizes Tractography in targeting pathways of high probable tumor recurrence while attempting to minimize total treatment volume to prevent over radiation of patients. Use of DTI in predicting GBM growth can be a more automated and methodological approach that may one day supersede the current method of 2cm isotropic expansion and hopefully be used as the gold standard in the clinic.