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A quantitative, whole-bacterial enzyme linked immunosorbent assay (ELISA) to measure *Chlamydia trachomatis* specific antibodies in sera and genital secretions from women

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**Background:** *Chlamydia trachomatis* (CT) is the most common bacterial sexually transmitted pathogen in the US and worldwide. Infection of the genital tract in women can lead to severe reproductive sequelae, such as pelvic inflammatory disease and infertility. Infection is frequently asymptomatic, and immunity is generally transient in young women. Additionally, infection with CT increases susceptibility to other sexually transmitted pathogens, such as HIV. Due to the morbidities and possibility of multiple re-infections, there is a pressing need for a vaccine, yet, the natural correlates of immune protection are unknown. Several studies suggest, however, that antibodies may play an important role in clearance and protection against re-infection. Several studies have demonstrated that local antibody repertoires against other pathogens do not reflect systemic antibody repertoires. Additionally, CT produces an infection that is localized to the reproductive tract. We, therefore, endeavored to investigate the humoral response to CT in the local genital tract. In order to accomplish this, we developed a reproducible quantitative enzyme-linked immunosorbent assay (ELISA) to measure whole elementary bodies (EB) of CT specific IgG and IgA in sera and genital secretions of CT infected women.

**Methods:** A mixture of EBs of CT serovars D, E, and F were attached to poly-L-lysine coated microtiter plates and fixed with glutaraldehyde. Confirmation of adherence of whole EBs was determined by using multiple antibodies against intra and extracellular CT antigens. Standards of IgG and IgA against EBs were developed by pooling sera from CT infected women with high titers, and concentrations were calculated against known standards. CT specific IgG and IgA in sera and genital secretions were measured via the developed ELISA and normalized to total IgG and IgA respectively. IgG and IgA myelomas and human monomeric antibodies were used as negative controls.

**Results:** Coating microtiter plates with poly-L-lysine and fixation of EBs with glutaraldehyde resulted in adherence of whole EBs as evidenced by detection of outer EB membrane antigens but no detection of intracellular antigens. Normalized levels of CT-specific IgG and IgA in sera from CT infected women were significantly higher when compared to negative controls. However, a proportion of patients had negative sera CT-specific IgG and IgA, despite being positive for CT by nucleic acid amplification test (NAAT). Genital secretions from women infected with CT had higher proportions of EB-specific antibodies when compared to sera. Further, cervical and vaginal secretions had similar proportions of normalized EB-specific antibodies.

**Conclusions:** We have demonstrated that genital secretions of women have a significantly higher proportion of CT specific antibodies compared to those observed in the systemic counterpart, suggesting that the majority of the humoral response against CT is produced at the mucosal site. These findings validate the necessity to investigate local CT antibody responses and will allow us to investigate the effective antibody isotype(s). Additionally, this quantitative ELISA could be used during CT vaccine trials to monitor both systemic and local CT specific antibody responses.
INTRODUCTION: Esophageal perforation is a condition with high rates of morbidity and mortality. Non-operative management, although not the mainstay of treatment, is becoming increasingly popular. Here we present a case of esophageal rupture treated with medical management.

CASE: A previously healthy 30 year old male presented to the Emergency Department with a “piece of a chicken breast” lodged in his esophagus. He had dysphagia to oral secretions, and he had attempted multiple times to manually induce regurgitation of the food bolus. He denied hematemesis, but he was able to expel some of his saliva. His vitals were stable, and his physical exam was unremarkable. The only significant lab finding was leukocytosis of 23.6x 10³/µl. X-ray of the neck was unremarkable. Emergent endoscopy was performed, and the large food bolus was removed using a Roth net. A 10 cm linear tear was noted above the food bolus. After the procedure, subcutaneous crepitus was appreciated. Computed tomography scan and X-ray showed extensive pneumomediastinum which extended into the neck, thorax, and abdomen. The patient was monitored in ICU, kept NPO and started on vancomycin, cefepime, and metronidazole. Daily chest x-rays were obtained to evaluate for complications. On day 3, gastrograffin and barium swallows showed no leaks. By day 5 the patient was tolerating liquids, and by day 6 the patient was discharged on a soft diet, a proton pump inhibitor, and oral amoxicillin/clavulanate. The patient remained stable throughout his stay without identified complications.

DISCUSSION: The case demonstrates the importance of early recognition of emergent esophageal pathologies and the utility of medical management for esophageal perforation. Patients may be candidates for medical management if the leak is contained within the neck or mediastinum, minimal symptoms are present, and there are no signs of sepsis. Current treatment recommendations are not well established but include an NPO diet for minimum of 7 days, broad spectrum IV antibiotics for 7-14 days, total parenteral nutrition as needed, and repeated contrast study to ascertain progress of treatment.
HIV Outpatient Clinic Quality Initiative to Improve Hepatitis B Vaccination
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Background
Seventeen percent of the patients in the HIV Outpatient Program (HOP) Clinic are co-infected with Hepatitis B (HBV), and an estimated 56% are unvaccinated. Our goal: improve HBV vaccination among newly diagnosed HIV patients via a dedicated program of screening, vaccinating and confirming serology

Methods:
From a retrospective chart review of two cohorts of new enrollees to HOP between 2012 and 2014, patients non-immune to Hepatitis B were identified, for a total of 373 patients. We focused on the 117 non-immune patients with a CD4 cell count of greater than 200. Data extracted from the electronic medical record included initial CD4 count, initial serological status using surface antibody testing, review of previous vaccine series, and confirmatory serology after completion of series.
Our intervention included educating providers and patients of the need to improve vaccination rates. We created a unique feature in the electronic order system which facilitated ordering the vaccine series and post vaccination serology with a single order. Patient navigators helped reach out to patients lost to follow up and scheduled them for a visit.

Results:
New enrollees between 2012 and 2013 included 168 patients of which 91 were found to be non-immune. Approximately 46 patients of patients had a partial vaccination series and 34 completed the three dose series. All new enrollees during the intervention period from August 2014 to December 2014 totaled 205 patients. Of these 116 were non-immune and 62 had CD4 counts greater than 200. Of these 23 successfully completed a vaccination series. The electronic therapy plan was utilized in every 1 out of 3 patients. We achieved serological conversion in 18 out of these 57 patients giving a 31% percent success rate.

Conclusions:
Hepatitis B vaccination in HIV patients is an important part of disease prevention. Efforts to vaccinate should be made at every available opportunity to ensure we maximize those who achieve immunity. By streamlining the orders for vaccination series using a therapy plan were able to streamline the vaccine administration process and capture more vaccination opportunities.
Title: The twenty year itch

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Introduction: This is the case of a patient presenting with an exophytic mass secondary to chronic dermatophyte infection.

Case Description: The patient, a male in his late thirties, was admitted with the complaint of two days of painful right groin mass. This was determined to be necrotizing lymphadenitis which was debrided emergently in the operating room. On exam patient was found to have a chronic skin condition he reported to have worsened over the chest and shoulder. The patient suffered from this condition intermittently since age 15. Previously it improved with a combination topical antifungals and steroids. He had never been given a specific diagnosis. On exam patient had the findings of a surgical debridement procedure in the right lower quadrant of the abdomen just above the inguinal ligament. Additionally there was a raised papillomaform rash on the upper chest, trunk, and proximal upper extremities and right axilla that was erythematous and tender with areas of lichenification, scaling and weeping. He also had involvement of the back with thick scaling and crusting. The axillary mass was exophytic, erythematous and friable. (Image 1) Patient reports it was pruritic and present for the past nine months. There were also a few scaly papules one centimeter in diameter scattered over both legs. He also was found to have onycholysis of all nails of the left hand and left great toe. He was taken to the operating room for debridement of the groin and also had biopsy of the right axillary mass. He was given broad spectrum antibiotic therapy for the lymphadenitis. While on antibiotics the erythema associated with the chest lesions improved but skin remained hypertrophic in appearance.

A skin biopsy with cultures was performed. Review of literature showed that his skin lesions to be similar to those associated with chronic mucocutaneous candidiasis (CMC) and caspase-associated recruitment domain deficiency (CARD9) deficiency. He was started on anti-fungal therapy given this suspicion. Punch biopsy results confirmed fungal invasion of the epidermis with a dermatophyte. The periodic acid-Schiff stain showed typical fungal hyphae with pseudoepitheliomatous hyperplasia of the epidermis and dense superficial and deep chronic inflammatory infiltrate. The Gomori methanamine silver stain revealed numerous pleomorphic fungal hyphae. (Image 2) Fungal cultures grew Trichophyton rubrum. Viral culture of the tissue was negative.

He received antibiotics for treatment of his necrotizing lymphadenitis which was culture positive for methicillin sensitive Staphylococcus aureus. He was started on oral fluconazole to cover for candida and dermatophytes. He began to improve within a few days of treatment. After three weeks of therapy the patient continued to show reduction in skin lesions and hypertrophic appearance of skin. By 8 weeks of oral therapy the fungating axillary mass was nearly down to 25% of its original size.

Discussion: This case has features similar to CMC and CARD9. Both are diseases with onset in young children and result from poorly understood immunological deficiencies. Adult cases of chronic fungal infections are usually limited to those with malignancy or autoimmune polyendocrinopathy candidiasis ectodermal dystrophy (APECED). This is usually associated with an endocrinopathy or chronic environmental exposure such as hyperhydrosis and nail dystrophy can often be a presenting symptoms. Our patient reported the latter two. These patients have an altered immune response to Candida infection due to defects in cytokine signaling, receptors or production of IL-17. In CARD9 deficiency there is disruption of the cytokine signaling pathways. Patients are susceptible to have concurrent dermatophyte or viral infections. These conditions should be suspected in patients with repeated fungal or dermatophyte infections. Patients with these diseases may need lifelong suppressive anti-fungal therapy or immunomodulation therapy to help control disease manifestations.
In vitro Susceptibility of local Neisseria gonorrhoea Isolates to Ertapenem
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Background
Drug-resistant Neisseria gonorrhoea is quickly becoming a public health threat. Over the last century we have lost several first line therapies for this organism. There are limited options for treatment recommended by the Center for Disease Control and Prevention. Over the last two decades cephalosporin resistance has been emerging globally. Our New Orleans clinic is a participant in the Gonorrhoea Isolates Surveillance Program (GISP). Here we have found ten isolates that were resistant to the cephalosporins. We decided to look at in vitro sensitivity to ertapenem, a broad spectrum carbapenem antibiotic. Given the once daily intramuscular dose, it provides a convenient alternative to ceftriaxone. Three previous studies have also looked at the susceptibility of N. gonorrhoea to ertapenem. The most notable one performed in the UK showed that as ceftriaxone MICs rose, MICs to ertapenem fell.

Methods:
Using the E-test method we performed susceptibility testing on GISP isolates with confirmed N. gonorrhoea via nucleic amplification testing (NAAT) and culture. A total of 67 isolates from 2014 were tested. Each strain was initially defrosted from frozen stock and then inoculated onto selective media using streak plate method to allow growth of colonies. These were incubated at 35°C to 36.5°C in 5% carbon dioxide for 24 hours. These were then subcultured for purity onto a non-selective media and re-incubated. Isolates were then diluted to a Mc Farland standard of 0.5 or 108 CFU/mL with Mueller Hinton Broth and then plated onto Meuller Hinton Agar. Antibiotic E-test strips were applied for ertapenem, ceftriaxone, azithromycin, and gentamicin. QC strains for antimicrobial susceptibility testing included Haemophilus influenza, Escherichia coli and Neisseria gonorrhoea were run with each batch of testing. Plates were then incubated for 24 hours. The MICs for each isolate were recorded and compared to the established CLSI values.

Results:
Of the 67 isolates tested, 12 were eliminated from analysis due to contamination or failure of the controls. Of the remaining 55 isolates MICs ranged from < 0.02 to 0.125, and 52 had MICs of less than 0.12 which is considered the susceptible range. A total of 3 isolates were resistant to ceftriaxone with MIC >0.125 and were also resistant to ertapenem with MIC >0.12. Gentamicin exhibited MICs ranging from 0.25 to 6, with most on average equal to 4 which is susceptible. Results for azithromycin were poor with most isolates having an MIC of greater than 0.12.

Conclusions:
Alternative therapies for N. gonorrhoea are desperately needed. Our study shows that ertapenem has high levels of activity against N. gonorrhoea. However, all three of our ceftriaxone resistant strains were also resistant to ertapenem. This correlation has not been previously seen. The next phase of our research will look at activity of ertapenem against additional cephalosporin resistant strains. Our findings also support the recommendation by the CDC in the 2015 STD Treatment Guidelines that azithromycin should not be used alone in the treatment of gonorrhea.
Gonococcal infections in a New Orleans STI Clinic: 2014
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Background
Gonorrhea continues to be a public health challenge. With emerging resistance and an increase in extragenital infection rates it is becoming more cumbersome to treat. We sought to identify the characteristics of our clinic patients that may shed light on risk factors for repeated infections or treatment failure.

Method
A retrospective chart review of 162 male patients who presented to Delgado Personal Health Center (STI Clinic) in 2014 with the diagnosis of gonococcal urethritis was performed. Demographic information, presenting symptoms and signs as well as sexual behavior was collected. Data on urethral smear results, nucleic acid amplification test (NAAT) results and culture for Neisseria gonorrhea results were also recorded.

Results
Patients’ ages ranged from 15-62 years. The predominant race was African American comprising 95% of the group. The majority of patients reported symptoms which included urethral discharge (95%) and dysuria (68%). Those reporting prior episode of urethritis was 42%. The majority of patients identified as heterosexual (85%), with 12% identifying as homosexual and 2.5% as bisexual. The predominant form of sexual contact was vaginal sex, but an additional 65% also reported oral sex, and 18% engaged in anal sex. When asked about prophylaxis, 89% reported strict condom use and only 7.6% reported never using condoms. However, less than 2% reported using condoms with last coitus. Ninety percent of patients had a negative HIV status determined by rapid testing on the day of the visit or self-report from previous testing. Physician exam revealed only 18% had lymphadenopathy, less than 1% had testicular pain and 98% had urethral discharge. NAAT testing was positive for 90% of patients for gonorrhea and there was a 34% rate of Chlamydia co-infection. This correlated well with culture results which were positive in 91% of patients. Treatment varied among subjects: ceftriaxone and azithromycin (49%), anti-gonococcal study drug (35%), ceftriaxone only (6.4%), ceftriaxone and study drug (5.7%) and azithromycin alone (3.8%).

Conclusions
Findings of our chart review reveal diverse sexual practices and high risk sexual behaviors in our patient population. Our screening methods during the study period of urethral only testing in a population that engages in oral and anal sex likely missed many extragenital infections which are significantly less often symptomatic. Our study patients reflect only those who had symptomatic genital infections. Routine NAAT of extragenital sites would perhaps find the reservoir of infection in our community that is not detected by current screening practices. The majority of our patients did exhibit symptomatic urethral discharge allowing for isolation and culture of the organism. Almost all patients reported lapse in barrier protection during their last sexual encounter, suggesting we need to convey a stronger message promoting basic prevention strategies.
Listeria Bacteremia: A hidden reason to avoid the Deli
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CASE: A 59 year old man presented to the Emergency Department (ED) with five days of subjective fevers, night sweats, and progressive shortness of breath with exertion. He also reported one month of generalized fatigue, decreased exercise tolerance, and two days of loose stools. In the ED, he was tachycardic to 110bpm and febrile to 105.5 °F. On physical exam he was having rigors and had a new petechial rash on his lower extremities. He had no lymphadenopathy, meningeal signs, or cardiac murmurs. Labs were significant for thrombocytopenia (30 K/ul), leukocytosis (16.79 K/ul), anemia (hemoglobin 7.5 g/dl, hematocrit of 23.5%) and an elevated creatinine (1.5mg/dl). Chest radiograph was unremarkable, CT abdomen only showed a non-obstructing left renal stone, and CTA chest was negative for PE but did showed splenomegaly. Blood and urine cultures were drawn and he was started on empiric vancomycin, piperacillin-tazobactam and Ciprofloxacin. Blood cultures grew out Listeria monocytogenes and antibiotics were changed to ampicillin. He was improving on exam but on day three his WBC started to trend up. The leukocytosis continued to trend up but the patient retuned to his subjective baseline and on day seven he insisted on being discharged. On discharge he was noted to have leukocytosis (26.77 K/uL) and thrombocytopenia (30 K/uL). On follow up with Hematology/Oncology his WBC increased to 93.77 K/uL. A bone marrow biopsy showed hypercellular marrow 90-100% of which was replaced with mature T-cells. He was diagnosed with T-cell prolymphocytic leukemia and was started on chemotherapy.

DISCUSSION: Listeria monocytogenes is a pathogen most commonly associated with neonates, pregnant women, elderly and the immunocompromised. Listeria is a small facultative intracellular anaerobic Gram positive rod with flagellae that favors refrigerated temperatures. Listeria commonly causes infection after ingestion of contaminated foods. T- cell lymphokine activation of macrophages clears Listeria from the blood and leads to immunity. Individuals with hematologic malignancies are at increased risk of Listeria infection and have higher mortality rates from Listerialosis, leading one to believe that perhaps it’s not just the pregnant women who should avoid the deli counter.
Catastrophic Retroperitoneal Bleeding Due to Acquired Factor VIII Inhibitor

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Introduction: Acquired factor VIII inhibitor is a rare coagulopathy caused by autoantibodies directed against Factor VIII, resulting in prolonged PTT and abnormal bleeding. Known causes of acquired factor VIII inhibitor include autoimmune disorders (most commonly SLE, RA and Sjögren’s syndrome), pregnancy, malignancy, and drug reactions.

Case description: An 81 year old female with a past medical history significant for polymyalgia rheumatica presented with a chief complaint of nausea, vomiting, and abdominal pain two days after sustaining a minor fall from standing. Initial labs were significant for hemoglobin of 8.7 g/dL and a prolonged PTT of 53 seconds with a normal PT and platelet count. CT of the abdomen and pelvis revealed a large left peritoneal hemorrhage. Patient initially managed conservatively, but hemoglobin dropped precipitously and patient went into respiratory arrest with subsequent PEA on day two of admission. ROSC was achieved with ACLS and patient was taken to the OR, where exploratory laparotomy revealed retroperitoneal bleed with rupture into the abdomen. No active source of bleeding was identified so abdomen as packed; CT angiography also failed to identify any actively bleeding vessels. The patient continued to experience drops in hemoglobin despite frequent transfusion of blood products. Subsequent CT angiograms identified pseudoaneurysm of the left intercostal artery and active bleeding of the left iliolumbar artery and the lower branch of the splenic artery, which were embolized. Despite these interventions, the patient continued to exhibit ongoing bleeding requiring and hematology was consulted for prolonged PTT. A mixing study demonstrated failure of PTT to correct with addition of normal plasma. Factor VIII activity was severely decreased at 5.3% and a Bethesda assay was consistent with a moderate potency factor VIII inhibitor at 8.3 Bethesda units. The patient was started on methylprednisolone at 1mg/kg to provide immunosuppression of the inhibitor. Due to failure of extubation trials, the patient underwent a tracheostomy and PEG placement; recombinant human factor VIIa (NovoSeven) was given prior to and following the procedure. However, the patient experienced significant oozing from the tracheostomy and PEG sites once the NovoSeven was stopped and required several additional doses to control the bleeding. The patient’s bleeding resolved and hemoglobin remained stable with no additional bleeding episodes off NovoSeven. PTT normalized and a repeat Bethesda assay demonstrated decreasing inhibitor levels. The patient will be continued on corticosteroids and subsequently tapered if adequate suppression is maintained.

Discussion: Acquired factor VIII inhibitor typically presents with mucosal bleeding, ecchymoses or large hematomas; as demonstrated here, the initial diagnosis may not be made until the patient develops severe, life-threatening bleeding. This case demonstrates the need for a high index of suspicion for acquired factor VIII inhibitor in an adult patient presenting with signs of bleeding and elevated PTT, especially in the context of a known risk factor (such as a rheumatologic disorder, as seen in this patient). Treatment focuses on control of the active bleeding and immunosuppression with corticosteroids; cyclophosphamide and rituxamab have also been found to be effective in cases refractory to steroids.
Fulminant Coxsackie Myocarditis
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CASE: A 59-year-old woman with past medical history of Takotsubo cardiomyopathy with full recovery of systolic function and tobacco abuse was referred to the Emergency Department (ED) from her primary care physician’s office for tachycardia. She had initially presented to her PCP with 3 weeks productive cough with dyspnea not improved with doxycycline and cough suppressants. Upon evaluation in the ED, she was found be in atrial fibrillation with RVR by EKG without ischemic changes. She received several doses of IV diltiazem and metoprolol and went into a junctional rhythm. She subsequently developed worsening hypotension with cold extremities and sluggish capillary refill. Initial labs revealed an elevated BNP (1762 pg/mL) and mildly elevated troponin (0.031 ng/mL), which remained stable on repeat lab draws. Echocardiography (Echo) on admission showed a severely reduced EF of 10% without focal wall motion abnormalities. She was admitted to the ICU for suspected cardiogenic shock requiring multiple vasoactive agents and rapidly developed multi-organ failure requiring IPPV and RRT for acute respiratory and renal failure, respectively. Given the history of viral prodrome preceding admission, there was high suspicion for viral myocarditis precipitating her cardiomyopathy. Respiratory viral panel, HIV, hepatitis and legionella were all negative. Enteroviral panel returned positive for Coxsackie B2 and B6 antibodies. With supportive therapy her shock improved and she was extubated.

DISCUSSION: Viral myocarditis is an important cause of cardiomyopathy that requires a high degree of suspicion as it can present with a wide range of clinical manifestations, including chest pain, heart failure, arrhythmia or sudden cardiac death. EKG findings are typically non-specific. Classic echo findings include global hypokinesis with or without pericardial effusion. Cardiac MRI can be useful in establishing a diagnosis. The gold standard for diagnosis is endomyocardial biopsy, which is invasive and therefore infrequently done. Treatment of viral myocarditis is aimed at the sequelae of the disease, including heart failure and arrhythmia according to current guidelines.
The Addition of Ultrasound Into the First Year Medical Student Curriculum
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**Background:** Many medical schools across the United States have begun including ultrasound education training into the basic science curricula of the first and second year. LSU does not yet have such a program. For the first semester of the 2015 academic year, we implemented a pilot program of ultrasound training for the LSU School of Medicine class of 2019.

**Methods:** We added three ultrasound labs for all students to both reinforce concepts from anatomy as well as to introduce basic ultrasound concepts (see objectives). The first lab focused on ultrasound of the eye, and offered students the chance to visualize ocular anatomy in real time as well as to introduce the ultrasound concepts of orientation, depth, frequency, and echogenicity. The second lab used Sonosim, an ultrasound simulator, to experience cardiac ultrasound, to reinforce the anatomy of the heart and blood flow within it, and to reinforce the ultrasound concepts taught in the first lab. This session was preceded by a didactic presentation given during the student lecture period. The final session again used Sonosim to explore abdominal ultrasound. The goals for this session were to explore the ultrasound concepts of anatomical planes, frequency, echogenicity, and the “flashlight” concept, while exploring the anatomical principle of potential spaces.

**Results:** We implemented the above curriculum in the fall of 2015 with the assistance of School of Medicine faculty, Emergency Medicine residents, and Trauma surgery fellows. Upon completion of the three sessions, an optional and anonymous survey was distributed to the medical student class to gauge our effectiveness in reaching our objectives and to solicit feedback for future sessions. Overall, the responding students felt that the course was successful, with greater than 80% of students agreeing that we had met each of our objectives (see graphs). The additional feedback was positive, with many suggestions for ways in which to expand this curriculum in the future.

**Conclusion:** We were able to successfully introduce ultrasound into the first year Medical Student curriculum for the class of 2019. In the future, we seek to expand this program, as well as to add content to the second year curriculum.
Bedside Ultrasound Evaluation of Pediatric Blast Injury in Kurdistan, Iraq
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Background: Duhok is a city in northwestern Iraq, in the semi-autonomous region of Kurdistan. The Islamic State (ISIS) controls area as close as 75 km away and the ongoing conflict has caused many military and civilian casualties.

History: A 13-year-old boy presents to the hospital in Duhok with injuries sustained after an improvised explosive device (IED) was detonated near to the group of children he was playing with.

Physical Exam: The patient is alert but crying. Vital signs are: BP 110/70, HR 130, RR 30. Exam reveals multiple superficial wounds to the chest and abdomen and a more significant appearing puncture wound to the epigastric area. Abdominal tenderness is present. A laceration is also noted to the left ankle.

Hospital course: Resuscitation is initiated with IV fluids. A FAST (Focused Assessment with Sonography in Trauma) exam reveals a large amount of free fluid within the pelvis (Image 1), a hyperechoic focus within the liver (Image 2), and a small pericardial effusion (Image 3). Based on these results, the patient is evaluated by a surgeon and taken to the operating room. A liver injury caused by shrapnel is noted and repaired. The pericardium is opened to reveal only serous fluid, which later is found to be AFB (acid fast bacilli) positive. The patient recovers well and is discharged home.

Discussion: The FAST exam has proven to be indispensible in trauma, particularly in low resource areas. This case highlights the rapid diagnosis of intra-abdominal injury, which led to rapid treatment of this patient. Blast injuries can be complex and frequently involves both blunt and penetrating aspects. These injuries are seen with frequency in areas of military conflict, such as in Iraq, but may become more prevalent in other areas, particularly with the increasing threat of terrorism.
Compassionate Use of Aldoxorubicin in Disseminated Kaposi’s Sarcoma.

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A 31-year-old male with a new onset HIV diagnosis is presented. A patient who presented to the ED with symptoms of shortness of breath and nasal swelling was found to have a new diagnosis of HIV. He presented with purple lesions on his face and noticed that his nose was larger than usual, resulting in hospitalization. His CD4 count was 8 and viral load 411,065. Ultimately, he was diagnosed with disseminated Kaposi’s sarcoma in his airways and GI tract. On a subsequent admission he presented to the hospital with abdominal pain, hemoptysis, hematemesis and shortness of breath. After being placed in the MICU for respiratory failure, he was later given aldoxorubicin for compassionate treatment given high tumor burden and poor prognosis. The patient lived for an additional 9 weeks and 6 days after beginning the aldoxorubicin regimen with the majority of this time spent outside of the hospital setting enjoying a good functional status. Although he responded well, ultimately there was disease progression on drug therapy and the determined likely cause of death was disseminated Kaposi’s sarcoma.

Aldoxorubicin has been used as an experimental treatment for disseminated Kaposi’s sarcoma. The rarity of the disease limits the ability to test its efficacy in clinical trials. In this case, the patient was excluded from said clinical trials for multiple dismal prognostic indicators. However, a compassionate waiver was granted for palliative treatment and the patient lived with improved functional status, decreased symptomology, and outside the hospital though he ultimately succumbed to his illness. We propose aldoxorubicin as effective compassionate therapy for disseminated Kaposi’s sarcoma.
Assessing the Role of Natural Killer cells in *Pneumocystis murina* Pneumonia

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**Rationale:** *Pneumocystis* pneumonia (PCP) is a significant problem in immunocompromised patients, especially those with HIV/AIDS. Our lab has previously identified a functional interaction between natural killer (NK) cells and CD4 T cells during murine *Pneumocystis* pneumonia. Here we hypothesize that cross-talk between NK and B cells is also required for optimal host defense against *Pneumocystis* pneumonia.

**Methods:** C57BL/6 mice were inoculated intratracheally with $2 \times 10^5$ of *Pneumocystis murina* cysts. To investigate the interaction between NK cells and B cells, mice were depleted of CD4 T cells, NK cells, or NK and B cells prior to a primary infection or secondary challenge. Control mice were not depleted of any cell types. Lungs were collected to assess changes in the cellular population, via flow cytometry, and quantify fungal burden via PCR. Serum was collected to quantify the *Pneumocystis* specific immunoglobulin (IgG, IgM, IgA) response.

**Results:** Mice depleted of CD4 T cells, NK cells, or NK and B cells prior to secondary challenge cleared *Pneumocystis* within 48 hours. This was also observed in the intact animals. As expected, mice depleted of CD4 T cells prior to primary infection had a substantial increase in *P. murina* lung burden compared to wild type (WT) mice. Surprisingly, NK depleted mice had a considerable *P. murina* burden, similar to CD4 depleted mice, and mice depleted of both NK and B cells had a significant increase in fungal burden compared to NK cell depletion alone, $p < 0.05$. Analysis of immunoglobulin levels, during primary infection, revealed a significant decrease in IgA and IgG levels in all depleted animals but no change in IgM compared to WT mice.

**Conclusion:** Here we show that NK cells are involved in host immunity to *Pneumocystis* by controlling the fungal burden during infection. We also show that NK cells are necessary for antibody class-switching from IgM to IgG or IgA. Together these results suggest an interaction between NK cells and B cells. Depletion of NK cells, CD4 T cells, or NK and B cells prior to a secondary challenge did not affect the clearance of *P. murina*. This result demonstrates that once an immune response is established during a primary infection, antibodies alone are sufficient to clear a subsequent challenge. In the future we will further investigate the functional relationship between NK cells and B cells in the host response to *P. murina*. 
Extra pulmonary small cell carcinomas are rare malignancies with poor prognoses. Our patient, a 58 year old gentleman with a 25 year history of HIV on HAART therapy and CKD, was admitted with acute renal failure, hypokalemia, and severe metabolic alkalosis. He was in his usual state of health until 6 weeks prior to the admission. At that time, he developed HTN and acute fluid retention with edema of the lower and upper extremities. He reported proximal muscle weakness, fatigue, and edema of the hands and feet. The patient was admitted for acute kidney injury. On admission, his creatinine was 5.6 mg/dL. He also was noted to have hypokalemia (2.3 mmol/L) and a metabolic alkalosis. Morning cortisol was elevated (>110 mcg/dL). Cortisol levels did not suppress with either 1 or 8 mg dexamethasone suppression testing. ACTH levels were extremely high (1585 pg/mL). Further evaluation showed hepatic lesions suggestive of possible diffuse metastases, as well as a right, enhancing perirectal soft tissue mass, likely representing a perirectal neoplasm. Patient underwent liver and rectal biopsies. Pathology reported a metastatic, high-grade neuroendocrine small cell carcinoma with Ki-67 greater than 95%, indicating an extremely aggressive tumor.

Multiple treatment options were considered, but all were problematic because of hepatic dysfunction, kidney failure, and sepsis. The patient’s immunity was severely compromised by the high cortisol levels in addition to the HIV-related immunosuppression. Furthermore he was not a candidate for myelosuppressive chemotherapy or surgery due to ongoing infections, pancytopenia, and performance status. A negative octreotide scan precluded treatment with radioactive octreotide.

Poorly differentiated extra pulmonary small cell carcinoma is a particularly rare subtype of neuroendocrine tumors that account for < 1.0% of gastrointestinal tumors. This tumors has an overall survival of 2 to 43 months. This case highlight the difficulties in identifying, diagnosing, and treating aggressive neuroendocrine tumors.
Paraneoplastic Dermatomyositis Leading to Restaging of Endometrial Carcinoma

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Introduction: Dermatomyositis (DM) is a rare autoimmune condition that primarily involves a patient’s skin and muscles. It affects approximately 1/100,000 people. Studies have shown that DM is associated with an underlying malignancy in 27-45% of patients.

Case: 61 year old African American female with history of stage 1b serous endometrial cancer s/p hysterectomy (10/5/15) presented to dermatology clinic on 11/4/15 with rash for one month. The rash was pruritic, painful, and erosive, affecting her scalp, face, and trunk. She was positive for the heliotrope and Samitz sign. Previous trials of oral/intramuscular steroids and topical antibiotics produced unsatisfactory improvement. She was admitted to OLOL hospital on 11/7/15 for pain due to worsening rash. She was found to have elevated creatinine phosphokinase of 1113 IU/L and was discharged the next day on high dose oral steroids, antibiotics, and steroid cream. An autoimmune workup was within normal limits. A skin biopsy from 11/4/15 was consistent with a highly inflammatory connective tissue disease. Her clinical presentation, elevated CPK, and skin biopsy were thus most consistent with paraneoplastic dermatomyositis. It was unclear why her symptoms were persisting despite presumed removal of the cancer. She was seen at the dermatology clinic multiple times before again being admitted to OLOL hospital on 11/22/15 with intractable pain from worsening, desquamating rash. During her hospital stay, she was started on hydroxychloriquine and intravenous corticosteroids to treat her condition. A muscle biopsy of the quadriceps showed nonspecific muscle atrophy. Given the severity of her dermatomyositis, a workup for metastatic disease was warranted. A PET scan revealed metastasis to the left para-aortic lymph node which was later confirmed with CT-guided biopsy. Oncology was consulted at this time and patient is expected to start chemotherapy in the near future.

Discussion: Paraneoplastic dermatoses are the second most common paraneoplastic syndrome; only endocrine syndromes are more common. It is important to recognize paraneoplastic syndromes in order to diagnose potential underlying malignancies or in the case of the patient presented here, to look for metastatic disease. Paraneoplastic dermatomyositis is most commonly associated with underlying ovarian cancer and has rarely been reported with endometrial cancer. Additionally, it has been suggested by a small case series that severe dermatomyositis, such as erosive or vesiculobullous dermatomyositis, could be associated with higher rate of malignancy and/or a poor prognosis. We present a case of a patient who was determined to have stage 1b endometrial carcinoma s/p hysterectomy which was subsequently discovered to have lymph node-involvement. Investigation for metastatic disease was only pursued because of her severe, treatment-resistant dermatomyositis.
Saddle Pulmonary Embolism in a Patient with an “Unlikely” Modified Wells Score

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Introduction: Pulmonary embolism (PE) occurs in 112/100,000 people and accounts for about 0.5% of all deaths in the United States. One study found that patients over 65 years of age with an unprovoked venous thromboembolism (either deep venous thrombosis or PE) had a >10% chance of having a hereditary thrombophilia mutation other than Factor V Leiden.

Case: A 68-year-old male with a history of hypertension, atrial fibrillation, peripheral neuropathy, and peripheral arterial disease presented to the emergency department with chief complaint of shortness of breath and associated cough for one month. He denied recent travel, trauma, hormone therapy, and any personal or family history of hypercoagulability. Vital signs at the time of examination were unremarkable, but the patient required 2L of oxygen by nasal cannula to achieve >92% oxygen saturation. Physical exam yielded few clues as to the cause of the patient’s condition demonstrating no increased work of breathing, clear breath sounds bilaterally, normal S1 and S2 heart sounds, and no murmurs, rubs, or gallops. Furthermore, the patient’s risk for pulmonary embolism (PE) on exam was “unlikely” by Modified Well’s criterion. Per current recommendations for patients at low risk for PE, initial work-up included a D-Dimer which was found to be elevated at 9.85 mg/L. A subsequent computed tomography angiogram (CTA) of the chest revealed extensive bilateral pulmonary emboli with focal pleural based lung opacities within the right chest that likely reflected pulmonary infarct. Venous ultrasound of lower extremities demonstrated extensive bilateral deep vein thromboses. Following an extensive work-up for thrombophilia, we concluded that our patient’s hypercoagulable state was secondary to a heterozygous prothrombin G20210A mutation and heterozygous Factor V Leiden R506Q mutation.

Discussion: The patient’s clinical probability assessment of having a PE on exam was “unlikely.” After cardiac etiology was ruled out, the differential diagnosis included: PE, COPD (the patient had a 10-pack-year history of smoking), pneumonia, bronchitis, asthma, pneumothorax. This case illustrates the importance of using the current accepted algorithm to drive decision making when a patient presents with few definitive signs of PE, despite having significant clot burden. It also demonstrates the importance of looking for a cause of PE, as it often involves diagnosing or excluding a malignancy. Idiopathic PE’s are rare and routine management for the condition should include a search for etiology. Even when there is one or multiple genetic causes for thrombophilia present, a search for malignancy should not be bypassed because a Factor V Leiden mutation dramatically increases the chance of thromboembolism in the presence of other risk factors, such as malignancy.
Herpes Simplex Virus Type 2 Meningitis in the Absence of Genital Sores
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CASE: A 19-year-old woman initially presented to an outside facility with a primary complaint of dysuria and fever. A urinalysis was suggestive of urinary tract infection for which she was prescribed amoxicillin/clavulanate. Her Symptoms worsened by day 2 despite antibiotic and antipyretics, on day 3, she began having diffuse severe headaches accompanied with photophobia and nuchal rigidity. On presentation to our facility, the patient was alert and well oriented a detail medical history was obtained, patient endorsed being sexually active with one partner and stated using barrier contraception consistently; she denied ever being diagnosed with any sexual transmitted disease. Physical examination was concerning for meningitis but no other focal neurological were present. Genital exam did not reveal any lesions. Lumbar puncture revealed an opening pressure of 51 cmH2O, cerebrospinal fluid (CSF) was obtained; gram stain showed no organisms, white blood count of 855 with 70% lymphocytic, and 74 red blood cells. The patient was started on Acyclovir empirically and her symptoms improved significantly in 24 hours. Herpes Simplex virus polymerase chain reaction (PCR) on the CSF was positive for HSV-2. Crypto antigen in CSF was negative, along with West Nile studies and CSF cultures. The use of PCR in suspected aseptic meningitis can help recognize HSV in the absence of genital lesions, as viral cultures may also be negative.

DISCUSSION: While Enteroviruses are the most common viral etiology for aseptic meningitis, HSV-2 meningitis has a prevalence of about 2%. HSV-2–associated meningitis is usually observed in the context of primary genital HSV-2 infection, therefore in the absence of these, the diagnosis may be quite challenging. The outcome of HSV-induced meningitis has been reported to be spontaneously favorable without the use of antiviral therapy in otherwise healthy hosts. The benefit of using antiviral therapy to treat HSV-induced meningitis is unclear but evidence supports immediate antiviral therapy and that antiviral prophylaxis for immunocompromised patients.
Endocrine and chemotherapeutic resistance in breast cancer is driven by light at night-induced disruption of the circadian melatonin signal.

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Introduction: Endocrine (tamoxifen, Tam) and chemotherapeutic (doxorubicin, Dox; Paclitaxel, Pax) resistance represent major impediments to the successful treatment of breast cancer and are coupled to increased tumor metabolism and tumor overexpression and activation of several families of receptor- and non-receptor-associated kinases. Dim light at night (dLAN) exposure, as occurs in shift work and/or perturbed sleep-wake cycles, disrupts circadian time structure and nocturnal melatonin production, which is associated with a significantly increased risk of an array of diseases, including breast cancer. Melatonin inhibits human breast cancer growth via mechanisms that include suppression of tumor linoleic acid (LA) metabolism, aerobic glycolysis (Warburg Effect), and expression and/or phospho-activation of AKT and ERK1/2 receptor kinases along with several other kinases and transcription factors, including STAT3.

Methods and Results: Female nude rats bearing tissue-isolated estrogen receptor positive (ERα+) MCF-7 human breast cancer xenografts were maintained on a light/dark cycle of LD 12:12 in which dLAN is present during dark phase (suppressed endogenous nocturnal melatonin), significant \( (p < 0.001) \) decreases in tumor latency-to-onset, increased tumor metabolism and growth, and total intrinsic resistance to either Tam, Dox, or Pax therapy. Conversely, a LD 12:12 dLAN environment incorporating nocturnal melatonin replacement resulted in markedly increased latency-to-onset, tumor regression, suppression of tumor LA metabolism and Warburg Effect, and inhibition of kinase and transcription factor phosphorylation, while Tam, Dox, and Pax sensitivity was completely restored.

Conclusion: Melatonin behaves as both a tumor metabolic inhibitor and circadian-regulated kinase inhibitor to reestablish human breast tumor to Tam, Dox or Pax and drive tumor regression further demonstrating that dLAN-induced circadian disruption of nocturnal melatonin production contributes to a complete loss of tumor sensitivity to endocrine or chemotherapeutic interventions.
CD4+ T-cell independent secondary immune responses to *Pneumocystis pneumonia*

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**Rationale**: *Pneumocystis* pneumonia is a major cause of morbidity and mortality only among immunocompromised patients, especially in the context of HIV/AIDS. In the murine model of *Pneumocystis* pneumonia, CD4+ T-cells are required for clearance of a primary infection of *Pneumocystis* but not the memory recall response. We hypothesized that the memory recall response in the absence of CD4+ T-cells is mediated by a robust memory humoral response, CD8+ T-cells, and IgG mediated phagocytosis by alveolar macrophages.

**Methods**: To investigate the role of CD8+ T-cells and alveolar macrophages in the immune memory response to *Pneumocystis*, mice were depleted of CD8+ T-cells or alveolar macrophages prior to re-infection. Mice depleted of CD4+ T-cell prior to secondary challenge cleared *Pneumocystis* infection within 48 hours identical to immunocompetent mice during a secondary memory recall response.

**Results**: Mice depleted of CD4+ T-cell prior to secondary challenge cleared *Pneumocystis* infection within 48 hours identical to immunocompetent mice during a secondary memory recall response. However, loss of CD8+ T-cells or macrophages prior to the memory recall response significantly impaired *Pneumocystis* clearance. Specifically, mice depleted of CD8+ T-cells or alveolar macrophages has significantly higher fungal burden in the lungs and loss of alveolar macrophages significantly increased the percent IFN-γ+ CD8+ T-cells. Finally, *Pneumocystis*-specific IgG significantly increases macrophage-mediated killing of *Pneumocystis in vitro*.

**Conclusion**: These data suggest that secondary immune memory responses to *Pneumocystis* are mediated, in part, by CD8+ T-cells, alveolar macrophages, and the production of *Pneumocystis*-specific IgG.

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Histological Evidence of Chronic *Mycoplasma genitalium*-Induced Cervicitis and its Role in Enhancement of HIV Transmission

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**Introduction:** *Mycoplasma genitalium* is emerging as a prevalent sexually transmitted infection that has been linked to several inflammatory syndromes in women with HIV, including pelvic inflammatory disease and cervicitis. Such inflammation may enrich the population of HIV-infected cells in lower reproductive tract tissues, and in turn enhance the sexual transmission of HIV. The objective of this study was to utilize a novel lab-developed nucleic acid amplification test (LDT) to determine the prevalence of *M. genitalium* in a longitudinal cohort of HIV+ of Louisiana women, and then characterize the inflammatory response both cytologically and histologically in those positive for *M. genitalium*.

**Methods:** To detect *M. genitalium*, we utilized a novel laboratory-developed, quantitative TaqMan PCR assay to screen a longitudinal cohort of 108 HIV(+) New Orleans women enrolled into the HIV Outpatient Program (HOP). Study participants visited the clinic approximately once every three months from 2009-2014. To characterize the inflammatory response in the cervix, we measured cytokines and chemokines from cervicovaginal lavages (CVLs), quantified leukocytes from liquid-based cytology specimens, and characterized leukocytic infiltrates in cervical tissues using immunohistochemistry.

**Results:** The prevalence of *M. genitalium* and *T. vaginalis* was 7.4 and 13.0% on the enrollment visit; the cumulative incidence of *M. genitalium* and *T. vaginalis* during the study period was 15.3 and 17.2%, respectively. Longitudinally, we identified 3 women with chronic *M. genitalium* infections (2.8%) in which no significant impact on HIV disease progression was observed. We found significant increases in several pro-inflammatory cytokines and chemokines measured from CVLs in subjects with *M. genitalium*. Direct quantification of cervical leukocytes from liquid cytology specimens showed co-infected individuals had significantly higher leukocyte infiltrates compared to those without *M. genitalium*. Similarly, histological analysis showed increased endocervical leukocytosis in those with chronic *M. genitalium*, consisting of predominately neutrophils and macrophages. Importantly, treatment of *M. genitalium* infection ablated these signs of inflammation and returned tissues to an otherwise healthy state.

**Conclusions:** The *M. genitalium* LDT performed well and was cost-effective, user-friendly, and time-efficient in the clinical lab. Collectively, our results highlight *M. genitalium* as a potentially important co-factor for HIV transmission, suggesting the need for routine screening and treatment in HIV-infected populations.
**Monitoring INR in the Presence of Lupus Anticoagulant**

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**Introduction:** Anti-phospholipid syndrome is defined by the presence of antiphospholipid antibody and clinical manifestations such as venous or arterial thrombi, or pregnancy morbidities.

**Case:** A 50 year old gentleman with a past medical history of positive lupus anticoagulant assay and prior DVT/PE who was not on anticoagulation presented to the hospital with 2 weeks of 10/10 above the knee, right leg pain. He was unable to bear weight on this leg. He also developed upper back pain that was constant, rated 8/10, relieved by lying and worsened with movement. He also endorsed a few episodes of gross hematuria but no dysuria. Physical exam demonstrated diffuse right leg swelling and decreased ROM due to pain. He was unable to ambulate due to pain and had a positive Homan sign on the right side. Labs were significant for elevated WBCs at 11.6 x10^3/µl, decreased H/H 11GM/dL/34%, INR/protime 1.3/13.5Sec and significant bilirubin and blood found on urinalysis. Abdominal CT revealed splenic and bilateral renal perfusion abnormalities compatible with infarcts, worsening of right leg DVT, and no evidence of pulmonary embolism. He was restarted on full dose enoxaparin as well as warfarin. After two doses of warfarin, INR rose to 6.7 then 7.1 and eventually up to 17 at which time, enoxaparin and warfarin were held. Research indicated that up to 30% of patients on warfarin with positive lupus anticoagulant can have artificially elevated supratherapeutic INRs. Hematology also stated that the elevated INR could be related to a drug reaction. Although patient still needed lifelong anticoagulation, warfarin was stopped as INR continued to be labile. The patient was discharged on low molecular weight heparin.

**Discussion:** Antiphospholipid syndrome is a rare cause of venous and arterial thrombus formation that is difficult to treat and monitor. Patients may show various fluctuations in their INR once placed on warfarin therapy and a therapeutic range may be difficult to obtain. This could be caused by time of day of the administration of warfarin and various drug interactions that may affect warfarin metabolism. This case demonstrated that INR may not be reliable in patients who are lupus anticoagulant positive, and cannot be appropriately monitored for proper anticoagulation.
CONCLUSION: Hyperbaric oxygen therapy may be a beneficial post-operative adjunctive option for patients with compromised digits post replantation. Hyperbaric oxygen therapy is well known to mitigate re-perfusion injury and promote neo-angiogenesis (4,5). Further research should be performed at a site with high volume digital replantation on the use of hyperbaric oxygen immediately post operation to investigate the utility of this treatment modality on preserving the replanted digit and salvaging compromised digits.
Assessing the Utility of Remnant DNA from CT/NG and HPV Testing for *Trichomonas vaginalis* Diagnosis Using the User Defined Workflow Software (UDF) on the cobas 4800 System

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Background: *Trichomonas vaginalis* is the most common curable sexually transmitted infection (STI) worldwide and is most prevalent among women over 40 years of age. Infections are predominately asymptomatic, however *T. vaginalis* has been linked to inflammatory reproductive tract disease syndromes including vaginitis, cervicitis and pelvic inflammatory disease. Pregnancy-related complications include pre-term birth and infertility. The objective of this study was to comparatively assess three nucleic acid amplification tests for *T. vaginalis* detection from urogenital specimens.

Methods: A laboratory-developed, quantitative TaqMan PCR (LDT) was adapted and optimized for use with the User Defined Workflow software (UDF) for the cobas 4800 system. Using the UDF, *T. vaginalis* screening was performed using cobas 4800 eluates or spin column-extracted DNA from several lower reproductive tract specimen types collected from 5 LSU-affiliated hospitals/clinics in Louisiana (2013-2014; n=2000). Assay performance was evaluated, and parallel comparisons were made with two TIB MOLBIOL *T. vaginalis* tests also run on the UDF system.

Results: For residual cobas 4800 DNA eluates, once-weekly freeze/thaw cycles for up to 4 weeks had no significant impact on template quantitation indicating extended stability of these eluates at -20°C. Using the LDT, DNA templates derived from serial dilutions of *T. vaginalis* organisms showed a linear range of detection from 1x10¹ to 1x10⁸ organisms with % coefficient of variations (CV) ranging from 0.1 to 2.5. Spiking *T. vaginalis* organisms into reproductive tract specimens showed similar inter-assay reproducibility of the extraction and detection system (<1.7 % CV). The analytical sensitivity was 1x10¹ organisms per reaction for the LDT, which was detected 100% of the time; analytical sensitivity values for the TIB MOLBIOL tests were less than 1 organism per reaction. Statistical comparison of results to those of the TIB MOLBIOL test showed a Cohen’s kappa correlation coefficient of 0.67 (95% CI 0.50-0.85) for liquid-based cytology specimens; kappa coefficients for all conditions were >0.6 with qualitative agreements of “good” and “very good” among specimen types.

Conclusions: These results highlight the utility of the UDF system for qualitative and quantitative *T. vaginalis* detection from female urogenital specimens.
Pathologic upgrading on confirmatory biopsy in a racially diverse group of men on active surveillance for prostate cancer

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Introduction and Objective: To evaluate the clinical variables associated with upgrading at confirmatory biopsy among a racially diverse group of men with prostate cancer (PCa) who elect Active Surveillance (AS).

Methods: Following IRB approval, of the more than 275 men from our multi-institutional prospective AS database we identified 149 that had undergone at least 1 confirmatory biopsy since their initial diagnosis. Patients whose diagnosis was made on TURP, had any Gleason 4 on their initial biopsy, or whose initial and confirmatory biopsy were more than 2 years apart were excluded. The cohort was analyzed using 2 different models. The first model examined disease upgrading on confirmatory biopsy as defined as Gleason score ≥ 7. The second model examined disease upgrading on confirmatory biopsy as defined as Gleason score ≥ 7 or increase in volume of disease, defined as more than 3 positive cores.

Results: We identified 123 men who fit inclusion criteria, 57 (46%) African Americans (AA) and 66 non-AA (54%) with a median follow-up of 22 months. The median age was 66, median number of biopsy cores taken at diagnostic biopsy was 12 and median time interval between diagnostic and confirmatory biopsy was 12 months. On confirmatory biopsy, no evidence of disease was noted for 52 (42%) men (27 AA, 25 non-AA), 49 (40%) men (19, AA, 30 non-AA) had findings consistent with their initial biopsy and 22 men (11 AA, 11 non-AA) experienced upgrading at repeat biopsy. Of the 22 (18%) men who were upgraded, 18 (8 AA, 10 non-AA) upgraded to a Gleason score of 7, 3 (2 AA, 1 non-AA) were upgraded to a Gleason score of 8 and 1 (AA) had a Gleason score of 9.

In univariate analysis AA race was associated with a greater number of positive cores (p = 0.04) and greater total prostate volume (p = 0.03) at confirmatory biopsy. Multivariate analysis was performed and none of the clinical variables examined (race, age, BMI, PSA, volume, PSAD, number of positive cores, total number of cores, percentage of positive cores, time interval between biopsies) were associated with upgrading on repeat biopsy.

Conclusions: Our findings suggest that race is not associated with an increased risk of upgrading at confirmatory biopsy. AA with low-risk PCa are reasonable candidates for inclusion in most AS protocols and should not be excluded based on race alone.
Utility of PCA3 and TMPRSS2:ERG Urinary Biomarkers in African American Men Undergoing Prostate Biopsy

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Introduction and Objectives: To determine the performance characteristics of urinary PCA3 and TMPRSS2:ERG (T2:ERG) in a racially diverse group of men.

Methods: Following IRB approval, from 2013-2015, post digital rectal exam (DRE) urine was prospectively collected in patients without known prostate cancer (PCa), prior to biopsy. PCA3 and T2:ERG RNA copies were quantified and normalized to PSA mRNA copies using Progensa assay (Hologic, San Diego, CA). Prediction models for PCa and high-grade PCa were created using standard of care (SOC) variables (age, race, family history of PCa, prior prostate biopsy and abnormal DRE) plus PSA. Decision Curve Analysis was performed to compare the net benefit of using SOC, plus PSA, with the addition of PCA3 and T2:ERG.

Results: Of 304 patients, 182 (60%) were AA; 139 (46%) were diagnosed with PCa (69% AA). PCA3 and T2:ERG scores were greater in men with PCa, ≥3 cores, ≥33.3% cores, >50% involvement of greatest biopsy core and Epstein significant PCa (p-values < 0.04).

PCA3 added to the SOC plus PSA model for the detection of any PCa in the overall cohort (0.747 vs 0.677; p<0.0001), in AA only (0.711 vs 0.638; p=0.0002) and non-AA (0.781 vs 0.732; p=0.0016). PCA3 added to the model for the prediction of high-grade PCa for the overall cohort (0.804 vs 0.78; p=0.0002) and AA only (0.759 vs 0.717; p=0.0003) but not non-AA. Decision curve analysis demonstrated significant net benefit with the addition of PCA3 compared with SOC plus PSA. For AA, T2:ERG did not improve concordance statistics for the detection any or high-grade PCa.

Conclusions: For AA, urinary PCA3 improves the ability to predict the presence of any and high-grade PCa. However for this population, T2:ERG urinary assay does not add significantly to standard detection and risk stratification tools.
Using Digital Media to Decrease Peritoneal Dialysis Related Infections
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Background: Peritonitis remains a major cause of morbidity and mortality for peritoneal dialysis (PD) patients. Studies have shown that peritonitis leads to an increase in mortality, as well as an increase in ultrafiltration failure which eventually leads to PD failure. One of the most important ways to decrease the risk of peritonitis and exit site infections, which is mostly due to Staphylococcus species, is with proper hand washing technique. At this time, there is no formal and standardized education in PD units nationwide. Most units, like our own, teach patient handwashing during the initial two week PD training, which is then annually reviewed. We have developed a 14 step handwashing sheet which includes written and visual cues to describe each step, based on World Health Organization handwashing guidelines as well as a 4 minute video to review proper handwashing technique.

Methods: Under IRB approval, we randomized 9 patients to two groups. Both groups reviewed the 14 step handwashing sheet, and all patients were tested to have a baseline score using a checklist with all 14 steps. Then, patients in Group A watched the handwashing video every month during their lab draw visit, while Group B had no further review of the technique. All patients were tested at month 3.

Results: At baseline, Group A had an average score of 83.25 and Group B had an average score of 82.20. After 3 months, Group A had an average score of 90.25 and Group B had an average score of 94.8. There were no cases of peritonitis in Group A and one exit site infection in Group A. There was one case of peritonitis in Group B and no cases of exit site infections in Group B.

Conclusion: Our study showed that using digital media to promote efficient handwashing was just as effective as the control and could possibly be used as a tool for patients who do PD at home. For the patient who does not have to come into the clinic daily, digital media allows one to review proper hygiene remotely.
Determining the Role of B Cell Aggregates in HPV Associated Cervical Malignancy

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Human papillomavirus (HPV) alone is a necessary but insufficient cause of cervical cancer due to the high number of infections that spontaneously resolve. We have evidence supporting Epstein-Barr Virus (EBV), a known oncovirus implicated in several cancer types, as a co-factor for cervical disease in HIV+ women.

In our longitudinal study population, co-detection of HPV and EBV DNA at the cervix was associated with increased rates of dysplasia. However, serum samples from this population indicated IgA, but not IgG, against EBV viral capsid antigen (VCA) predicted cervical dysplasia, while antibodies against HPV were not predictive. The mechanism of IgA production against EBV VCA is unknown, as cervical antibody responses are generally IgG. The repetitive structure of the EBV capsid may trigger production of T cell independent antibodies, but the longevity of IgA detection opposes this notion.

We hypothesize that EBV infection in the cervix results in formation of lymphoid-like follicles, as seen in cervicitis, for antibody production. Formalin fixed paraffin embedded cervical tissues are being analyzed to determine the frequency of these B cell aggregates and the cell type, B cell or epithelial cell, that contains EBV. Immunohistochemical analysis of CD20 for B cells, LMP-1 for EBV, and HPV L1s will be assessed. B cell aggregates, some quite large, were seen in all cervical cancer tissues analyzed (N=7), with follicular aggregates in three cases. Follicular aggregates were found in all cases of invasive cervical cancer (2/2). Aggregates were observed in two out of three cases of severe dysplasia, with one of those tissues exhibiting follicular aggregates. No B cell aggregates could be found in non invasive tissues (N=2). Of the tissues with LMP-1 staining data available (N=4), none of the B cells in the observed aggregates were infected with EBV. However, in one cancer case a stromal area enveloped by HPV infected epithelium stained strongly for LMP-1. No epithelial staining for LMP-1 was observed in either of the four cases.

In conclusion, B cell aggregates were quite common in abnormal cervical tissues, appearing in 75% of the tissues tested (9/12). Among tissues with observed aggregates, nearly half (4/9) had follicular aggregates, with these occurring most often in invasive cancers. The B cell aggregates stained by CD20 were not positive for EBV LMP-1 nor was LMP-1 associated with the epithelium in any of the tissues tested. LMP-1 was observed in a stromal area not stained by CD20, indicating a different sub-population of B cells that do not express CD20 may harbor EBV. More tissues must be tested for EBV in order to determine the frequency of this occurrence and its significance in cancer development.
Case Report: NSAID Induced Autoimmune Hemolytic Anemia

Introduction
Drug induced Immune hemolytic anemia is a rare but devastating event in the case of non-steroidal anti-inflammatory drugs (NSAIDs). With the overall tripled increase in NSAIDs use in the last two decades, and the widespread poor patient understanding of its side effects; DIIHA cases will likely become more prevalent.

Case Presentation
48 year old female with a history of long term alcohol abuse and chronic left knee Osteoarthritis on chronic ibuprofen was in her usual state of health until four days prior to admission. She complained of headaches and dizziness, worsening over the course of one day to altered mental status and lethargy. On admission labs showed severe macrocytic anemia with multiple antibodies and warm /cold agglutinins positive. She was transferred for hematologist consult for hemolytic anemia work up. Upon transfer she was found to be GCS 8, severally acidotic, elevated bilirubin and H/H decreased from 5.5/15 to <2.6/9.6.

Management Outcome
Upon transfer, the patient was intubated, multiple amps of bicarbonate administered, high dose IV steroids, IV folic acid/thiamine, transfused packed red blood cells, central line placed for plasmapheresis/dialysis, and full body CT scans completed without frank abnormalities. The patient’s acid base status transitioned to alkalemia. The patient was also covered with broad spectrum antibiotics for encephalopathy with sepsis vs. meningitis rule out. She was also found to have ischemic liver disease with severe transaminitis and coagulopathy due to severe anemia and lactic acidosis. Lab work up indicated EBV positive, THC positive urine toxicology and negative volatile compounds. ANA, HIV, Hepatitis labs in normal range. The patient required approximately 5 rounds of plasmapheresis, 4 weeks of Rituximab infusions, greater than 20 units of PRBCs and Hemodialysis/CRRT for 28 days. Throughout hospitalization D dimmer, haptoglobin, hemoglobin/plts, liver enzymes, coags, LDH and lytes were monitored and improved with therapies. Patient did have on episode of hypotension needing IV pressers support secondary to bacterial sepsis that resolved quickly with IV antibiotics. Patient underwent tracheostomy on hospital day 22 and weaned to CPaP. On hospital day 24 MRI of the brain showed bilateral ischemic lesion consistent with cardiac emboli. The patient was started on secondary stroke prevention but anticoagulation held due to thrombocytopenia and continued coagulopathy. PEG tube placed on hospital day 26. Steroids transitioned to PO and tapered once hemoglobin stabilized and fewer blood transfusions needed. Patient transferred to Neurology Rehabilitation once off dialysis and medically stable. Patient discharged home with family on day 110 of hospitalization.

Discussion
On initial transfer the patient had a known hemolytic anemia that was suspected to be secondary to her chronic NSAID use. Due to the mixed cold and warm agglutinins, Plasmapheresis was initiated before IVIG trial due to severity of disease process. Though she had poor response to plasmapheresis she did improve with Rituximab infusions which is has shown good response in both cold and warm agglutinin positive hemolytic anemias. On further review with family the patient was not on any other known medications at the time. Toxicology and volatile compounds were ordered to rule out any other sources due to her AGMA and NAGMA. Infectious etiologies such as Hemolytic Uremic Syndrome and Meningitis were also treated empirically. No LP was able to be performed due to the critical status of the patient. Antibiotics were discontinued with negative cultures and the patient did show improvement with primary autoimmune hemolytic anemia therapy. Stroke as a cause for AMS and weakness was not worked up until patient was weaned from sedation and stable for an MRI and anticoagulation for cardiac emboli as a source was held until coagulopathy and platelets normalized. Multifactorial autoimmune disease possibly contributing to the disease process were also ruled out with a normal autoimmune panel as well as a lymphoma/cancer process with grossly negative CT scan of the brain chest abdomen and pelvis.
Characteristic ensembles in neocortex encode essential information for specific visual shape discriminations

Synaptic plasticity and neural network theories hypothesize that the critical information for specific cognitive tasks is encoded in different neuronal ensembles, in distributed neocortical circuits. However these critical ensembles remain uncharacterized: The size, neuronal composition, and spatial distribution of these ensembles remain to be determined. Another important unanswered question is if a specific discrimination is encoded in a characteristic, or different, ensembles across multiple individuals. We used a genetically-modified circuit that encodes essential information for an advanced cognitive task to show that characteristic ensembles encode specific visual shape discriminations.

For the model system, protein kinase C (PKC) pathways were activated in several hundred glutamatergic or GABAergic neurons in a multimodal associative area that is essential for visual learning, postrhinal (POR) cortex. A constitutively (always) active PKC was delivered using a Herpes Simplex virus (HSV-1) vector (J Neurosci 2005 25 8468-81). This intervention activates specific PKC substrates with central roles in synaptic plasticity, including glutamatergic neurotransmission or neurotransmitter release, and increased activation-dependent neurotransmitter release. Importantly, this intervention supported enhanced accuracy for specific visual shape discriminations that were learned after gene transfer.

Some of the essential information for performing specific discriminations is encoded in the genetically-modified circuit (PNAS 2010 107 14478–83). Following both the gene transfer and learning new image sets, neurochemical lesions that ablated ~21 % of POR cortex, centered on the gene transfer site, selectively reduced performance for only discriminations learned after the gene transfer.

During learning, activity increased for neurons in the genetically-modified circuit, as shown using activity-dependent gene imaging (c-fos and arc). Quantification of the active neurons showed that the essential circuit was relatively small, ~500 neurons, and was sparse coded, with a coding density of ~3 %, consistent with neural network theories.

Analysis of the locations of the active neurons established that different image sets are encoded in characteristic and different neuronal ensembles. Of note, the active neurons were arranged in a bilaminar pattern: For one image set ([] vs. +) the superficial layer contained more active neurons than the deeper layer, but, for a second image set (/ vs. \), the two layers contained similar numbers of active neurons. In summary, within a circuit that contains essential information for performance, different discriminations are encoded in characteristic and different ensembles.
Digital pupillometry correlates with depth of sedation during propofol administration

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RATIONALE: Digital pupillometry (DP) is a novel technology that more accurately and precisely measures static and dynamic pupillary responses compared with penlight exam. Because pupillary light reflexes are attenuated by sedative-hypnotics, DP may be a reliable tool to assess depth of sedation. We hypothesized that propofol administration would attenuate both static and dynamic pupillary responses measured by DP.

METHODS: We conducted a cross-sectional study of 19 ambulatory adult subjects undergoing elective GI endoscopy under moderate sedation with propofol. Four sequential DP measurements were performed at baseline (pre-operative), following induction (two minutes after propofol administration), at procedure termination (endoscope withdrawal), and after recovery (awake and able to count to three). The primary outcome of interest was change in mean constriction velocity (MCV) from baseline. Student’s t-testing was used to compare differences in MCV between time intervals. All data are reported as mean (+/- SDEV).

RESULTS: The mean induction propofol dose was 109 mg (+/- 25) while the total dose was 408 mg (+/- 244). Maximal pupillary diameter decreased from baseline to procedural termination from [4.21 mm (+/- 1.4) to 2.73 mm (+/- 0.7) in the left eye and from 4.17mm (+/- 1.3) to 2.97 mm (+/- 1.2) in the right eye (p<0.001 for both)]. Mean constriction velocity (CV) fell throughout the course of propofol administration (Figure 1). The mean change in constriction velocity was -0.79 mm/s (+/- 1.1) in the left eye and -0.88 mm/s (+/- 0.9) in the right eye. The fall in CV was greater (p=0.03) from baseline to procedure termination (-0.79 mm/s, 95% CI -0.24 to -1.34) than from baseline to induction (-0.32 mm/s, 95% CI -0.66 to 0.02). Latency did not change significantly throughout the course of propofol administration. Maximal pupillary diameter correlation between right and left eye was 0.76 at procedural termination (p<0.001). Constriction velocity correlation between right and left eye was 0.81 at procedural termination (p<0.001).

CONCLUSIONS: In patients undergoing routine outpatient endoscopy, propofol administration decreased pupillary diameter and mean constriction velocity. These data suggest that DP measurement may be useful for assessing depth of sedation during propofol administration. There was a high degree of correlation between the left and right eye measurements, suggesting that a single measurement would be sufficient (assuming normal eye function).
Objective: Current anal cancer prevention programs include screening by anal cytology followed by high resolution anoscopy (HRA) to detect and biopsy abnormal lesions. The use of anal cytology to screen high-risk individuals needs to determine those that need further investigation. This study examined the correlation between anal cytology and biopsy in a cohort of HIV+ individuals.

Methods: HIV+ men and women attending the Infectious Disease Center at University Medical Center in New Orleans that had both anal cytology and biopsy at the same visit were enrolled. Demographic data, chart review including CD4 cell count, and HIV viral load was performed and the results of anal cytology and biopsy were ascertained.

Results: A total of 73 HIV+ individuals had paired smears and biopsies at the same clinic visit. This cohort was 88% male, 60% African-American with a mean age of 46, mean CD4 cell count of 372, and median HIV viral load of 19. No one with a normal Pap smear had a high-grade lesion. Over 90% of those with dysplasia on Pap smear had low (53%) or high-grade biopsies (43%). The majority of ASCUS Pap smear (70%) had low (52%) or high-grade lesions (17%).

Conclusions: There was a good correlation between anal cytology and biopsy in this cohort. Individuals with a normal anal Pap smear did not have high-grade disease. Most of those with anal dysplasia on cytology did have significant anal disease. These data also support the referral for HRA of those with ASCUS Pap smear.
Risk factors for anal dysplasia in a cohort of HIV+ individuals

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Objective: The rates of anal cancer are increasing in HIV+ individuals even those on active anti-retroviral therapy. Current prevention programs involve repeat Pap smears, biopsies and treatment of precancerous lesions. This study’s goal is to identify risk factors that can target a higher risk population to follow.

Methods: Stable HIV+ patients had anal swabs collected for Pap smear analysis, HPV DNA detection by reverse line blot, EBV virus detection and local inhibitory cytokines (IL-4, IL-10) by ELISA. Demographic data, peripheral CD4 and HIV viral loads, and a behavioral questionnaire were obtained. Those individuals with abnormal anal cytology were referred for high resolution anoscopy. Risk factors for anal dysplasia (LSIL or HSIL) were assessed using SPSS software.

Results: The population (n=174) was 87% male, 56% Caucasian, mean age of 47.5 with mean CD4 count of 533 cells/ml and median HIV viral load of 39 copies/ml. High-risk HPV was detected in 73% and EBV in 37% of the anal specimens. IL-4 was detectable in 86% of the specimens and IL-10 in 81%. Anal dysplasia was seen in 36% (2% HSIL). The most notable risk factors for anal dysplasia (p< .001) were lower CD4 cell count (446 vs 637 cells/ml) and co-detection of HR-HPV and EBV (87% vs 47%).

Conclusions: High rates of anal dysplasia (36%) were found in a cohort of well-controlled HIV patients. Those individuals with relatively lower CD4 cell counts and co-detection of HPV and EBV in anal swabs were at the highest risk of concurrent anal dysplasia.
**Thoracic Splenosis Resembling Metastatic Disease**
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**Case:** A 57 year old man sustained a shotgun wound to left abdomen in 1973. Forty-one years later, he developed active pulmonary tuberculosis which was diagnosed at a correctional facility. A CT scan at that time revealed a cavitary lesion in the left upper lobe, multiple left sided pleural based nodules, multiple ballistic fragments across the left abdomen and diaphragm, and an absent spleen. PET scan showed borderline hypermetabolic activity in the left pleural base and hypermetabolic activity in a LUL pleural based lesion. This suggested an infectious process, although the pleural based lesions were not consistent with active tuberculosis. IR guided biopsy of a left upper lobe lesion revealed mixed inflammation including scattered macrophages with hemosiderin deposition, fibrosis, and vascular proliferation. There was no evidence of malignancy. He was started on RIPE therapy for active tuberculosis, but presented to the hospital two months later with transaminitis. Repeat CT imaging revealed the previously reported findings and also noted traumatic changes to the left diaphragm. Thoracic splenosis was suspected based upon the history of splenic and diaphragmatic trauma, the biopsy results, and imaging studies. The patient was appropriately treated for RIPE induced transaminitis. Subsequent nuclear medicine liver-spleen scan obtained with Technetium-99m revealed extensive thoracic and subcutaneous splenosis.

**Discussion:** Splenosis is defined as autotransplantation of splenic tissue to different anatomic sites throughout the body. Splenosis can be seen in distant sites via endovascular spread or through direct, mechanical seeding of viable splenic tissue. Abdominal splenosis is the most common form and is more likely to develop after blunt trauma to abdomen or via splenectomy. Simultaneous splenic and diaphragmatic injury from blunt force trauma or penetrating injury may result in thoracic splenosis. Splenosis is often an asymptomatic and benign condition. If not suspected, it can often lead to unnecessary investigation to differentiate it from neoplastic or other processes. Thoracic splenosis should be suspected in patients with pleural based nodules and a history of splenic and diaphragmatic trauma.
Case Report: Critical Care Hyperbaric Oxygen Treatment Of An Injured Diver with Severe Neurological Decompression Sickness

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Background: A 54 year old healthy male, experienced scuba diver, developed severe neurological decompression sickness while diving the USS Oriskany artificial reef. His dive profile included two dives: 144 feet of seawater (fsw) for 53 minutes followed by a dive to 129 fsw for 53 minutes. The diver became unconscious approximately 10 seconds after surfacing from the second dive. The unconscious diver was transported by the US Coast Guard to a US Navy facility with an operational hyperbaric chamber without critical care capabilities. The diver received a US Navy Treatment Table 6 hyperbaric oxygen treatment (HBO). He improved from a GCS 6 to a GCS 13 but deteriorated to a GCS 9 after completion of the treatment. The treating physician requested transport to the nearest available critical care hyperbaric chamber which was West Jefferson Medical Center (WJMC). Poor weather conditions prevented medical transport therefore the patient was transferred to the local medical center intensive care unit where he was intubated and required continuous blood pressure support. Approximately 28 hours after injury, the patient was transported via fixed wing critical care transport to WJMC.

Critical Care HBO: Upon arrival at WJMC, the patient was evaluated in the Emergency Department and then transferred to the Hyperbaric Medicine Unit. He received the following critical care HBO treatments: Day 1 COMEX 30; Day 2 US Navy Treatment Table 6; Day 3 Customized Table 2.0 Atmospheres Absolute (ATA) for 90 minutes; Day 4 Customized Table 2.0 ATA for 90 minutes. During the initial assessment of the patient over the first two inpatient days (ICU), his prognosis was considered to be very poor by the neurologist, ICU staff, and cardiologist. His brain MRI displayed diffuse areas of cerebral and cerebellar infarcts and he began exhibiting signs of multi-organ failure. Beginning on day 3 the patient began to be responsive and became increasingly more alert; he was extubated on day 5.

Tailing Treatments With HBO: Once the patient was extubated, he continued to receive HBO but did not necessitate critical care support. His customized treatment course included: Days 5-6 (2.0 ATA for 90 minutes); Days 7-24 (1.5 ATA for 60 minutes); Days 25-30 (1.35 ATA for 50 minutes). During this time the patient also received inpatient rehabilitation. He made significant progress throughout his hospital stay and was discharged to an outpatient rehabilitation facility. At two months after his injury, he was able to perform light exercise such as jogging on the beach, had minimal residual neurological deficits such as easy fatigability, and some left upper extremity fine motor deficits.

Conclusion: Critical Care HBO is a unique lifesaving capability available within the LSUHSC health system. Additionally, it is important to note that injured divers that receive HBO will likely have a better prognosis than expected as compared to other neurological injuries.
Case Report: Medical Maggot Therapy For A Non-Healing Wound

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Background: An 80 year old female with peripheral vascular disease presented to the hyperbaric medicine unit with a non-healing wound of the great toe. The patient was evaluated by vascular surgery and peripheral vasculature was opened for optimization of wound healing. Additionally, the patient received hyperbaric oxygen therapy. After several weeks, the wound stalled and it was recommended that an amputation of the great toe would be the best option for the patient. The patient wanted to exhaust all medical options prior to agreeing to an amputation.

Medical Maggot Therapy: Medical Maggots are excellent at debriding wounds of non-viable tissue while sparing viable tissue. Additionally, they have been shown to reduce bacterial burden including colonization or infections with methicillin resistant staph aureus. This patient specifically requested the therapy. The medical maggots were ordered, shipped overnight, and placed on the wound. The maggots did an excellent job of debriding the wound; however, the patient did experience increased pain in the area as the maggots became engorged from feeding on nonviable tissue. The maggots are typically left in place for 48 to 72 hours but this patient had them removed in approximately 12 hours. The patient went through a second treatment round of medical maggot therapy and was able to tolerate the maggots in place for 24 hours.

Results: In this case, medical maggots were not able to change the recommendation of amputation of the great toe; however, the medical maggot therapy was a useful adjunct therapy in the treatment of this patient’s chronic wound. The wound bed was debrided more thoroughly than had been previously achieved with either enzymatic debridement or standard sharp debridement.

Conclusion: Medical Maggot Therapy is a useful adjunct therapy for the management of wounds. The use of this type of biologic debridement should be considered for the management of chronic non-healing wound or wounds that are difficult to debride non-viable tissue due to location.
Case: A 23-year-old African American woman with a history of hypertension, iron deficiency anemia, and recent premature delivery due to eclampsia presented with face, arm, and leg swelling and dark foamy urine for four days. The patient reported a facial rash five years prior and had two maternal aunts with lupus. She had stopped taking her antihypertensives at the onset of symptoms and her blood pressure was 217/159, which was controlled with magnesium. She became hypermagnesemic to 7.5 mg/dL; magnesium was stopped and her blood pressure was managed with hydralazine and labetalol. Her initial urinalysis and labs suggested acute renal failure in the setting of nephritic syndrome with a creatinine of 4.4 mg/dL. She had hyponatremia (serum sodium 123 mEQ/L) and was restricted to 1-liter free water. Limiting intake led to further kidney injury and she was given more fluids. The patient’s hemoglobin dropped from 9.2 g/dL to 7.5 g/dL with an LDH of 313 units/L and haptoglobin of <10 mg/dL; the patient was transfused two units of blood. She also had hyperuricemia at 9.2 mg/dL treated with allopurinol. Sodium citrate was used for acidosis. Worsening hyperphosphatemia (serum phosphorous 8.9 mg/dL) was refractory to increasing doses of sevelamer. Renal biopsy showed moderate to severe lupus nephritis; class IV, with accelerated hypertensive and glomerular and vascular involvement. She had low C4 complement levels, normal C3, and a positive ANA. She was started on pulse steroids, mycophenylate and birth control. Kidney injury improved and the patient was discharged however, a week later she presented with worsening kidney failure requiring further therapy.

Discussion: Approximately half of patients diagnosed with Systemic Lupus Erythematous (SLE) will manifest with lupus nephritis (LN) in their lifetime. LN is suggested by an abnormal urinalysis showing proteinuria or evidence of renal insufficiency. This case is notable for the severity of LN with both glomerular and vascular involvement of the kidneys and the degree of renal failure as her initial manifestation of SLE. A high suspicion for lupus in patients with rapidly progressing kidney failure with a family history of SLE despite a paucity of classic symptoms may provide early diagnosis and treatment.
**Autoimmune Cholangiopathy Mimicking Malignancy**

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**Case:** A 73-year-old woman with a history of hypertension, hyperlipidemia, prediabetes, and hypothyroidism was found to have elevated aminotransferase and alkaline phosphatase levels on routine lab work. Although asymptomatic, repeat labs revealed: aspartate transaminase (AST) 55U/L, alanine transaminase (ALT) 111U/L, alkaline phosphatase (AP) 278U/L, and gamma-glutamyltransferase (GGT) 677U/L with a normal bilirubin. Additionally, the patient had a negative hepatitis B and C panel. An ultrasound of the right upper quadrant showed gallstones, a dilated common bile duct and intrahepatic radicals, and mild enlargement of the pancreatic head. A magnetic resonance cholangiopancreatography (MRCP) ruled out a pancreatic mass, but did reveal abnormal enhancement at the confluence of the right and left biliary ducts concerning for a Klatskin tumor. The patient underwent an esophageal ultrasound (EUS) with endoscopic retrograde cholangiopancreatography (ERCP) at which time two hilar lymph nodes, the largest measuring nine millimeters, a 15 millimeter gallstone in the gallbladder, and a single severe 15 millimeter stenosis in the upper third of the common bile duct was noted. At that time, bile duct brushings were obtained for pathological evaluation and a CA 19-9 was sent off. Both were negative for signs of malignancy, however, suspicion was still very high. A computed tomography (CT) revealed portal vein narrowing thought to represent portal vein stenosis or thrombosis. A repeat ERCP was performed for stent replacement at which time brushings and biopsies of the mass were obtained. Additionally, spyglass technology was employed for direct visualization of the mass within the bile duct which showed a frond-like, villous mass and signs of chronic inflammation. The pathology report showed reactive ductal epithelium with acute and chronic inflammation, but no evidence of malignancy or dysplasia. The patient underwent a diagnostic laparoscopy and cholecystectomy including intraoperative ultrasound showing a normal liver, a nodule in the gallbladder and in the hilum. A frozen section of the gallbladder nodule was negative. The subsequent pathology revealed benign, dense fibroconnective tissue with marked chronic inflammation and reactive changes including fibrosis and dystrophic calcification, but no evidence of malignancy. The patient was then referred to surgical oncology and she elected to have the mass resected with a right and left hepatojejunostomy, lymphadenectomy, and Roux-en-Y. Pathological findings included IgG4 positive plasma cells and inflammation indicating autoimmune cholangiopathy as the etiology.

**Discussion:** IgG4-associated autoimmune cholangiopathy (IAC) can be difficult to differentiate from other biliary structuring diseases including malignancy and primary sclerosing cholangitis. It is a rare hepatobiliary inflammatory condition affecting the larger extrahepatic and hilar biliary ducts as well as the gallbladder. Because a Klatskin tumor often presents at the hilum with extensive fibrosis making malignant cell identification difficult on biopsy, differentiating IAC from a tumor can be difficult. However it remains important as evidenced by this case, in which a trial steroids may have precluded extensive surgical intervention.
Cushing’s Syndrome as the Initial Presentation of a Rectal NET with Metastasis to the Liver
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Case: A 58 year old man with HIV with a CD4 count of 46 and chronic kidney disease presented to an outside hospital with a 6 week history of elevated blood pressure, anasarca, and 20lb unintentional weight loss. He was found to have renal failure with a creatinine of 5.6mg/dL, (baseline 1.7mg/dL), hypokalemia 2.3meq/L, hyperglycemia 372mg/dL, hyperbilirubinemia 1.2mg/dL, and transaminitis 81U/L AST and 181U/L ALT, UA showed hematuria 12/hpf RBC and proteinuria. He also had a lactic acidosis. The initial computed tomography (CT) without contrast revealed bilateral adrenal hyperplasia without mass. Serum ACTH was 1585. Adrenal function studies showed no suppression of cortisol with low and high dose dexamethasone. A subsequent CT obtained with IV contrast demonstrated multiple liver lesions and a perirectal mass. He was diagnosed with acute tubular necrosis, and ACTH-dependent Cushing’s syndrome. He was treated with IV fluids, aldactone, acetazolamide, and subcutaneous octreotide. A friable, ulcerated rectal mass was found on colonoscopy. Biopsies revealed a high grade neuroendocrine tumor of the rectum that was positive for chromogranin, synaptophysin, CD31, Factor VIII, and a Ki-67 proliferation index of >95%. Percutaneous biopsy of the liver lesions indicated metastasis. Additional imaging revealed a normal pituitary and multiple lung nodules. His final diagnosis was ACTH-dependent Cushing’s syndrome, metastatic neuroendocrine tumor of the rectum, and AIDS. Because of his underlying chronic kidney disease he was not a candidate for chemotherapy or HAART. He was discharged to hospice.

Discussion: About 1% of rectal cancers are carcinoids. Similar to carcinoids of the small bowel and colon, they are tumors of epithelial endocrine cells. However, rectal carcinoids are different in that they have glucagon and glicentin-related peptides, instead of serotonin making a typical carcinoid syndrome rare. When symptoms do arise they include rectal bleeding, pain, and constipation. This is a case that presented as Cushing’s syndrome associated with a rectal neuroendocrine tumor with metastasis to the liver. It is rare and not well-described in the literature.
Superior Vena Cava Syndrome in the Setting of Weightlifting
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Case: A 28-year-old man with a history of hypertension presented with a 6 weeks of neck/face swelling that waxed and waned but never fully resolved and was worse in the mornings. His symptoms worsened acutely on the day of presentation. Over the prior months, he had associated rhinorrhea, post-nasal drip, increased snoring, and intermittent tongue swelling changing the way he talked but not causing difficulty breathing or swallowing. He denied any changes to his upper extremities. He denied weight loss, changes in appetite, or night sweats. He had no recent medication changes except for two and half months prior, he had stopped Lisinopril for possible angioedema. He did not smoke. He had a history of lifting weights, but denied using exogenous hormones. On exam he had a symmetric, edematous face and lips with nasal and oral mucosa and uvula, no stridor or wheezing, and a normal, muscular torso and extremities. He was found to have a normocytic anemia, low protein, and an elevated troponin. He was started on full dose enoxaparin and CPAP for supportive care in the ICU as he became hypoxic, tachycardic, and lethargic. Imaging showed extensive clots in bilateral subclavian veins, jugular veins, and the proximal superior vena cava. Cardiology performed thrombolysis and angioplasty; a 95% occlusion of the SVC was opened, a right subclavian stenosis of 70% was opened, and a left subclavian vein remained occluded but a robust collateral system draining the left arm was opened with tPA. The patient’s swelling and associated symptoms were drastically improved. He was started on rivaroxaban. A hypercoagulability workup was negative, and a PET scan was planned after discharge.

Discussion: Superior Vena Cava (SVC) syndrome occurs when there is obstruction of the SVC from either compression or invasion externally or thrombosis internally. Common symptoms include facial swelling exacerbated by lying flat, dyspnea, and dysphagia. Malignancy, usually bronchogenic carcinoma, is the most common cause of and intravascular device is the most common benign cause. However, the patient’s history may reveal another etiology that is less common. His history of body building may have caused a thoracic outlet syndrome leading to stasis in venous return.
A Rare Cause of Dysphagia: Forestier's Disease or Diffuse Idiopathic Skeletal Hyperostosis
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Case: A 55-year-old woman with a history of seizure disorder, hypertension, chronic back pain, and obesity presented to the emergency room for dysphagia that started the day after having a non-traumatic seizure not associated one week prior. She states that the dysphagia was progressive and occurred with solids and liquids including saliva for the last 3 days. She reported that her voice had changed and she had difficulty breathing. She endorsed chest pressure that was mid-sternal and radiated to her throat. Upon further questioning, some symptoms appeared to be more insidious than acute including intolerance to solids, weight loss, and loss of range of motion of her neck. On physical exam, the patient was an obese, well-appearing, frustrated woman intermittently spitting into a bag. She had no deformities of the neck but did have decreased range of motion. The rest of her exam was benign. Speech pathology performed a barium swallow that showed significant dysphagia. A computed tomography of the neck showed anterior spinal ligament osteophytes compressing the pharynx and esophagus. The patient was admitted and seen by Otolaryngology, Gastroenterology, and Neurosurgery. She was admitted and eventually received a percutaneous endoscopic gastrostomy (PEG) tube for nutrition, hydration, and medications. The patient is currently awaiting a neurosurgical intervention of her osteophytes.

Discussion: Dysphagia can be characterized as oropharyngeal or esophageal. Oropharyngeal or transfer dysphagia is caused by an anatomical or neuromuscular problem moving a food bolus from the mouth through the pharynx to the esophagus. This case represents a rare cause of oropharyngeal dysphagia due to cervical osteophytes of the anterior spinal ligament, the sequelae of Forestier’s disease. It is also referred to as Diffuse Idiopathic Skeletal Hyperostosis (DISH), a non-inflammatory disease more common in the elderly and characterized by ossification of spinal ligaments and calcification of peripheral entheses. This patient did not report symptoms of the latter, however, she had cervical osteophytes from the anterior spinal ligament impinging on her pharynx causing dysphagia. It is typical for patients to complain of pain in the thoracic spine and morning stiffness. However a small portion of these patients can have disease localized only to the spine as with this patient. Both the etiology and pathogenesis of DISH are not understood, but hypotheses exist. The treatment is symptomatic in most, but surgery for cervical osteophytes can be necessary due to tracheal and esophageal or pharyngeal compression as in this case.
A Multi-Faceted Attack to an Acyclovir Resistant HSV Lesion

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Introduction: Genital herpes is one of the most common sexually transmitted diseases worldwide. While acyclovir resistant herpes lesions are rarely seen in immunocompetent hosts, they occur more frequently in HIV patients and can be difficult to treat.

Case: A 35 year old woman with HIV (CD4 count 202, CD4% 10.2, and viral load 111) and HSV presented to the outpatient HIV clinic with an enlarging left groin mass. Biopsy and viral cultures of the mass were consistent with hypertrophic HSV and she was begun on oral acyclovir. Despite multiple attempts at treatment with acyclovir, the lesion continued to enlarge and patient presented to the emergency room 7 months later. At this time, her groin lesion was a large 6 x 6 cm, septated, pedunculated lesion which was weeping clear fluid. She was admitted to the hospital and begun on foscarne IV and topical imiquimod for her Acyclovir resistant lesion. After several days, the lesion appeared smaller and was no longer weeping fluid. A discussion between the internal medicine, infectious diseases, and dermatology services led to a general surgery consult for excision of the remainder of the lesion. The patient was taken to the operating room for the excision and had clean margins. She completed a 10 day course of foscarne IV and was then discharged home to complete an additional 7 day course of acyclovir IV for suppression. At a one month outpatient follow up visit in HIV clinic, no recurrence of the lesion was noted.

Discussion: Acyclovir resistant herpetic lesions occur more frequently in HIV patients. Treatment with a three-pronged approach including topical and IV therapies (specifically imiquimod and foscarne) with surgical excision should be considered in these patients.
Neurosyphilis Masquerading as Headache and Syncope
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INTRODUCTION: Although once common, neurosyphilis is a rare manifestation of Treponema pallidum infection. Symptoms vary depending on early vs. late forms, with early affecting the CSF, meninges, and vasculature and late affecting the brain parenchyma and spinal cord.

CASE: A 61 year-old woman with history of type 2 diabetes, hypertension, asthma, and TIA presented to the Emergency Department with complaints of daily frontal headaches described as throbbing and radiating to occipital area without visual disturbances. On the day of admission, the patient felt nauseated and subsequently passed out for 30 minutes. Witnesses denied seizure-like activity, and noted that upon arousal patient was confused and disoriented. Review of systems was notable for weakness of lower extremities and paresthesia of her hands, both of which improved shortly after. Three months prior, patient was diagnosed with a TIA based on a similar episode where she experienced 30 minutes of right-sided weakness and facial droop. A MRI was contraindicated due to a metallic plate in her left orbit. On admission, patient’s neurological exam was unremarkable. Vitals signs were stable and negative for orthostatic hypotension. Syncope workup was unremarkable, with a normal EKG and Echo, negative head CT, and stable blood sugars. Lab studies revealed a positive RPR 1:16. Chart review showed that her VDRL on lumbar puncture (LP) 3 months prior after TIA workup was positive 1:2, but only resulted after discharge. The patient began a 14-day course of IV Penicillin G with symptomatic improvement. A repeat LP was deferred for 6 months to evaluate for treatment response.

DISCUSSION: Clinical suspicion and CSF analysis are key for diagnosing neurosyphilis in a patient with unknown history. Nontreponemal tests may be nonreactive in late syphilis, making FTA-ABS and syphilis EIA more sensitive. IV Penicillin G for 10-14 days is the recommended treatment, with serial LPs three to six months after treatment until the CSF white blood cell count is normal and the CSF-VDRL is nonreactive.
**Introduction:** Takotsubo Cardiomyopathy consists of transient systolic dysfunction of apical segments of the left ventricle that is similar to myocardial infarction, but in the absence of coronary artery disease. The cardiomyopathy is transient and the duration of therapy is variable.

**Case:** A 77 year-old man with history of Amyotrophic Lateral Sclerosis presented to the Emergency department with respiratory distress requiring airway protection. The patient was complaining of fatigue, sore throat, and difficulty managing secretions. At baseline, the patient’s ALS had progressed to quadraparesis and severe bulbar dysfunction. On the day of admission, the patient took valium and became unresponsive, prompting his wife to call EMS who gave naloxone without response. He was intubated and admitted to ICU for further management. Vitals were significant for hypotension and bradypnea and patient was placed on norepinephrine. Physical exam was unremarkable. EKG initially showed low voltage QRS in limb leads, but subsequent EKGs were significant for ST and T wave changes in anterolateral leads. Troponins were trended and peaked, 12 hours from initial presentation, at 1.78 ng/mL. Cardiology was consulted and patient underwent coronary angiography for suspected NSTEMI, which showed nonobstructive coronary disease. An echocardiogram showed left ventricular systolic dysfunction and distal anteroseptal wall akinesis with preserved basal contraction. The patient continued on norepinephrine, and was transitioned to dobutamine and phenylephrine. He was eventually weaned off all pressors and was started on ACE-I, beta-blocker and aspirin. A gastrostomy tube was placed for tube feedings. The patient was extubated and discharged with home BIPAP.

**Discussion:** A proposed diagnostic criteria by the Mayo Clinic requires four conditions for the identification of Takotsubo: transient dyskinesis of the left ventricular mid-segments with or without apical involvement on echocardiography; absence of obstructive coronary disease on angiography; new EKG abnormalities or modest elevation of troponins; absence of pheochromocytoma or myocarditis. Patients who have been diagnosed with Takotsubo are treated similarly to patients with heart failure or systolic dysfunction.
TB or Histoplasmosis: Why Not Both?
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Introduction: Immunocompromised patients are at risk for multiple opportunistic infections, often concomitantly. Diagnosis usually requires broad testing and workup.

Case: A 36 year-old man with a history of HIV/AIDS and disseminated Histoplasmosis was referred to the Emergency Department from HIV clinic for tachycardia and fever. The patient had a recent positive PPD and was sent to get a chest x-ray. When a pleural effusion and loculated mass were seen, he was called with the result and told to present to the hospital to be admitted. Patient stated he had developed a chronic cough one month prior, but otherwise was asymptomatic. Of note, the patient's Histoplasmosis was diagnosed 8-12 months prior and was not fully treated. The patient was supposed to be taking itraconazole twice daily, but was only taking his nighttime dose due to nausea. His other medications included emtricitabine, tenfovir, dolutegravir, and dapsone/azithromycin for prophylaxis. He was not homeless, denied any TB contacts, but did report a remote history of incarceration 10 years prior. On exam vital signs were significant for tachycardia (Pulse 120-130 BPM) and temperature 100.5°F. Physical exam was unremarkable except for coarse breath sounds bilaterally. CT scan obtained showed bilateral granulomatous nodules, a large cavitary lesion in the right upper lobe, and mediastinal lymphadenopathy. Pulmonary performed a thoracentesis. AFB cultures were positive and fungal cultures were pending. A urine Histoplasmosis antigen resulted positive. ID was consulted and patient was determined to have both TB and Histoplasmosis. He was started on RIPE therapy as well as itraconazole, and discharged with close follow-up after a 2 week course of treatment and two subsequent negative AFB smears.

Discussion: Pulmonary Histoplasmosis presents with various clinical symptoms. In the setting of cavitary lesions, at least 12 months of antifungal therapy are required. This is normally seen in immunocompromised individuals. Tuberculosis in a patient with HIV is generally treated with RIPE therapy, with rifabutin sometimes substituted for increased efficacy.
BACKGROUND: Growing evidence suggests that nontuberculous mycobacteria (NTM) prevalence is increasing. HIV patients may be particularly vulnerable to the consequences of NTM. Currently, however, little is known regarding the significance of NTM isolated in respiratory specimens of HIV patients. We determined the prevalence of NTM in HIV patients admitted with presumed pneumonia and assessed potential predictors of NTM isolation.

METHODS: We performed secondary data analysis of a prospective cohort study (2007-2011) of early bronchoscopy (<48 hours from admission) in HIV patients presenting with suspected pneumonia. All subjects in the parent study underwent informed consent and clinical variables were collected prospectively. Respiratory specimens were collected from spontaneously expectorated and/or induced sputum or bronchoalveolar lavage from the subset undergoing early bronchoscopy. Patients with NTM isolated in respiratory specimens were included in the analysis. Mycobacteria isolates identified as potentially pathogenic included: Mycobacterium (M.) avium-intracellulare (MAC), M. chelonae, M. gordonae, M. kansasii, M. fortuitum, and M. abscessus. Student’s t-tests, chi-square and Wilcoxon ranksum testing were used to identify NTM predictors. Potential predictors chosen a priori included CD4 count, highly active antiretroviral therapy (HAART) use, homelessness, alcohol use, NTM prophylaxis, hematocrit, albumin, COPD and smoking status.

RESULTS: Among 197 HIV patients admitted with pneumonia, we identified 75 patients in whom 124 BAL or sputum samples were positive for NTM for an overall prevalence of NTM of 38% (75/197). Most patients with NTM were middle-aged men (mean age 44, SD 9, 73% men) who identified their race as Black (84%). Few patients were on HAART therapy (25%) and most were markedly immunosuppressed (median CD4 59, interquartile range [16-127]). Few patients were receiving MAC prophylaxis prior to admission (9%). MAC was the most frequently identified NTM identified in 31 patients (15.7%), m. chelonae in 8 (4%), m. gordonae in 14 (7.1%), m. kansasii in 8 (4%), m. fortuitum in 25 (12.7%), m. abscessus in 8 (4%). An additional 12 respiratory specimens were positive for alternate NTM species. More NTM patients were smokers, not on HAART, although these differences did not achieve statistical significance (Table 1).

CONCLUSION: Respiratory cultures were positive for NTM in 38% of respiratory cultures obtained in HIV positive patients admitted for pneumonia. Our results suggest AFB sputum surveillance in an appropriately selected cohort of HIV patients may identify patients with pulmonary NTM disease. Further investigation should explore the short- and long-term sequelae of routinely identified NTM in HIV patients and investigate NTM early identification strategies.
West Nile Virus with Weakness of Unilateral Extremities and Hyponatremia
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Introduction: The clinical manifestations of neuroinvasive West Nile Virus (WNV) usually mimic meningitis/encephalitis of other viral etiologies. Here we present a case of WNV encephalitis which presented with meningitis as well as SIADH and later developed acute onset of left sided weakness.

Case Description: A 58-year-old female with no known medical history presented with complaint of five days of fever, headache, malaise, nausea, and vomiting. On examination, she was hemodynamically stable and febrile (38.6 °C) with epigastric tenderness. Labs revealed leukocytosis (12.9x10^9/L) and hyponatremia (130 mmol/L). The morning after admission she complained of worsening headache. She experienced altered confusion, neck stiffness, and a diffuse erythematous rash. CSF studies demonstrated 256 WBCs/μL, total protein of 168 mg/dL and glucose of 73 mg/dL, with negative gram stain. Empiric treatment was initiated for bacterial and HSV meningitis. Serum sodium was 134 mmol/L with urine osmolality of 784 mosm/kg and urine sodium of 65 mmol/L. The fourth day of hospitalization she had acute onset of left facial droop and weakness of her left upper and lower extremities (1/5 strength) and a stroke activation was called. CT was negative for intracranial hemorrhage. tPA was administered, with no improvement of her weakness. MRI of the brain and spinal cord were unremarkable. She became increasingly somnolent and was intubated. Her hyponatremia worsened to the 120s mmol/L, which was managed with hypertonic saline after transfer to the ICU. CSF IgM returned positive for WNV. CSF HSV PCR and VDRL were negative and bacterial cultures were no growth. She was extubated after 4 days and hospitalized for 39 days total, her course complicated by deconditioning, ileus, urinary retention, and atelectasis. She was discharged to a nursing facility with persistent weakness in her left arm (3/5) and leg (1/5).

Discussion: Neuroinvasive WNV is associated with a highly variable clinical course and a fatality rate of approximately 10%. The most important risk factor is older age. Neurologic symptoms can include symptoms typical of meningitis/encephalitis as well as acute onset of poliomyelitis-like flaccid paralysis of the extremities. Probable diagnosis requires IgM antibody to WNV in serum or CSF. Viral encephalitis may also present with hyponatremia secondary to SIADH. Treatment for WNV is supportive.
A Case of Hemodialysis Induced Thrombocytopenia in a Patient with Lupus and Antiphospholipid Antibody Syndrome

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Introduction
Recent articles and reviews have reported evidence of dialysis associated thrombocytopenia (DAT), most notably in those using electron beam sterilized filters. Many of these reports have demonstrated up to a 50% drop in platelet counts after dialysis. It has been proposed that electron beam sterilization can alter surface properties of polysulfone filters, possibly causing platelet activation and aggregation. Here we present an interesting case of DAT in a patient with class IV lupus nephritis, a positive heparin induced thrombocytopenia (HIT) panel, and antiphospholipid antibody syndrome.

Case
A 37 year-old Honduran female with a past medical history of systemic lupus erythematosus, chronic kidney disease stage 5, hypertension, anemia of chronic disease, antiphospholipid syndrome, and deep venous thrombosis presented to our institution with 5 days of nausea, vomiting, metallic taste, BUN 70 mg/dL, and creatinine 11.7 mg/dL. She underwent urgent dialysis for uremia. She received heparin with dialysis for 3 days. Over the next 7 days her platelets fell from 173,000 to 28,000. Her 4T score was high and a HIT panel was sent. All heparinoid products were held and argatroban was initiated. She initially had a transient improvement in platelet counts, but it dropped again significantly following dialysis. Due to the thrombocytopenia corresponding to dialysis and failed improvement with initiation of HIT treatment, the suspicion for dialysis induced thrombocytopenia began to grow. The dialyzer was switched from a F160 (electron beam sterilized) to a F6 (ethylene oxide sterilized) with improvement in platelet counts. HIT panel returned mildly positive and a serotonin release assay returned negative. Heparin was restarted without any significant thrombocytopenia thereafter.

Discussion
DAT is a rare but important cause of thrombocytopenia in dialysis patients. Here we have demonstrated a case of decreasing platelet counts in a dialysis patient with class IV lupus nephritis and antiphospholipid antibody syndrome that was originally attributed to heparin induced thrombocytopenia, which failed to improve despite discontinuation of heparin. DAT has been previously been reported in a few case reports in association to F160 filter. Careful monitoring of platelet levels before and after hemodialysis is important for establishing a diagnosis of DAT. We urge clinicians to think of DAT as a possibility for decreasing platelet counts in patients undergoing hemodialysis after excluding the more common causes.
The association between psoriasis and asthma and asthma severity
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Background: Due to systemic inflammation, psoriasis is associated with an increased risk of numerous diseases, including coronary artery disease and cerebrovascular disease. Recently, asthma has been shown to be more common in patients with psoriasis, however, it is unknown whether asthmatics with psoriasis have clinically more or less severe asthma. The significance of this is that as more diseases are associated with psoriasis, it is important to curate whether psoriatic inflammation can exacerbate other disease processes.

Methods: Data from the 2009-2010 and 2011-2012 Centers for Disease Control’s National Health and Nutrition Examination Survey (NHANES) database were used to compare rates of asthma among patients with and without psoriasis. Five specific questions regarding active asthma were used to qualify asthma severity among psoriatic and non-psoriatic patients with a previous diagnosis of asthma. Race/ethnicity, gender, age, obesity, and smoking status were compared among psoriatic patient with and without asthma to look for disease associations.

Results: Psoriatic patients (N=357) are more likely than the general public (N=12,686) to have previously been diagnosed with asthma (OR 1.46, 95% CI 1.12-1.90, p=0.0048); using a logistic regression module, this finding was still true after adjusting for several societal and healthcare covariates (OR 1.48, 95% CI 1.13-1.93 p=0.0045). There were no statistically significant differences between psoriatic and non-psoriatic patients with a previous diagnosis of asthma regarding age of asthma diagnosis (p=0.87), having currently active asthma (p=0.72), likelihood of having an asthma attack in the previous year (p=0.70), use of an ED in the previous year for asthma (p=0.40), or current use of at least one asthma medication (p=0.47). Among patients with psoriasis, psoriatic patients with asthma were more likely to be obese (p=0.047), but there were no statistically significant differences based on age, gender, race/ethnicity, or smoking status.

Conclusion: Psoriatic patients are more likely than the general public to develop asthma, but psoriatic asthmatics are not more likely to have clinically severe or active asthma. Among psoriatic patients, asthma is more common in obese patients. Continued research on the cause for the association between these two diseases, and whether inflammation form one disease affects the other, is needed.
FERTILIZER: AN UNCOMMON CAUSE OF HYPERPHOSPHATEMIA – A CASE REPORT

S. Lock, M. del Rosario, E. Aguilar, J. Owen, E. Reisin, S. Morse

INTRODUCTION:
Hyperphosphatemia is an electrolyte abnormality in which there is an elevated level of phosphorous in the blood. Normal phosphorous levels should be 2.7-4.5 mg/dL. In CKD patients, the most likely cause of hyperphosphatemia would be renal insufficiency. The case below does not seem to fall into any of the traditional causes. It is possible that the high phosphorous could have been caused by “13-13-13” industrialized fertilizer, which is quite high in phosphorous. We do not believe any previous cases have been reported of hyperphosphatemia from this cause.

CASE:
A 57-year-old male with past medical history of CKD stage III, DM-II, rheumatoid arthritis, osteoarthritis, and HTN presented to his Nephrologist’s outpatient office with c/o malaise and muscle twitching. In the ER, he was found to have a creatinine of 5.3 (up from a baseline of 1.4 mg/dL taken at quest labs 6 days ago), and a phosphorous of >15 (up from his baseline of within normal range). This would most likely rule out hyperphosphatemia caused by chronic renal failure. His potassium remained normal inhouse, and his uric acid was only mildly elevated, so tumor lysis syndrome could most likely be ruled out. The patient states that he was gardening, two days prior to presenting to the ER, for twelve hours with fertilizer that his wife says was “13-13-13,” which is extremely high in phosphorous. Initially, the patient was treated conservatively with IV fluids and other supportive measures, but later that night he developed altered mental status, so the decision was made to dialyze him. After two rounds of dialysis, his creatinine decreased to 1.0 mg/dL, and his phosphorous decreased to 1.9 mg/dL. The patient felt significantly better and was then discharged.

DISCUSSION:
This case does not seem to fall into the traditional causes of hyperphosphatemia. The patient’s baseline creatinine was 1.4, mg/dL hence CRF most probably would not be a cause of his hyperphosphatemia. Tumor lysis syndrome and other more traditional causes of hyperphosphatemia seemed less likely. It is quite possible that his hyperphosphatemia was caused by industrial fertilizer exposure by inhalation. Our hypothesis is that since the renal failure was acute and occurred immediately following his gardening with the 13-13-13 fertilizer, and since other causes of the high phosphorous were excluded, the exposure to the fertilizer can very likely be the cause of this patient’s hyperphosphatemia.
ATTEMPTED SUICIDE BY ASPIRIN OVERDOSE: A CASE REPORT

S. Lock, M. del Rosario, A. Aguilar, A. Jack, E. Reisin, S. Morse

INTRODUCTION:
Aspirin toxicity, whether acute or chronic, can lead to significant morbidity and mortality. Acute overdose has a mortality rate of 2%, while chronic overdose has a mortality rate of 25%. A patient can present with a wide array of symptoms – tinnitus, abdominal pain, nausea, vomiting, dizziness, respiratory alkalosis, metabolic acidosis, low potassium, low blood glucose and even cerebral edema, seizures, and coma. As of now, there is no antidote to aspirin toxicity, but there are a few ways to treat it, such as intravenous fluids, activated charcoal, sodium bicarbonate, and when all else fails, dialysis. Following aspirin toxicity, the most common cause of death is cardiopulmonary arrest from pulmonary edema. This is a case of a young woman with attempted suicide by aspirin intoxication, treated with dialysis.

CASE:
A 32-year-old Caucasian female with past medical history of sexual abuse with subsequent PTSD, major depressive disorder, chronic tension headaches, hirsutism, and hypothyroidism presented to the ER with dizziness and tinnitus. The patient states that earlier that evening her father had called her and antagonized her, so she had taken 100 tablets of 325 mg aspirin, along with clonazepam with the intent to commit suicide. She was acidotic with salicylate level of 69.1 mg/dL, just under the threshold of severe intoxication. Her creatinine level was 1.3 mg/dL, up from her baseline of 1.0 mg/dL. Dextrose with bicarbonate drip was started, and dialysis was initiated. She had hypokalemia, hypomagnesemia, and hypophosphatemia, which were all corrected. Metabolic acidosis was corrected with bicarbonate drip and dialysis. Patient was eventually transferred to a psychiatric facility. Upon transfer, the patient’s acute medical issues were resolved – the salicylate level decreased to normal, the anion gap closed, the creatinine fell to baseline, the electrolytes were within normal range, etc.

DISCUSSION:
The diagnosis of aspirin toxicity includes measuring the plasma salicylate levels, which is the active metabolite of aspirin. Ideally, plasma levels should be measure 4 hours after ingestion, and then 2 hours after that to visualize the trend. Initial treatment of aspirin overdose includes immediate gastric decontamination by activated charcoal. Intravenous dextrose is recommended to correct the hypoglycemia and to keep a urinary output of 2-3 ml/kg/hr. Sodium bicarbonate is administered regardless of serum pH, in order to enhance elimination of aspirin in the urine. Hemodialysis is usually preserved for those in severe poisoned states. Not only does hemodialysis remove salicylate in the blood, but it also restores electrolyte and acid-base abnormalities. Needless to say, hemodialysis is a powerful tool in the management of severe aspirin intoxication.
Duplication Cyst Presenting as Chest Pain and Dysphagia
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Case: A 47 year old African American woman presented with a five day history of chest pain and worsening dysphagia and odynophagia. Dysphagia progressed to the point that she could not tolerate liquids. She had a leukocytosis and low grade fevers on admission. CT chest scan showed an air fluid level in the mediastinum region and possible mediastinal, bronchial or esophageal mass or abscess. No abnormalities were seen on bronchoscopy except for slight posterior tracheal bulging possibly from extrinsic compression. On EGD there was a large extrinsic compression of proximal esophagus but no mucosal abnormalities were observed. EUS was aborted secondary to loss of end tidal CO2 and concern the endotracheal tube may have moved. The patient was treated as having an infected duplication cyst and was given a 4 week course of clindamycin. The patient improved during hospitalization and was afebrile and able to tolerate liquids and most solids prior to discharge. She was scheduled to see cardiothoracic surgery for elective enucleation of the cyst.

Discussion: Gastrointestinal and bronchial duplication cysts are rare congenital anomalies in children and adults. Duplication cysts are congenital malformations arising from the embryonic foregut at 5-8 weeks gestation; 50-70% of foregut duplication cysts are enterogenous while 7-15% are bronchogenic. Although frequently asymptomatic, presenting manifestations may include dysphagia, chest pain, and hematemesis. Esophageal duplication cysts should considered as a rare cause of esophageal symptoms even in adults and the diagnosis may not always be determined with conventional imaging.
“Corticotrophin Secreting Pituitary Macroadenoma”
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INTRODUCTION: Pituitary adenomas are uncommon, with an overall prevalence of 77.6/100,000. Furthermore, corticotrophin secreting adenomas are an exceedingly rare subtype, comprising only 2%, with a prevalence of 1.2/100,000.

CASE: A 24 year old male with a past history of asthma presented to the Emergency department with complaints of polyuria, polydipsia, dry mouth, and blurry vision for 3 weeks. He also described a 3 year history of weight gain. Blood pressure was 172/111 mmHg, pulse 93 bpm, and BMI of 36.5. Labs demonstrated glucose of 605 mg/dl, Hemoglobin A1c of 12.4%. He was treated with intravenous fluids, provided diabetic education, and discharged with a prescription for metformin. On the day before his follow up clinic visit, he was involved in a multivehicle accident. BP was 170/108 mmHg, pulse 88 bpm, and BMI 36.5. A CT Abdomen demonstrated avascular necrosis of his femoral heads and adrenal hyperplasia. Labs revealed a glucose of 855 mg/dl, Hemoglobin A1c of 14.2%, metabolic alkalosis, and potassium of 2.7 meq/L. On physical exam, he was found to have features consistent with Cushing’s syndrome, including buffalo hump, moon facies, striae of the abdomen and extremities, thrush, and central obesity. A random cortisol level was > 60 ug/dl. A low dose dexamethasone suppression test failed to correct his hypercortisolism. ACTH level was elevated at 245 ng/ml. Upon further questioning, he mentioned early morning headaches, and coupled with his blurry vision. MRI of the brain demonstrated a macroadenoma of the pituitary measuring 8mm x 19mm x 8mm with erosion of the sella as well as invasion into the sphenoid sinus. He was referred for neurosurgical evaluation.

DISCUSSION: Patients with corticotrophin secreting pituitary macro adenomas often present with hypercortisolism, or Cushing’s syndrome as evidenced by hypokalemia, hypertension, metabolic alkalosis, hyperglycemia, striae, and progressive central obesity. ACTH, released with greater amplitude and duration leads to adrenal hyperplasia. In turn, the adrenal glands begin to excrete proportionately more cortisol at a given ACTH level. Medical management is usually limited and many patients ultimately require surgery. Patients with pituitary macroadenomas have higher ACTH levels, less response to both high and low dose dexamethasone suppression, and higher baseline cortisol concentrations. Plasma cortisol concentrations that do not respond to a low or high dose dexamethasone suppression test does not always indicate an ACTH independent Cushing’s syndrome present.
Rituximab Therapy for Recurrent Refractory TTP-HUS.
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Background: There is a lack of reliable data on managing relapsing/refractory idiopathic TTP-HUS in adults. There exists encouraging case reports on the therapeutic role of Rituximab (Rituxan) in relapsing/refractory idiopathic TTP-HUS, however paucity of clinical trials has left necessary questions unanswered; precise guidelines on when to begin therapy, appropriate patient dosages, and duration of induction and maintenance therapies remain unclear. Rituximab is an anti-CD20 monoclonal antibody targeting B-cells of the human inflammatory system. The accepted theory that autoimmune ADAMTS-13 B-cell antibodies are at the center of idiopathic TTP-HUS etiology makes Rituximab a logical treatment option, however, those cases of TTP-HUS where anti-ADAMTS-13 antibodies are not suspected to be the underlying pathology still show Rituximab to have therapeutic efficacy. In these instances, it is hypothesized that subduing the B-cell response and subsequent cytokine inflammation will prevent the surge in von-Willebrand Factor (vWF) multimers that induces microangiopathic hemolytic anemia (MAHA).

In this particular clinical case of refractory TTP-HUS discussed below, we employed therapeutic management per guidelines with plasma exchange and steroids and subsequently with supplemented Rituximab and saw drastic improvement.

Introduction: TTP-HUS is a systemic phenomenon whereby endothelial injury evokes microangiopathic hemolytic anemia (MAHA) consisting of platelet-rich thrombi. Idiopathic TTP-HUS is a distinct pathology, not caused by an inciting event (e.g. E. coli Shiga Toxin), but is likely from auto-antibodies attacking ADAMTS-13 (an enzyme that dissolves vWF, helping eliminate platelet thrombi). Renal failure with glomerulonephritis, malignant hypertension, and neurological manifestations are common and severe symptoms. First-line therapies for TTP-HUS in adults include Plasma Exchange (PEX) and Steroids. The major shortcomings of exclusive treatment with PEX in Idiopathic cases of TTP-HUS versus those cases with an underlying cause is recurrence and relapse. Due to marked morbidity and mortality of almost 20% seen in TTP-HUS, there must exist a low threshold for suspicion. The presence of thrombocytopenia and MAHA are only two requirements to proceed with treatment. With current treatment regiments, there is a 60% recurrence rate seen in idiopathic cases. Advances in identification and treatment are important and necessary for patient survival.

Case: This study follows a 26 year-old African American male patient who presented to nephrology clinic with a recurrent case of idiopathic TTP-HUS. His past medical history is significant for TTP-HUS at age 21, at which time he suffered malignant hypertension, resolving CN VI palsy, and entered chronic kidney disease. The patient's only symptoms at current presentation were headache and fatigue. His initial case of TTP-HUS was treated with PEX, Solumedrol, and FFP. Upon this second presentation of TTP-HUS, he again was treated with PEX and steroids per suggested guidelines. He continued to show no significant improvement after about three weeks of therapy so Solumedrol was replaced with pulse doses of prednisone and Rituximab (Rituxan). Within 10 days of this change, his platelet count began rising and he was discharged home. While inpatient, he received two Rituximab infusions seven days apart, and was discharged with instructions to follow-up for an additional two more infusions at same interval.

Discussion: With the likely etiology of refractory TTP-HUS at least in part rooted in B-cell auto-inflammation, treatment with targeted B-cell therapies such as Rituximab is critical. Currently, there exists limited data suggesting optimal dosing, duration therapy, maintenance therapy, and side effects of Rituximab in the setting of TTP-HUS. The recommended dose in this setting is 375mg/m² once weekly for four weeks, however further study into proper dosing is essential. This is a horrendous and morbid disease that deserves further exploration.
A case of Peptide-Receptor Radionuclide Therapy (PRRT) in the treatment of a metastatic Neuro-endocrine tumor (NET)

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**Background:** The use of octreotide coupled radionuclide for the treatment of metastatic NET is widely used in Europe and results in a decrease in symptoms, tumor size and disease progression. In the United States, PRRT is still investigational. We describe the case of a patient with metastatic NET who was enrolled in a trial of PRRT as treatment in metastatic NET in the United States (US).

**Clinical case:** A 58 year old male undergoes resection of a retroperitoneal extra-adrenal paraganglioma of the left sympathetic chain in 1998. In 2005 he develops diarrhea, flushing and abdominal pain. CT scan of the abdomen reveals multiple liver lesions with biopsy positive for metastatic NET. Octreotide whole body scan (OWBS) reveals increased activity in the lesions. The patient is started on Octreotide with resultant improvement in symptoms and decreased size of lesions on repeat CT abdomen. The patient changes health care providers in 2007 and Octreotide is stopped for unclear reasons with return of symptoms and increased uptake in the lesions on OWBS. Octerotide is restarted in 2012 resulting in improved symptoms with stable liver lesions on repeat OWBS. MIBG (metaiodobenzylguanidine) scan done in 2012 reveals no uptake. Repeat CT abdomen shows stable liver lesions but new adenopathy along the lesser curvature of the stomach despite ongoing Octreotide therapy. A 24 hour urine nor-metanephrine is elevated at 934 mcg/24 hour (122-676 mcg/24 hr), total metanephrine is 1027mcg/24 hr (222-832 mcg/24 hr), with an appropriate urine volume of 2950 mls.

In 2013 the patient complains of worsening abdominal pain despite being on octreotide and undergoes bland chemo-embolization of the hepatic lesions. Repeat CT abdomen reveals a decrease in liver lesions and an unchanged gastric lesion.

In 2014 the patient is symptomatic again while on Octreotide therapy and is accepted into the first FDA approved trial for PRRT use in treatment of metastatic NET in the US. He receives 4 treatments with Lutetium 177. Post PRRT OWBS shows decrease in hepatic lesion grade and intensity with stable gastric adenopathy. His symptoms of diarrhea and flushing are completely resolved.

**Conclusion** The use of PRRT in metastatic NET with symptoms refractory to conventional treatment results in improved symptoms and disease regression.
Breathtaking Concerns for the use of TNF-alpha antagonists
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INTRODUCTION: There is a known association of Crohn’s disease and intestinal carcinoid tumor. Previous reports have proposed that treatment with TNF-alpha antagonists may play a role in the increasing incidence of this combination Crohn’s disease and carcinoid cancer.

CASE: A 43-year-old woman with a past medical history of mild intermittent asthma and Crohn’s disease chronically treated with adalumimab presented with three days of shortness of breath, cough, productive sputum, and fevers greater than 103°F. Clinically, the patient was found to have decreased breath sounds and increased fremitus to bilateral lower lung fields. An x-ray showed obliteration of the right hemidiaphragm concerning for pleural fluid and pneumonia. The patient was treated with moxifloxacin for 3 days with minimal clinical improvement and continued fevers. A repeat chest x-ray revealed consolidation in the right lower and middle lobes with continued right hemidiaphragm opacification. Pleuracentesis demonstrated negative cytology and an exudative effusion. Chest CT without contrast revealed a 1.6 cm right upper lobe endobronchial mass. The patient was diagnosed with post obstructive pneumonia. The endobronchial lesion was visualized via bronchoscopy and biopsy demonstrated non-atypical carcinoid tumor. The patient was stabilized and then underwent right lower and middle pulmonary bilobectomy with a bronchoplasty closure of the bronchus and an intercostal pedicle muscle flap. Standard mediastinal lymph node dissection was performed which showed no metastatic disease.

DISCUSSION: This is the second known case presented in two years of a healthy young patient with no other risk factors, other than Crohn’s disease, presenting with an endobronchial primary carcinoid tumor while taking adalumimab. This case not only showcases a rare and interesting finding of endobronchial primary carcinoid tumor of the lung in a patient with Crohn’s disease, but also highlights the concern for increased cancer risk in patients taking TNF-alpha antagonists. The use of TNF-alpha antagonists has previously been shown to increase the risk of many cancers and the increasing incidence of case reports highlighting otherwise rare tumor instances is both concerning and worthwhile of further investigation.
Rituximab Therapy for Recurrent Refractory TTP-HUS
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Introduction: TTP-HUS is a systemic phenomenon whereby endothelial injury evokes microangiopathic hemolytic anemia (MAHA) consisting of platelet-rich thrombi. Idiopathic TTP-HUS is a distinct pathology, not caused by an inciting event (e.g. *E. coli* Shiga Toxin), but is likely from auto-antibodies attacking ADAMTS-13. With the likely etiology of refractory TTP-HUS at least in part rooted in B-cell auto-inflammation, treatment with targeted B-cell therapies such as rituximab has potential.

Case: A 26 year-old man presented to nephrology clinic with a recurrent case of idiopathic TTP-HUS. His past medical history was significant for TTP-HUS at age 21, at which time he suffered malignant hypertension, resolving CN VI palsy, and developed chronic kidney disease. He was treated with plasma exchange (PEX), methylprednisolone sodium succinate and fresh frozen plasma during his initial case of TTP-HUS at age 21. Upon this second presentation of TTP-HUS, he again was treated with PEX and steroids per suggested guidelines. He had no significant clinical improvement after about three weeks of therapy so methylprednisolone was replaced with pulse doses of prednisone and rituximab. Within 10 days of this change, his platelet count began rising and he was discharged home.

Discussion: There is a lack of reliable data on managing relapsing/refractory idiopathic TTP-HUS in adults. There are encouraging case reports on the therapeutic role of rituximab in relapsing/refractory idiopathic TTP-HUS. Rituximab is an anti-CD20 monoclonal antibody targeting B-cells of the human inflammatory system. The accepted theory that autoimmune ADAMTS-13 B-cell antibodies are at the center of idiopathic TTP-HUS etiology makes rituximab a logical treatment option. However, a paucity of clinical trials has left necessary questions unanswered; precise guidelines on when to begin therapy, appropriate patient dosages, and duration of induction and maintenance therapies remain unclear.
Avascular Necrosis and Hyperbaric Oxygen Therapy: A Case of Femoral Head Edema

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Avascular Necrosis (AVN) of the femoral head is a devastating disease process, traditionally with few non-operative or hip sparing management options. Hyperbaric Oxygen Therapy (HBO$_2$) has shown benefit in randomized controlled trials in treating early stages of AVN. Despite this, the Undersea and Hyperbaric Medical Society does not recognize AVN as indication for HBO$_2$. The case we present is a 19 year-old male who presented to University Medical Center with persistent right hip pain 6 weeks after mild hip trauma. MRI of the hip showed edema of his femoral head, without a clear diagnosis of AVN. The patient was treated with HBO$_2$ for suspected early AVN and experienced remarkable recovery. After 3 treatments both his hip pain and range of motion were greatly improved, and after 10 treatments his refractory hip pain had resolved. The speed of this patient’s improvement calls into question the underlying pathophysiology of AVN and the therapeutic target of HBO$_2$, which in this case appears to be reduction in edema and intra-osseous compartment pressures. Conclusion: HBO$_2$ is an effective treatment for AVN, especially when it is employed early in the disease progression.
A Life Threatening Case of Back Pain

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HPI: A 53 year old male presented to the Emergency Department with a possible ruptured abdominal aortic aneurysm (AAA), discovered on a CT without contrast of the Lumbar spine performed at an outside hospital. The patient had initially presented with back pain. His past medical history was significant for HTN, Stage IV lymphoma, HIV, and a past episode of staphylococcus bacteremia. Of note, the patient had been followed previously at our hospital, with multiple recent visits to the ED and clinic for back pain. On a CT scan of the abdomen and pelvis with IV contrast performed 2 weeks prior, no significant abnormalities had been noted to the aorta. After these visits, the patient had increasing back pain, prompting his presentation to another hospital and subsequent CT scan.

Physical Exam:
Exam: Vitals BP 142/90 HR 67 RR 14 Sat 100% Temp 97.6
General.: Thin, chronically ill appearing male, in no acute distress, alert
CV: Normal heart sound, pulses 2+ and equal to all extremities
Pulmonary: Effort normal, breath sounds clear without additional sounds
Abdomen: Soft non distended, midline pulsatile mass above umbilicus that was mildly tender to palpation, no rebound, no guarding
Neurologic: No focal deficits
Psych: Denies SI/HI/A VH, normal affect, mood and behavior

Imaging: Bedside ultrasound found 5.25 cm infrarenal aneurysm with surrounding complex fluid collection

Hospital Course: After identification of the aortic aneurysm with suspected rupture on ultrasound, the patient was placed on a cardiac monitor and large bore IV access was obtained. A CT angiogram demonstrated a saccular, infrarenal aortic aneurysm suspicious for mycotic origin. An Esmolol drip was initiated and Vascular surgery was consulted who took the patient to the operating room for endovascular repair.

Discussion:
This case highlights the difficulty in diagnosing AAA and its complications. Many patients present with vague symptoms, making diagnosis difficult. Multiple imaging modalities may be used to evaluate the Aorta. Bedside ultrasound is highly sensitive and specific for identifying AAA, but can be limited in diagnosing rupture. CT, specifically CTA has long been considered the gold standard, but may also have its limitations, as highlighted by this case. In patients with high clinical suspicion of ruptured AAA, emergency bedside ultrasound may be helpful in guiding management.
Pain out of proportion to exam not always ischemia
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Case: A 60 year old woman with a past medical history of hypertension, type 2 diabetes with diabetic retinopathy, and glaucoma presented with abdominal pain, nausea, vomiting, 3 days of diarrhea and 1 day of confusion. At presentation, she was hypothermic 90.5°F, BP 80/40, RR 30, and HR 44; she required aggressive fluid resuscitation, blood products, vasopressor support and intubation. Initial blood glucose was 108 mg/dl, VBG showed pH <6.9, C02 5 mmol/l, lactate acidosis 19.5 mmol/l, elevated ammonia 330 umol/l, C-reactive protein 0.67 mg/dl, BNP 813 pg/ml, troponin 0.03 ng/ml, hyperkalemia 5.3 mmol/l, and acute renal failure with a creatinine 8.3 mg/dl (baseline ~2). A CT scan of the abdomen revealed bowel edema concerning for mesenteric ischemia. Given the severe lactic acidosis and abdominal pain, the patient underwent exploratory laparotomy which was unremarkable. She was transferred to the ICU where sustained low efficiency dialysis (SLED) was initiated for the severe acidosis and renal failure. She required nicardipine briefly after she was taken off of the vasopressor and required antihypertensive medications throughout the remainder of her hospital course. The patient unexpectedly developed atrial fibrillation (AF) with RVR which spontaneously converted. Cardiac echo showed biatrial enlargement, however cardiology felt that her AF was secondary to profound acidemia. She remained in normal sinus rhythm after SLED. On hospital day 7, her creatinine peaked at ~4.3 mg/dl and remained stable.

Discussion: Lactic acidosis is the most common cause of metabolic acidosis in the hospitalized patient. Metformin induced lactic acidosis occurs in approximately nine cases per 100,000 person-years of exposure and has a high mortality rate of approximately 50%. Per chart review, our patient was taking metformin despite her creatinine >2 mg/dl for at least three months prior to admission. Our patients metformin level was found elevated prior to SLED. We believe our patients lactic acidosis was primarily due to metformin use in the setting of progressing chronic kidney disease. The current contraindications for metformin use include: impaired renal function, concurrent liver disease, acute heart failure, hemodynamic instability (i.e., sepsis) or past history of lactic acidosis.
Ogilvie’s Syndrome with history of Multiple Myeloma
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INTRODUCTION: Ogilvie’s Syndrome is an acute pseudo-obstruction of the bowel in the absence of mechanical obstruction. This rare acquired disorder results from abnormal intestinal motility due to autonomic nervous dysfunction. We report the second case of Ogilvie’s syndrome in a patient with Multiple Myeloma.

CASE: A 56 year old man with history of Multiple Myeloma with bone lytic lesions on maintenance treatment with bortezomib, presented to his oncologist for routine follow up and was found to have hypokalemia. His only complaint was abdominal swelling that started 2 days prior to the clinic visit. Initial abdominal radiographs showed marked gaseous distention of small bowel and dilation of the ascending and transverse colon. Abdominal CT showed distended gas-filled loops of large bowel without evidence of mechanical obstruction or ischemia. He was diagnosed with Ogilvie’s syndrome and his potassium was replaced aggressively. He improved following colonoscopy for bowel decompression with rectal tube placement. Following rectal tube removal, he had reoccurrence of dilated small bowel. The rectal tube was reinserted, followed by decompression with colonoscopy. He once again had recurrence of distention once the rectal tube was removed. Trial therapy with erythromycin, neostigmine and cecostomy tube provided short-term relief. During this time period, he had progression of his myeloma. His performance status deteriorated significantly and he was discharged home with home hospice and cecostomy tube for symptom relief.

DISCUSSION: Ogilvie’s syndrome often responds to conservative management and treatment of underlying condition. Based on one prospective study, sustained and early response to neostigmine and association with non-traumatic surgery were good predictors. Electrolytes imbalance and association with serious medical condition were poor predictors. In addition, Bortezomib has been associated with autonomic nervous dysfunction and paralytic ileus. Our patient had a prolonged refractory course with poor outcome most likely due to multi factorial etiology including progressive Multiple Myeloma treated with bortezomib.
Trichomonas vaginalis infection does not impact Papanicolaou specimen adequacy, and is not associated with signs of cervical inflammation nor cytological abnormalities

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Background: Trichomonas vaginalis infections have been linked to inflammatory urogenital syndromes including vaginitis, cervicitis and pelvic inflammatory disease. Chronic infections are also associated with reproductive tract complications including pre-term birth and infertility. Although T. vaginalis is the most common curable sexually transmitted infection worldwide, infections are predominately asymptomatic and most prevalent in women over 40 years of age. Cervical cancer screening is routinely performed using liquid-based Papanicolaou (Pap) specimens whereby T. vaginalis is a common incidental finding. The objective of this study was to compare molecular detection to cytology-based identification of T. vaginalis, and then determine whether infection impacted specimen adequacy and/or was associated with cytological signs of disease.

Methods: DNA was extracted from liquid-based cervical Pap specimens received from 5 LSU-affiliated Louisiana hospitals/clinics from 2014-2015 (n=400). PCR amplification and analysis was performed using the User Defined Workflow software (UDF) on the cobas 4800 system.

Results: Statistical comparison between the molecular tests produced a Cohen’s kappa correlation coefficient of 0.92 (95% CI 0.82-1.00) indicating “almost perfect” agreement. Using the LDT as the gold standard comparator, the kappa coefficient for cytology-based detection of T. vaginalis was 0.71 (95% CI 0.50-0.93) indicating “substantial” agreement. Relative to the LDT test, T. vaginalis detection on Pap preparations showed an overall sensitivity of 57.1%, a specificity of 100.0%, and positive and negative predictive values of 100.0 and 96.9%, respectively. No significant associations were observed among several parameters of Pap specimen adequacy, HPV infection, epithelial cell changes, signs of inflammation, nor cytological abnormalities.

Conclusions: The results indicate that cytology-based identification of T. vaginalis is highly specific, but relatively insensitive compared to molecular diagnosis. T. vaginalis was not associated with cervical inflammation, and despite previous associations with reactive changes and/or squamous atypia, the impact of this common infection on Pap cytology appears to be minimal.
Chagas Cardiomyopathy
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INTRODUCTION: Delineating the etiology of cardiomyopathy is an important part of the initial workup of newly diagnosed cardiomyopathy. We describe the case of a 30 year old previously healthy male who presented with VF arrest and was found to have dilated cardiomyopathy.

CASE: A 30 year old Hispanic Male with no prior past medical history presented to our institution post-resuscitation for ventricular fibrillation. Initial and subsequent EKGs were significant only for low voltage. Echocardiogram was significant for LV EF <20% with global hypokinesis, and LVID 7.0 cm. Computerized Tomography Scan protocoled for Cardiac structures revealed no atherosclerotic disease and normal origins of both left and right coronary arteries, and a LVEDD 7.6cm. Evaluation of renal function, creatinine-kinase, hepatic function, iron studies, HIV, TSH, and urine toxicology were all unremarkable. Enzyme Linked Immunosorbent Assay for *Trypanosoma cruzi* IgG was positive, and subsequent testing by CDC confirmed the diagnosis. During his admission he received an ICD for secondary prevention. The patient remained asymptomatic from his cardiomyopathy.

DISCUSSION: The prevalence of *Trypanosoma cruzi* infection in South American is about 1%. *Trypanosoma cruzi* infection has two forms. Approximately 70-80% of infected have the indolent intermediate disease form characterized by chronic infection in the absence of signs or symptoms, and 20-30% of infected have Chagas cardiomyopathy, Chagas gastrointestinal disorder or both. Acute Chagas may be diagnosed with either microscopic examination of thin smears stained with Giemsa or PCR. Chronic infection relies on ELISA or Immunofluorescent Antibody Assay (IFA). Two assays are typically used for diagnosis, as no single assay has high enough sensitivity or specificity to be used alone as confirmation of diagnosis. Cardiac involvement can cause both dilated cardiomyopathy and arrhythmia. Treatment of chronic Chagas cardiomyopathy is controversial, with ongoing trials aimed at determining effectiveness. Although uncommon, changes in epidemiology will undoubtedly result in a greater incidence and prevalence of Chagas cardiomyopathy.
Pneumocystis pneumonia alters the intestinal microbial communities and inferred functional capacities.

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Rationale: The gut-lung axis enables cross-talk between the intestinal tract (microbiota) and the respiratory tract and is required for optimal host defense against pathogenic insult in the lung. However, many questions remain unanswered. For example, it is not known if lung infections alter the intestinal microbial communities or if the gut-lung axis is bidirectional. We sought to understand the effects of respiratory infection on the composition and inferred metagenomic functions of the intestinal microbiota community, using a murine model of Pneumocystis pneumonia. We hypothesized that Pneumocystis pneumonia will significantly alter both the composition of the intestinal microbiota and the inferred functional capacity of the microbial communities.

Methods: C57BL/6 mice were infected with Pneumocystis murina via intratracheal inoculation. Control animals were infected with naïve lung homogenate from uninfected mice. Mice were then sacrificed at 7 and 14 days post infection and intestinal contents were harvested. Genomic DNA was then extracted and 16s sequencing was performed. Beta and alpha diversity metrics, as well as, taxonomic community assessments were produced using QIIME 1.9 scripts. Additionally, we performed metagenomics PICRUSt and LEfSe analysis to evaluate various microbial features associated with each microbial community.

Results: We found that the diversity of the intestinal microbial community was significantly altered by respiratory infection with P. murina. Specifically, mice infected with P. murina had altered microbial populations, as judged by changes in alpha and beta diversity, as well as, changes in taxa abundances and diversity. We also found that CD4+ T cell depleted mice infected with P. murina exhibited significantly altered intestinal microbiota that was distinct from immunocompetent mice infected with P. murina, suggesting that loss of CD4+ T cells also affects the intestinal microbiota in the setting of pneumonia. Finally, we found that Pneumocystis pneumonia significantly alters the intestinal microbiota’s inferred functional potential for carbohydrate, energy, and xenobiotic metabolism, as well as, signal transduction pathways.

Conclusion: Our study provides insight into specific-microbial clades and pathways associated with Pneumocystis pneumonia and CD4+ T cell depletion. Our results also suggest that the gut-lung axis is bidirectional with signals/products produced during lung infection inducing changes in the gut microbial populations that, in turn, may provide feedback to the lung.

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Development and Utilization of a Novel Molecular Diagnostic Test for *Mycoplasma genitalium* Detection in Female Urogenital Specimens

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*Mycoplasma genitalium* is emerging as a prevalent sexually transmitted infection that is associated with inflammatory reproductive tract syndromes including pelvic inflammatory disease and cervicitis. The prevalence of *M. genitalium* in both high- and low-risk populations is between that of *Chlamydia trachomatis* and *Neisseria gonorrhoeae*. Establishing both acute and chronic inflammation of urogenital tracts of men and women, *M. genitalium* has thus been identified as a significant concern for both reproductive and sexual health. Currently, no FDA-approved clinical diagnostic tests available in the USA. As such, *M. genitalium* testing is rarely performed because clinicians rely upon lab-developed tests (LDTs) performed only at specialized reference labs. Considering the significant burden of STIs in New Orleans women, including undiagnosed and untreated *M. genitalium* infections, our objective was to develop and validate a molecular diagnostic test system for implementation in the University Medical Center (UMC) Molecular Pathology Lab. Targeting the unique and highly-conserved MG130 gene, we developed a PCR-based LDT that detected *M. genitalium* DNA with high analytical sensitivity and specificity in several sample types. Using the optimized LDT and ThinPrep® PreservCyt® specimens (commonly used for Papanicolaou smears), we determined the prevalence of *M. genitalium* among low-risk Louisiana women to be 1.9%. In a separate quantitative analysis of cellular inflammation, subjects with *M. genitalium* infection had significant increases in cervical leukocytes, substantiating *M. genitalium* as an etiology of cervicitis. This study highlights a rapid, sensitive, and specific method for *M. genitalium* detection; we are actively working to further validate and implement this test at UMC-NO.
Suspected Essential Thrombocythemia as Cause of Cryptogenic Stroke
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CASE: A 31 year-old man with a past medical history of marijuana abuse presented with progressively worsening headache over four days with development of left-sided weakness and slurred speech. Physical exam was significant for left upper and lower extremity weakness with mild dysarthria. He was also found to have an asymmetric smile and nasolabial fold flattening. Sensory and cerebellar exam were intact. His NIHSS score was calculated to be 4. Labs were significant for thrombocytosis (618 K/µL), a low TSH (0.220 uIU/ml) with normal free T4 (0.90 ng/dL) and a normal ferritin (235 ng/ml). Initial head CT was negative. An MRI of the brain showed several subacute pontine infarcts with a small hemorrhagic component. There was no abnormality seen on the MRA of the head and neck. Trans-thoracic echocardiography with bubble study revealed a small PFO, which was managed with antiplatelet therapy given the lack of left atrial thrombus seen on subsequent TEE. Upon chart review, patient’s platelet count was noted to be elevated on a prior visit one year earlier (688 K/µL), raising suspicion for essential thrombocythemia. Hematology was consulted and a hypercoagulability workup, including a JAK-2 mutation analysis, was negative. He was discharged on daily aspirin, BCR/ABL was ordered and an outpatient bone marrow biopsy was arranged with close follow-up with hematology and neurology.

DISCUSSION: Essential thrombocythemia (ET) is characterized by a persistently elevated platelet count over 450 K/µL that may be accompanied by thrombotic or hemorrhagic events. ET varies from the other chronic myeloproliferative disorders (MPDs) in that it is a diagnosis of exclusion and is not explainable by a reactive process, iron deficiency or other myeloproliferative process. Work-up of ET includes testing of acute phase reactants to rule out an underlying inflammatory process, BCR/ABL testing to rule out CML, and bone marrow aspiration which typically reveals megakaryocytic hyperplasia. Greater than 50% of patients with ET will have a positive JAK 2 V617F mutation. Treatment is aimed at prevention of thrombotic events and typically consists of low-dose daily aspirin and cyto-reductive therapy with hydroxyurea or interferon.
A 41-year-old Nicaraguan man with a past medical history of HIV/AIDS presented with a chief complaint of intermittent subjective fevers for 1 week accompanied by generalized malaise and myalgias. On initial evaluation, he was tachycardic to 128 BPM and febrile to 102.3°F. Physical examination was notable for painful cervical and inguinal lymphadenopathy. His CD4 count was 304. Chart review revealed that he had been started on antiretroviral therapy (ART) approximately 1 month earlier, with a CD4 count of 42 prior to initiation of ART. Given his clinical presentation in conjunction with the rapid rise in CD4 count and drop in viral load, a diagnosis of acute immune reconstitution inflammatory syndrome (IRIS) was made. The underlying etiology then became the main question of the treatment team and an extensive differential was considered. Since the patient emigrated from a country where TB is endemic, he was admitted and immediately placed on airborne isolation. Pulmonary TB was subsequently excluded with negative IGRA and negative sputum AFB. However, the suspicion for extrapulmonary TB vs. Mycobacterium Avium-Complex (MAC) remained high. Eventually, the patient underwent fine-needle aspiration of a left cervical lymph node which showed 3+ AFB. Serum AFB was negative. He was discharged on empiric therapy for extrapulmonary TB and MAC with a regimen of RIPE+B6 and azithromycin. He was continued on ART throughout his admission and at discharge. Culture from the cervical lymph node aspirate and induced sputum ultimately grew MAC.

Discussion: IRIS is a dysregulated inflammatory response to a known or occult infection after initiation of ART. It is driven by a rapid improvement in immunologic function that leads to a paradoxical worsening of infectious symptoms. Criteria for diagnosing IRIS generally include: 1. the presence of AIDS with a low pre-treatment CD4 count, 2. a positive virologic and immunologic response to ART, 3. no evidence of drug-resistant infection, bacterial superinfection, drug allergy or drug-drug interactions, 4. the presence of inflammatory clinical manifestations, and 5. a temporal association between ART initiation and the onset of clinical features. The differential for IRIS is extensive and includes TB, Non-Tuberculous Mycobacteria, Cryptococcus, Cytomegalovirus, Herpes simplex virus, Hepatitis B and C, and Pneumocystis jirovecii among others. MAC-related IRIS usually occurs within several weeks of starting ART and is typically characterized by fever and painful lymphadenitis. It can also cause lesions in unusual places such as the lower respiratory tract. IRIS is generally managed by treating the underlying opportunistic infection and by continuing ART unless the IRIS is life-threatening. Corticosteroids or NSAIDs can be used as adjuvant therapy in certain cases, for example if obstructive masses are present, but risk-benefit analysis must be conducted.
Severe Hyponatremia Secondary to Untreated Hypothyroidism
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Abstract
Hyponatremia is a common electrolyte disturbance seen in hospitalized patients, which is unfortunately related to a great increase in morbidity and mortality. Hyponatremia is classified as mild, moderate or severe and is associated with volume status to narrow the differential. There is a well-established association between altered sensorium and hyponatremia. The causes of hyponatremia are multifactorial and a low sodium level alone is not diagnostically helpful. The body’s response to this electrolyte disturbance is orchestrated through the hypothalamic pituitary thyroid axis along with the kidneys. Given the connection between the kidneys and pituitary’s responsiveness to electrolyte disturbance, it is unsurprising that there have been multiple studies into the mechanisms behind these disorders. Interestingly the underlying pathophysiology between hypothyroidism and the response of the kidneys is interconnected by a single hormone. We report a case of a patient with severe hyponatremia related to untreated hypothyroidism.

A case of 51 year old man with known history of non-small cell lung cancer with brain metastases status-post total brain radiation, presented with three days of urinary and fecal incontinence, decreased oral intake, and altered mental status. Other pertinent past medical history includes Coronary Artery Disease, Congestive heart failure, Chronic Obstructive Pulmonary Disease, hypothyroidism, and hypertension. Upon admission he was found hypothermic with a temperature of 35.9°C, hypotensive at 92/73 mmHg. On exam he was drowsy, unable to verbalize, but following commands. Initial labs were drawn and he was hypokalemic with potassium of 1.6 mEq/L and hyponatremic with sodium of 125 mEq/L. His thyroid function studies were drawn and showed a TSH >100.0 µU/mL and free T4 <0.25 ng/dL, He had been started back on his home dose of Synthroid 175 mcg PO daily; and a stress dose of Synthroid 200 mcg IV for two days in addition to his oral levothyroxine. His TPO antibody titer was within normal limits at 0.3 IU/mL, causing suspicion for adrenal insufficiency. A cosyntropin stimulation test was ordered showing cortisol levels of 3.5 mcg/dL at baseline, a rise to 17.5 mcg/dL after 30 minutes and a subsequent drop to 11.4 mcg/dL 30 minutes later. Due to this abnormal test he was started on Prednisone 5mg daily. Testing was ordered to rule out panhypopituitarism secondary to his brain radiation, and all hormones were found to be within normal limits. Patient was treated with levothyroxine 175 mcg by mouth daily and hydrocortisone 50 mg by mouth twice a day, for his hypothyroidism secondary to his adrenal insufficiency. After 8 days of treatment he was discharged home with resolution of symptoms and restoration electrolytes at physiological range.

The association between electrolyte disturbance and hypothyroidism is a widely debated issue in which causality is difficult to establish. It is well known that electrolyte disturbances, particularly hyponatremia is associated with increased morbidity and mortality in hospitalized patients. Interestingly the underlying pathophysiology between hypothyroidism and the response of the kidneys is interconnected by a single hormone. There is a proposed mechanism for hyponatremia in the presence of severe hypothyroidism due to defective water diuresis related to vasopressin at the level of the kidney. Others argue that the role of hypothyroidism in producing a hyponatremic state is purely a renal-mediated dysfunction. Despite the disagreement over the underlying pathophysiology, it is an accepted fact that treatment of hypothyroidism with replacement of deficient thyroid hormone results in restoration of normal fluid and electrolyte balances at all physiological levels.
Mycoplasma genitalium Infection Activates Cellular Pathways Associated with Preterm Labor and Reduces Epithelial Barrier Integrity of the Human Ecto- and Endocervix

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Preterm birth (PTB), defined as delivery at less than 37 weeks of pregnancy, is a significant and predominately idiopathic cause of neonatal morbidity and mortality that affects approximately 10% of infants in the USA; Louisiana has one of the highest PTB rates at 12.3%. Mycoplasma genitalium is an emergent sexually transmitted bacterial pathogen associated with chronic inflammatory syndromes of the reproductive tract including cervicitis, pelvic inflammatory disease, and tubal factor infertility. Epidemiologically M. genitalium has been associated with preterm labor, but the mechanisms underlying this association remain unclear. M. genitalium has been shown previously to activate pro-inflammatory host defense responses in cervical epithelial cells (ECs), leading to the infiltration of neutrophils, macrophages and T-cells into cervical tissues. We hypothesized that M. genitalium infection may impact the cervical epithelial barrier function directly, or as a consequence of leukocyte enrichment and chronic exposure to an inflammatory milieu. Inflammation is a key component of cervical ripening – a critical component of initiating labor that may lead to premature rupture of membranes (PPROM) and PTB. Using a well-characterized three-dimensional (3D) model of the human ecto- and endocervical epithelium, we observed that acute M. genitalium infection resulted in low but significant decreases in epithelial barrier integrity and function. We next hypothesized that M. genitalium infection may induce PTB via activation of inflammatory pathways that overlap those involved in cervical ripening. Preliminary RNA-Seq results indicate that acute M. genitalium infection of endocervical ECs induces expression of several genes, including those associated with T-cell, macrophage, and neutrophil chemotaxis. In addition, the class of matrix metalloproteinase (MMP) genes, known to be involved in PPROM, was also upregulated during M. genitalium infection. Collectively, these data provide substantial rationale for investigating the role of M. genitalium in preterm labor. To this end, we are initiating a cross-sectional prevalence study in pregnant UMC clinic attendees, followed by a longitudinal cohort study with Touro Infirmary to address the role of M. genitalium in preterm birth in New Orleans.
Chasing the Dragon: A case of Heroin Inhalation Leukoencephalopathy
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Introduction: “Chasing the Dragon” is a slang term which refers to the inhalation of the heated vapors of heroin. First described in 1982, heroin inhalation leukoencephalopathy (HIL) is a rare but serious complication of heroin use by inhalation.

Case Description: A 35 year old incarcerated woman with a history of intravenous heroin use was brought in by the sheriff’s office for three days of altered mental status. The jail physician noted “unsteady gait, weakness, delayed responses, and lethargy”. She complained of headache and generalized weakness, which she attributed to “withdrawing.” Her last heroin use was four days prior to presentation. On exam, she was noted to be apathetic with generalized psychomotor slowing. Her neurologic exam was significant for right lower extremity weakness and diminished sensation, brisk patellar reflexes, and bilateral ankle clonus. She was uncooperative with cerebellar testing and was unable to stand due to right extremity weakness. Initial labs revealed a slight leukocytosis (13.6) without left-shift, hypokalemia (2.9), transaminitis (AST 292 U/L, ALT 147 U/L) and elevated CK (1864). Urine drug screen was positive for opiates and benzodiazepines. Brain MRI demonstrated symmetric cortical/subcortical T2 hyperintensities in the watershed territories of the bilateral parietal and occipital lobes consistent with leukoencephalopathy. Spine MRI, EEG, CSF studies, rheumatologic panel, MS panel, and infectious work-up were unremarkable. On further questioning, she admitted to heroin use by inhalation which led us to the diagnosis of HIL. She was started on a trial of coenzyme Q and received intensive physical therapy resulting in improved mentation and physical function.

Discussion: Symptoms of HIL include cerebellar dysfunction, psychomotor retardation, soft speech, and apathy. Symmetric T2 hyperintensities in the posterior cerebral hemispheres and cerebellum are seen on MRI. Heroin vapors may be directly toxic to mitochondria, and result in a vacuolar degeneration of myelin sheaths. Treatment includes supportive care; anti-oxidants such as coenzyme Q have been used anecdotally. HIL should be considered in patient’s presenting with a history of heroin inhalation and new onset neurologic or behavioral changes.
Introduction: Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) is potentially life-threatening and classically presents with fever, skin eruption, lymphadenopathy, eosinophilia, and systemic organ involvement. This drug reaction is delayed onset, typically occurring six to eight weeks after initiation of the offending agent. Reactivation of human herpes viruses, particularly HHV-6, is frequently seen in association with DRESS.

Case: A 20-year old woman with history of childhood asthma, cannabis use, and schizoaffective disorder presented to the Emergency Department with a complaint of fever and left-sided, abdominal pain that worsened with eating. She was febrile to 102.7°F and tachycardic on presentation. Labs revealed a normal leukocyte count and elevated transaminases (AST 162, ALT 301) with a normal bilirubin. An abdominal CT with contrast revealed mild intrahepatic biliary dilation, a partially contracted gallbladder with an abundance of pericholecystic fluid, and mild pancreatic ductal dilation. Findings on abdominal ultrasound suggested acalculous cholecystitis. She was started on intravenous antibiotics and underwent laparoscopic cholecystectomy. Her post-operative course was complicated by persistent fever and worsening transaminitis (AST 347 U/L, ALT 413 U/L). On exam, she was noted to have diffuse lymphadenopathy as well as interval development of a diffuse, erythematous, morbilliform rash. Given her constellation of symptoms and history of recent initiation of oxcarbazepine for schizoaffective disorder, DRESS was suspected. HHV-6 titers were elevated at 9.08 (positive > 0.99). She was started on prednisone and improved clinically.

Discussion: DRESS is a potentially life-threatening syndrome and early recognition is important. Initially, our patient’s clinical picture was unclear due to recent cholecystectomy as a confounding cause of fever and transaminitis. However identification of elevated HHV-6 titers in the setting of drug hypersensitivity is considered specific for DRESS. Treatment of DRESS includes removal of the offending agent and steroids. Patients with DRESS are at increased risk of developing auto-immune illness and should be monitored closely for manifestations even after resolution of the acute syndrome.
Gastrinoma in a patient with Acute Intermittent Porphyria
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Introduction: A gastrinoma is a rare functional gastrointestinal neuroendocrine tumor typically encountered in the duodenum and characterized by unregulated, excessive gastrin. Acute intermittent porphyria (AIP) is a rare inborn disorder of the heme biosynthetic pathway with autosomal dominant inheritance; a deficiency of the enzyme porphobilinogen deaminase results in excess cytoplasmic porphobilinogen. Often diagnosed by the classic finding of reddish-brown urine, acute episodes are characterized by severe, diffuse abdominal pain.

Case description: A 58 year old man, who was diagnosed with AIP five years prior presented to the Emergency Department with two weeks of abdominal pain that was more constant and severe than his prior AIP flares. The pain was associated with nausea, vomiting, and a palpable RUQ mass that enlarged after meals. Contrasted abdominal CT revealed a 1.5 x 1.5 x 1.4 cm mass in the first part of the duodenum, partially obstructing the gastric outlet. MRI demonstrated features consistent with a neuroendocrine tumor. Upper endoscopy showed multiple punctate ulcerations throughout the stomach and duodenum, and a gastrin level was elevated to 873 pg/dL, well above normal limits but below the 1000pg/dL threshold for diagnosis of gastrinoma. An endoscopic FNA specimen taken from the tumor stained positive for CD56, chromogranin, and synaptophysin and exhibited a Ki67 proliferation index of 1%, consistent with a well-differentiated neuroendocrine tumor. The tumor was resected and final pathology was consistent with biopsy. The patient’s 24-hour porphobilinogen excretion was 4.1mg, 2.75 times the upper limit of normal. Of note, the patient’s 5 HIAA (frequently elevated in the setting of carcinoid, another functional neuroendocrine tumor) was within normal limits.

Case discussion: There is no documented association between gastrinoma and acute intermittent porphyria. AIP is associated with various gastrointestinal diseases including cirrhosis, hepatocellular carcinoma, and chronic pancreatitis. The neurotoxic effects of frequently elevated porphobilinogen in the setting of AIP may predispose to the development of neuroendocrine tumors, though the rarity of both diseases renders such an association quite difficult to prove.
A Case of MPGN and Mixed Cryoglobulinemia in a Patient with Hepatitis C; New Treatment Implications and Renal Outcomes

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The association of Hepatitis C (HCV), cryoglobulinemia, and membranoproliferative glomerulonephritis (MPGN) is well known. Treatment of underlying HCV infection has greatly improved in recent years with the introduction of Direct Acting Antivirals (DAA), which have demonstrated curative sustained viral response (SVR) rates for select viral genotypes with the added benefit of less drug side affects. However, a mainstay of newer DAAs is sofosbuvir, which is contraindicated in patients with severe renal impairment.

We are reporting the case of a 65-year-old female with chronic systolic heart failure, hypertension, and chronic HCV Genotype 1b with biopsy-proven Type I MPGN with Cryoglobulinemia Type II, who presented with rapidly progressive renal failure requiring emergent hemodialysis. After initiation of DAA therapy including ombitasvir-paritaprevir-ritonavir plus dasabuvir, in conjunction with plasmaphoresis, corticosteroids, and rituximab, there was significant improvement in renal function such that hemodialysis was no longer needed. This patient’s HCV treatment is estimated to induce a greater than 90% SVR, which is notably promising for the reduction and/or reversal of HCV-related glomerulonephropathy. Most recent HCV guidelines from 2015 recommend this regimen; however, there is little data to evaluate the safety and efficacy of treatment. Therefore, it is valuable to report positive preliminary results at this time. Overall, we anticipate this treatment regimen to become a basis in the management of HCV-related renal disease; however, larger studies will still be needed to prove its efficacy in improving renal outcomes.
RNA-Seq Reveals Human Papillomavirus Transcript Expression Patterns in Cervical Tissue

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Background and Objectives
Human papillomavirus (HPV) infection and HPV oncogene expression are required for the development of cervical cancer. Next-generation nucleic acid sequencing technology (RNA-Seq) has the capacity to reveal novel viral and cellular transcript expression patterns during cervical transformation. The objective of this pilot study was to demonstrate the feasibility of this approach for detecting HPV transcript expression in cervical tissue biopsy specimens.

Methods
Cervical tissue collected from women undergoing colposcopy-directed biopsy at the Interim LSU Hospital’s Woman’s Clinic (2012-2014) was used in this pilot study (n=4). Nucleic acids were extracted from the fresh-frozen tissues using the AllPrep DNA/RNA/miRNA Universal Kit (Qiagen). Four high-quality RNA extracts were then subjected to transcriptomics analysis on the Illumina HiSeq 2000 platform (LC Sciences, LLC). Sequence alignment to human and viral reference genomes was performed using Spliced Transcripts Alignment to a Reference (STAR) RNA-seq aligner software. Linear Array assays (Roche) were performed on the biopsy DNA extracts to detect genotype-specific HPV infection.

Results
Two cervical specimens tested positive for HPV genotype 18 DNA, one specimen tested positive for HPV-33 DNA, and the remaining specimen tested positive for HPV-16, -18, and -56 DNA. HPV mRNA transcripts were detected in all four specimens, with the number of mapped HPV reads detected in a specimen ranging from 17 to >205,000. Interestingly, there was significant HPV genotype-discordance between the genotype(s) detected in the DNA specimen and the genotype-specific transcripts detected in the corresponding RNA specimen. Viral transcript expression patterns were highly variable. One specimen showed high expression of HPV-18 oncogene transcripts and low expression of transcripts derived from viral regulatory genes, indicative of integration of the virus into the cellular genome.

Conclusions
Using RNA-Seq technology, papillomavirus transcripts can be readily detected within a background of human cellular transcripts in cervical tissue biopsy specimens. This approach has the capacity to simultaneously reveal viral genotype, viral transcript expression patterns, and virus integration status in clinical specimens.
Immersion Pulmonary Edema in a Saturation Diver; A Case Report

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Immersion pulmonary edema is a relatively rare condition that can occur in divers, swimmers, and breath hold divers. The symptoms are characteristically dyspnea, cough, and frothy sputum. The underlying cause is mostly multifactorial, with the end result of increased pulmonary capillary permeability and disruption of the integrity of the alveolar-capillary interface.

The contributing etiologies in dives can be separated primarily into a circulatory component, a respiratory component, and environmental component.

The circulatory response to immersion is characterized by a central pooling of blood volume due compression and also peripheral vasoconstriction. This can be in response to cold temperature but is also seen in warm water. The effects are an increase in the preload and afterload with increase in pulmonary vascular resistance. This is purportedly the cause in high exertional swimming.

The respiratory effects are increased inspiratory resistance and changes in thoracic respiratory pressure. The increase in pressure during a dive increases ambient pulmonary pressure and requires the pressure of the inspired gas to be equal to or greater than the thoracic pressure. The increase in pressure also increases the density of the inspired gas, increasing resistance to flow, thus requiring increased respiratory effort.

The environmental components immersion, with the attendant physiologic responses, and increased pressure, with the increase in gas density and hydrostatic pressure. The saturation diver lives and works in in an atmosphere of increased pressure with the attendant physiologic effects. The environment is carefully controlled to maintain the appropriate gas mixture, at the correct pressure and flow rate to mitigate the effects. The diver becomes acclimated to the environment. There is not reported an increased occurrence of pulmonary edema in saturation diving. However, the diver is exposed to the same effects of immersion during working excursions from the saturation habitat.

Immersion pulmonary edema has been reported in swimmers, SCUBA divers and breath hold divers. The mechanism of injury has been described as multifactorial, related to changes in pulmonary vascular resistance and in respiratory effects of increased inspiratory resistance. We report a case of immersion pulmonary edema in a saturation diver with review and discussion of potential etiologies.