



## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-01

**Title:** Thymic Carcinoma with Associated Hyponatremia Presenting After a Motor Vehicle Accident

**Authors:** Zachary Wise, OMS-3, Manh C. Dang, M.D.

**Importance:** Thymic carcinoma is a rare malignancy that, typically, presents incidentally on routine chest X-ray. This case reports an unusual initial presentation of this disease and, associated syndromes that have scarcely been reported in literature.

**Case Presentation:** A 66 year old woman with past medical history of Sjögren's syndrome presented to the ER following a motor vehicle accident due to a syncopal episode. CT scan was initially concerning for aortic trauma but, follow-up MRI instead suggested an anterior mediastinal mass. MRI revealed an unresectable, 4-5cm, mass adjacent to the aortic arch with an additional, smaller left-sided extrapleural mass. Thus, tumor mass effect on the great vessels was suspected of contributing to the syncopal episode resulting in her accident. Subsequent biopsy confirmed a diagnosis of thymic carcinoma of a squamous cell origin. Patient was seen for follow-up, at which time, a CMP displayed hyponatremia. PET scan confirmed the tumors to be metabolically active and, she was started on a chemotherapy regimen of paclitaxel and carboplatin, as well as, pegfilgrastim for neutropenia prophylaxis. SIADH was considered as a possible cause of her hyponatremia, which was only monitored at this time. The patient was seen weekly for the next three weeks and, she tolerated chemotherapy well, but hyponatremia persisted. She was then prescribed demeclocycline which improved her sodium levels from 128mmol/L to 134 mmol/L, further suggesting SIADH. The patient is now being seen for follow-up every 1-2 weeks and, has discontinued chemotherapy after four cycles due to side effects and lack of tumor diminution. She also completed a course of radiation therapy with a resulting mild decrease in tumor size. Patient is now taking sunitinib which has caused side effects of oral mucositis and malar rash, concerning for exacerbation of autoimmune disease such as Sjögren's. She elected to discontinue demeclocycline after taking it for one week and, mild hyponatremia has persisted at every visit.

**Conclusion:** This case provides further insight into a rare malignancy and suggests that further studies may be warranted to investigate the associations between thymic carcinoma, SIADH, and Sjögren's syndrome.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-02

**Title:** A Rare Case of Invasive Streptococcus Constellatus Infection Presenting with Aortic Valve Endocarditis: a case report

**Authors:** Kelsey Burson OMSIII, Cameron Charlow OMSIV, Sebastian T. Tosto MD, Sai Avula MD

**Background:** Streptococcus constellatus is a member of the Streptococcus milleri group of bacteria, which can be found among the normal flora of the oropharynx and gastrointestinal tract. It is a rare cause of bacteremia, but has been associated with the formation of abscesses and implicated as the source of invasive infection throughout the body, including infective endocarditis.

**Case Presentation:** This is a report of *S. constellatus* bacteremia in a 57-year-old Caucasian male who presented to the hospital with severe pain in his left knee, a twenty-five pound weight loss over a period of two months, and watery diarrhea. An MRI of the left knee revealed a fracture of the lateral femoral condyle, as well as a joint effusion and medial meniscal tear. Orthopedics recommended conservative management with non-weight bearing status. Due to the patient's mild fever, blood cultures were obtained and confirmed *S. constellatus* bacteremia. This was presumed to be a transient bacteremia, and the patient was treated for this infection with 1g IV Rocephin. After seven days of treatment, the patient was clinically stabilized, and discharged with 300mg oral Clindamycin for seven days. Just six weeks later, the patient was readmitted to the hospital after outpatient MRI for facial weakness and dizziness revealed multiple brain masses compatible with brain abscesses. With a high concern for septic emboli, a transesophageal echocardiogram was done which revealed an aortic valve vegetation. Further studies with CT abdomen/pelvis showed a perianal abscess which was drained and grew *S. constellatus*. After one week of treatment with 500mg IV Metronidazole, the patient was discharged on 2 g daily of IM Ceftriaxone for six weeks. At the end of the treatment, the patient had no symptoms of any remaining infection or neurologic sequelae.

**Conclusion:** Due to the inherent pathogenicity of *S. constellatus* upon infection, the importance of early and thorough diagnostic imaging for both initial diagnosis as well as detection of complications, and an aggressive treatment approach must be emphasized. This is an important consideration even among patients with a focal *S. constellatus* infection, and with no significant risk factors for complications of dissemination.



## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-03

**Title:** NEUROSYPHILIS CASE PRESENTATION: Shaky and funny laugh had a hidden truth.

**Authors:** Elizabeth Rosell Cespedes, PGY-3

**Case Presentation:** A 39 years old Caucasian male presented with worsening upper and lower extremities weakness for four weeks. Patient had tremor on the lower extremities and muscle spasms on the left cheeks which was exacerbated with each smile. He had shortness of breath on rest and dysphagia for liquid of one -week duration. He has no known past medical history. Review of system was positive for fatigue, difficulty walking, slurred speech and memory loss. He works as electronic technician. He lives with his wife and six children, sexually active with one partner. No history of alcohol, smoking or drug use.

Neurological examination was remarkable for hyperreflexia, fine postural tremor and bilateral lower extremities weakness 4/5, the rest of the exam was noted to be normal. Patient had a nerve conduction study and electromyography study that were normal. Initial labs were normal. HIV was negative. RPR was positive: 1:32 with a confirmatory test, Syphilis IgG antibodies with reflex positive. CSF analysis revealed total nucleated cells of 34 with 94% of lymphocytes, Glucose: 56, Protein: 117. Later, VDRL on CSF was positive: 1:4. The final diagnosis of Neurosyphilis was made.

Treatment was initiated with Penicillin G, 6 million q 4h for 14 days. Pt responded very well to the antibiotics. Tremor and muscle spasm improved significantly.

**Conclusion:** A case which initial presentation was full of different symptoms without a clear specific organ involved, with abnormal and funny laughing spells turned out to be a Neurological manifestation of the great imitator in medicine: -- Neurosyphilis

This goes to reaffirm the need to always include syphilis screening in patients with multiples non-focalizing complains.

### References:

1. F. Drago, G. Merlo,\* G. Ciccarese, A.F. Agnoletti, E. Cozzani, A. Rebor, A. Parodi: Changes in neurosyphilis presentation: a survey on 286 patients
2. Ziad Khamaysi<sup>1</sup>, MD, Reuven Bergman<sup>1</sup>, MD, Gregory Telman<sup>2</sup>, MD, and Dorith Goldsher<sup>3</sup>, MD: Clinical and imaging findings in patients with neurosyphilis: a study of a cohort and review of the literature



## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-04

**Title:** Squeezing Through the Gap

**Authors:** Kayla DeSuza, OMS III

**Case Presentation:** Acute pancreatitis provoked by diaphragmatic hernias are rare events and only a few cases have been documented. It is proposed that repetitive trauma, intermittent folding of the main pancreatic duct, or volvulus like twisting through the diaphragmatic defect are possible mechanisms initiating pancreatitis. Strangulation and subsequent ischemia can result if proper measures are not taken to relieve the irritating event. In the following case, an 81-year-old female presented to the Emergency Department with multiple episodes of vomiting, epigastric pain, along with an elevated lipase level. CT imaging showed a left diaphragmatic hernia containing abdominal organs, including the pancreatic head, in the hemithorax compressing the left lung. The patient had two prior failed attempts at correcting the hernia, the most recent one resulting in termination due to major complications during the surgery. Therefore, the initial decision amongst family, physicians, and patient was conservative treatment with symptomatic relief. The patient, however, went into acute respiratory distress and developed cardiopulmonary compromise in the initial days spent in the hospital and a consensus was made to operate. A left thoracotomy was performed to repair what the surgeon diagnosed as a massive paraesophageal hernia recurrence and gastric outlet obstruction. It is presumed that the diaphragmatic hernia resulted in the complications seen in this case. Although different mechanisms have been attributed to causing pancreatitis in association with diaphragmatic hernias, all can eventually lead to strangulation and ischemia, particularly when additional abdominal contents are accompanied through the defect. Emergent elective surgical repair of symptomatic diaphragmatic hernias should be encouraged with known diaphragmatic hernias to prevent possible life-threatening complications.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-05

**Title:** Blocking Angiogenesis for the Treatment of Melasma

**Authors:** Shelly Haferkamp, Vikram Vaz, MD

**Introduction/Background:** Melasma is a difficult-to-treat skin condition of brown patches, usually located on the face, that can last for years, and in some cases a lifetime. Birth control pills and pregnancy are triggers for some patients and once these factors are removed, melasma may fade or completely disappear. However, for those patients without clear triggers, or for whom the condition continues beyond the termination of a trigger, treatment options are limited.

Understanding the pathogenesis of melasma, which is currently not fully known, can help bring about viable treatment options. Tranexamic acid's mechanism of action and effectiveness in treating melasma brings to question how much of a role of angiogenesis plays in melasma and if anti-fibrinolytic medications might offer another treatment option for this stubborn condition.

#### **Case description:**

**History:** 35-year-old female diagnosed with melasma unrelated to birth control pills and pregnancy. Patient tried multiple home therapies including Vitamin C moisturizer, topical Vitamin C peel, topical apple cider vinegar and topical lemon juice for defoliation, topical 40% glycolic acid peel, topical Kojic acid, professional chemical peels, oral pycnogenol 50mg daily, and topical Tri-Luma (flucinolone acetonide, hydroquinone, tretinoin) cream. Patient had melasma for approximately 1.5 years before this case study.

**Physical examination:** Brown spots on forehead, nose, cheeks, and upper lip. The darkest areas appeared on the forehead and upper lip. MSI score 12.

**Investigative studies:** Daily oral dose of 650mg of tranexamic acid combined with daily sunscreen and an avoidance of the sun when possible. Weekly photos were obtained.

**Patient Progress:** At the time of this case study, 19 weeks of treatment had been completed. MSI score pre-treatment was 12. MSI score post-treatment was 3. Figure 1 shows pre-treatment and post-treatment images.

**Discussion/Conclusion:** Tranexamic acid blocks the conversion of plasminogen to plasmin, thereby reducing angiogenesis. This anti-angiogenic effect appears to lighten the appearance of melasma and gives clinicians another treatment option in a skin condition that is often difficult to treat.



## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-06

**Title:** Non-nosocomial native aortic valve Pseudomonas Endocarditis requiring surgery.

**Authors:** Olumide Omobo

**Case description:** Pseudomonas endocarditis historically was uncommon and had high mortality; However, with newer antibiotics and improved medical therapy, we have seen a significant decrease in mortality<sup>1</sup>. Surgery continues to be an important part of therapy in many cases<sup>8</sup>. Reports of treatments with just medical therapy has often been in prosthetic valves<sup>1</sup> and in nosocomial infections<sup>3</sup>. Left sided endocarditis has rarely been cured by medical therapy alone when occurring in native valves<sup>5</sup>. Left sided infections has also been shown to have worse prognosis than right sided ones<sup>6</sup>. Prognosis is worse for left sided infections treated with medical therapy alone than with a combination of medical and surgical<sup>7,8</sup>. This is a case of a IV heroin user who had a non-nosocomial infection of native aortic valve and ultimately needed surgery. This report emphasizes again the need for early surgical consideration and likelihood of medical therapy failure.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-07

**Title:** Psychosis Triggered by Letrozole Fertility Treatment

**Authors:** Leah Dlugolecki, Shelly Haferkamp, Leona J. Graham, MD

**Introduction/Background:** Certain drugs have documented potential to induce mania. However, this case report reminds practitioners that medications not on our differential also carry the possibility of triggering mania.

#### **Case description:**

**History:** A female in her mid 30s began Letrozole for infertility treatment. Patient has a history of hypothyroidism controlled with Synthroid 50mcg daily. She also has a history of brief depression treated with escitalopram during a “bad divorce” several years prior to her current marriage. She was completely tapered off this antidepressant over five years ago. She denies any previous psychiatric hospitalizations.

**Physical/Mental examination:** The patient was on her fourth month of Letrozole for infertility treatment when her obstetrician noticed the patient demonstrating racing thoughts, irritability, increased energy and other manic symptoms that the patient reported having for the past three weeks. The patient voluntarily went to the ER where she also reported insomnia for at least two nights. She presented with hyper-voluminous speech and hypergraphia, producing multiple written pages to the ER physician where she had written down her thoughts. The patient had markedly impaired insight and judgment. She was difficult to redirect during the exam and continued to ask “why” throughout the interview. The patient was informed that she met the criteria for court-ordered admission but agreed to a voluntary inpatient stay.

**Investigative studies:** TSH was within normal limits at 2.81  $\mu\text{U}/\text{mL}$  and syphilis was negative. CT of the brain was also negative. There were no other pertinent clinical findings in the laboratory studies to suggest a biological etiology of her psychosis. Patient subsequently received Risperdal. Within the first 48 hours her manic symptoms improved. She left against medical advice after two days, though it was believed she could have benefited from further stabilization through inpatient treatment.

**Discussion/Conclusion:** Letrozole’s known psychiatric side effects include insomnia, anxiety and depression which have been reported at low rates, however inducing mania is not listed [1]. This patient’s acute presentation of mania without a history of bipolar disorder increases the likelihood that this was a drug induced side effect.

#### **References:**

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-08

**Title:** Portal Vein Thrombosis (PVT) After Sleeve Gastrectomy

**Authors:** Andrei Lojek

**Introduction/Background:** PVT after bariatric surgery has rarely been reported in medical literature and is not commonly considered in the differential in an acute setting.

**History:** 30s female is post-operative day (POD) #14 for sleeve gastrectomy. She presents to the emergency room with vague abdominal symptoms and has had increasing pain since the day before arriving in our care. PVT with extension of thrombus into superior mesenteric vein is discovered.

**Physical exam:** Largely normal. She complains of diffuse lower abdominal pain beginning the day before that worsens when supine and radiates to her back. Denies hematemesis/melena/hematochezia. Still passing flatus.

**Investigative studies:** A CT scan of her abdomen reveals PVT with superior mesenteric vein extension. Later studies for coagulopathy are all normal.

**Progress/Outcome:** The patient is transferred to a nearby facility under the care of interventional radiology and started on anticoagulation therapy. She continues oral anticoagulation therapy at home after discharge and reports the pain subsides POD#28.

**Discussion/Conclusion:** PVT presents weeks or even years after bariatric surgery and often with vague symptoms, which gives little clue as to the etiology of the pain when the patient presents in the acute setting. Education of primary care/emergency physicians about PVT in bariatric surgery patients can improve diagnosis and outcomes. Further study is needed to identify a causal relationship between bariatric surgery and PVT occurrence.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-09

**Title:** RET Negative Sporadic Medullary Thyroid Carcinoma with Paraneoplastic Cushing Syndrome

**Authors:** Stephanie Arana; Aleksandra Pivovarova; Punuru J. Reddy, MD

**Introduction:** We report a 77-year-old female with metastatic medullary thyroid cancer (MTC) producing ectopic ACTH dependent Cushing's syndrome.

**History:** 77-year-old white female with past medical history of medullary thyroid carcinoma with surgical resection, atrial fibrillation, HTN, metabolic syndrome, and colovaginal fistula

**Physical Examination:** edema, skin acne, elevated BP, hyperglycemia, hypokalemia, hypernatremia, weight loss, abdominal cramps and tenderness, foul-smelling diarrhea. Diagnostic evaluations included CT of head, chest, abdomen; MRI of the head; liver & lymph node biopsies with pathology; high dose dexamethasone test, urine free cortisol 24-hour level.

**Investigative studies:** Aldactone for hypokalemia; ketoconazole for adrenal cortisol suppression; bilateral adrenalectomy was considered but not performed due to patient being a poor surgical candidate

**Prognosis:** patient stabilized, but long-term prognosis is poor, hospice care was offered and obtained.

**Discussion:** Metastatic ACTH producing medullary thyroid carcinomas makes up 2.5-7.5% of MTC cases overall. Due to its rarity, intensive work up and lack of a single diagnostic tool, metastatic ACTH producing MTC has a poor literature foundation.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-10

**Title:** Septic arthritis in an immunosuppressed patient

**Authors:** Martinez, Chad; Hassoun, Ali MD,

**Introduction:** Septic arthritis in immunocompromised patients can be caused by atypical organisms. Although uncommon, this case study will highlight the risk factors and management of one of these organisms: *Pasteurella multocida*.

**Case Presentation:** A 64-year-old male with a history of advanced rheumatoid arthritis and chronic steroid use was referred to our office with 2 days history of right lower extremity redness, swelling, and pain with reduced mobility. Patient denied any fever, chills or myalgia. Past surgical history significant for bilateral knee replacements. Denied recent travel. Owns a cat but denied any recent bite. Past infection history significant for disseminated histoplasmosis, and right shoulder *Enterobacter* septic arthritis for which he is on suppressive trimethoprim/sulfamethoxazole. Physical exam revealed right lower extremity erythema from the knee down, hot to touch, and significant right ankle swelling. The patient was given one dose of oritavancin and reported resolved erythema 7 days later with persistent right ankle edema and pain. Vitals remained stable with a temperature of 97.6 F and blood pressure of 116/69. Additional labs were drawn for further workup and were notable for a CRP of 1.5, an ESR of 39, and CBC with increased immature granulocytes (3.8). Incision and drainage were performed, and cultures showed beta-lactamase negative *Pasteurella multocida*. The patient was started on IV ampicillin/sulbactam and returned 2 weeks later reporting that the right ankle edema and arthralgia had resolved. IV antibiotics were continued for an additional 2 weeks with additional follow up scheduled.

**Discussion:** *Pasteurella* can be pathogenic even in previously healthy individuals but those who are immunosuppressed are at higher risk of infection and with increased severity. Infection usually manifest as cellulitis but can spread to deeper tissues causing septic arthritis, osteomyelitis, and meningitis. Although beta-lactamase testing is not always warranted, it should be considered in complicated infections, especially in individuals with immunosuppression, to help guide antimicrobial therapy.



## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-11

**Title:** Mycoplasma Avium Intracellulare Osteomyelitis in the Post-Combined Renal/ Pancreatic Transplant Patient

**Authors:** Natasha Amjed, M.P.H., M.A; Balamurali Chennupati, M.D.

**Introduction/Background:** We present a 47-year-old African American male, post-combined renal/ pancreatic patient who developed mycoplasma avium intracellulare (MAI) osteomyelitis in the left clavicle. Renal transplant recipients (RTR) are predisposed to opportunistic and rare infections due to their immunocompromised state.

**History:** 47-year-old African American male with history of type I diabetes with complications of neuropathy, nephropathy, and ESRD status post-combined pancreatic renal transplant in 2010, presented with pain of the left shoulder. Upon imaging and biopsy, he was diagnosed with MAI osteomyelitis of the left clavicle. He was treated with azithromycin, rifabutin, and ethambutol regimen. Admitted one week later with intractable nausea, vomiting for three days, and severe fatigue. No fever, food poisoning, recent travel, or exposures. Patient denies abdominal pain, diarrhea, or constipation.

#### **Physical Exam:**

Vitals: T: 98.2, BP: 118/60, Pulse: 85, RR: 18  
General: alerted and oriented X 3  
HEENT: PERRLA, EOMI, oropharyngeal mucosa dry  
Chest: symmetric and clear. Left axillary scar from biopsy  
Heart: S1, S2, RRR  
Abdomen: soft, non-tender, midline scar of renal transplant surgery  
Extremities: DJD, AV fistula left arm, trace edema  
CNS: mental status intact. No gross sensory motor or reflex abnormalities.

**Investigative studies:** Pathological report: shoulder biopsy in December 2017 revealed MAI osteomyelitis of left clavicle. Patient treated with Zofran, IV fluids and temporary withholding of rifabutin and ethambutol. Symptoms resolved, his acute renal failure improved, and patient was referred to Infectious Diseases for medication adjustment.

**Progress and Follow-Up:** He responded to IV fluids and holding ethambutol and rifabutin. Rifabutin was resumed at his discharge, and continued on azithromycin. MAI treatment was adjusted by replacing rifbuatin with moxifloxacin. Patient continued on azithromycin, and ethambutol for a 9 to 12-month period.

**Discussion/ Conclusion:** Osteomyelitis with MAI is a rare occurrence. More information is needed related to non-tuberculous mycoplasma infections in patients who have undergone solid-organ transplantation.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-12

**Title:** Cutaneous Scalp Nodules: A Highly Uncommon Initial Presentation of Renal Cell Carcinoma

**Authors:** Ali Hollis OMS3; Allen Schmidt MD

**Introduction:** Renal cell carcinoma (RCC) is an aggressive urological malignancy well-known for its metastatic potential. The ‘classic triad’ of RCC (flank pain, abdominal mass, and hematuria) is seen in less than 10% of cases 4 . Metastasis at the time of diagnosis occurs in approximately 1/3 of patients, with common sites being the lung, lymph nodes, and bone 5 . The estimated incidence of cutaneous metastasis in RCC is only 3.4% 2, 3 , and is most commonly due to recurrence of late metastatic disease. Rarer still is the cutaneous metastasis leading to the diagnosis of malignancy 1 - as seen in this case presentation.

#### Case description:

**History:** A 59 year old male presented to the clinic with a complaint of several nodules on his scalp that had increased in size over a month time span. Several months prior, he had additionally complained of back pain, thought to be musculoskeletal in nature as it was somewhat responsive to pain management. Biopsies of the mid-occipital and left frontal cutaneous nodules were obtained, and pathology revealed renal cell carcinoma.

**Physical examination:** Several hard, fixed painless nodules ranging from 0.5 to 2 cm in size were noted on his scalp. CT scan of the abdomen revealed a mass in the right upper kidney measuring 6.5 cm, as well as numerous bony metastasis in the lumbar spine and femoral acetabulum. An MRI of the brain revealed a 4.7 cm mass in the occipital bone invading the cerebellum, lesions in the pterygoid muscles bilaterally, and approximately 10 small cutaneous lesions. **Investigative studies:** Shortly following diagnosis, the patient’s pain from the tumor burden rapidly progressed, and he was hospitalized. Palliative radiation was initiated and he began treatment with Pazopanib (VEGF tyrosine kinase inhibitor).

**Outcome:** Patient continues to undergo targeted therapy, and forthcoming treatment plans will be determined by his initial response.

**Discussion:** Cutaneous metastasis of RCC is highly uncommon, particularly as an initial presentation and diagnosis 1 . Unfortunately, it carries a poor prognosis of advanced disease. Clinicians should be well aware of the varied presentations with which this malignancy can present, and understand the high metastatic potential RCC carries and the need for prompt treatment.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-13

**Title:** IV Lipid Emulsion Infusion in the Treatment of Diphenhydramine Overdose

**Authors:** Sundar V. Cherukuri, Allen Purvis M.D., Sebastian T. Tosto M.D., Arash Velayati M.D.

**Introduction/Background:** Diphenhydramine is a commonly available over-the-counter antihistamine; however, there are few documented cases of treatment when ingested in toxic quantities, where it can cause a sodium channel blockade leading to wide-complex tachycardia, seizures, and death. Conventional treatment includes sodium bicarbonate infusion, but few cases document the addition of lipid emulsion therapy.

**Case Description:** History: A 24-year-old African American female, with a previous history of depression and prior suicide attempts, ingested 18g (360 pills of 50 mg) over-the-counter diphenhydramine as part of a suicide attempt. At the regional medical center, she received 100 mEq/mL of sodium bicarbonate intravenously and was transferred to our medical center.

Physical Examination: She was comatose, intubated with pupil dilation to 6-7mm, and her vitals were BP: 143/85, HR: 86, temp: 97.8. She was placed on mechanical ventilation in the ICU and had two episodes of witnessed tonic-clonic seizures. Initial ECG findings showed a type 1 AV block with a QT/QTc of 360/402 ms which progressed into sinus tachycardia with widened QRS intervals of 134 ms and prolonged QT/QTc intervals of up to 638/759 ms.

**Investigative Studies:** Treatment using sodium bicarbonate and magnesium was initiated; however, the intraventricular conduction delay persisted. Intravenous lipid emulsion therapy was considered, where the emulsion would act as a “lipid sink” for the lipophilic diphenhydramine molecules and draw them away from sodium channels, and instead, binding to the lipid emulsion particles. A 500 mL bolus of 20% intravenous lipid emulsion was administered; following this, the patient developed narrow complex QRS with sinus rhythm and shortened the QT/QTc interval to 448/516 ms. She was transferred to inpatient psychiatric unit for further evaluation, and discharged one month later.

**Discussion/Conclusion:** There have been few documented uses of lipid emulsion therapy in treatment of other compounds, and even fewer documented in the treatment of diphenhydramine overdose. With the amount of diphenhydramine ingested by the patient in this case report, the use of combined conventional and lipid emulsion therapy was necessary in the stabilization and management of the patient, and should be considered in scenarios where conventional treatments have not improved the patient presentation.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-14

**Title:** Renal Cell Carcinoma and Shortness of Breath: An Unlikely Duo

**Authors:** Rob Spiller; Dr. Frank Wang, MD

**Introduction:** This case represents an unusual presentation and diagnosis of an uncommon subtype of renal cell carcinoma, which emphasizes the importance of a thorough and systematic approach to both patient presentation and diagnostic modalities.

**Case Description:** The patient is a 68 yo CM who originally presented to the office for a new patient establishment visit. The patient had no complaints at that time, no positive findings on physical exam and lab work was unremarkable. He had no prior smoking history and did not drink EtOH. Two months later, he came to the office for follow up on labs and mentioned that he had been mildly SOB and noticed some BLE edema. Physical exam was notable for

- Vital signs WNL
- General appearance, HEENT, cardiac, lung, abdominal skin and neurologic exams did not reveal and positive findings
- Extremities: 1+ pitting edema bilaterally

Subsequently, an echo and BNP were ordered. This revealed an LVEF of 50-55% and BNP was within normal limits. The patient then had testing for ESR, CRP, EB antibody, CBC, CMP and ANA which were unremarkable. One week later, a CT angiogram of the thorax was performed which did not indicate any lung abnormalities but did show partial visibility of a left renal mass. Of note, urinalysis was performed one week later which was negative for RBCs. Abdominal CT with contrast confirmed the diagnosis of a renal malignancy and the patient was sent to urology for a left radical nephrectomy. Biopsy revealed the tumor was 8cm at its widest and staging was T3N0M0. Pathology indicated the renal cancer was chromophobe renal cell carcinoma, an uncommon form that accounts for ~5% of renal cell carcinomas. Post-surgical course was uneventful and the patient has had resolution of SOB and BLE edema.

**Discussion:** SOB is not a common symptom of renal cell carcinoma and for it to be the only presenting complaint for this disease is quite unusual. This case exemplifies the importance of a thorough consideration into patient complaints and a systematic approach in reading diagnostic modalities, as incidental findings can lead to early diagnosis of malignant disease.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-15

**Title:** Tolosa-Hunt Syndrome: A Case Presentation

**Authors:** Thomas Lindsey; Lyndsay Ewing

**Introduction:** Tolosa-Hunt syndrome is a rare condition that occurs in approximately one out of one million people per year and presents as painful ophthalmoplegia involving cranial nerves within the cavernous sinus due to idiopathic granulomatous inflammation.

#### Case Description:

History: A 67 year-old Caucasian male with a known history of type 2 diabetes and hypertension presents with left sided facial pain, diplopia, diaphoresis, nausea, vomiting, headache and difficulties with balance and gait leading us to a preliminary diagnosis of Tolosa-Hunt syndrome.

#### Physical Examination:

HEENT: normocephalic, + left ptosis and diplopia, fixed dilated left pupil, left sided esotropia, +vertical nystagmus

Neurological: sensation to sharp and dull stimuli intact bilaterally in upper and lower extremities, DTRs 2+ bilaterally in upper and lower extremities

Musculoskeletal: patient falls to the right, full range of motion bilaterally in upper and lower extremity, strength 5/5 in upper and lower extremities

#### Diagnostic Evaluation:

Chem 14: elevated serum glucose, BUN, Cr, low GFR

Lyme titer: -

Serum Protein electrophoresis: unremarkable

VDRL: -

ACE level: -

ANA with titer: -

MRI of the brain with and without contrast: unremarkable

MRI of the orbits with and without contrast: unremarkable

ESR: normal

MRA: -

Hgb A1C: 7.1

#### Investigative Studies

Doxycycline: prophylactically for potential lyme disease

Prednisone: 80 mg prednisone was given over 3 days and tapered down over 2 weeks

Zofran: nausea and vomiting

Promethazine: motion sickness and vomiting from diplopia

Phenergan: nausea and vomiting

#### Outcome

1 month follow up: off prednisone, no cranial nerve palsies, no more symptoms

**Conclusion:** Tolosa-Hunt syndrome is an idiopathic disease that typically presents with unilateral symptoms of painful ophthalmoplegia involving cranial nerves III, V and VI. Although cranial nerve IV is located within the cavernous sinus, it is not often involved. Typically, patients will have an elevated ESR and an MRI indicating inflammation within the cavernous sinus. However, this patient had a normal ESR. Additionally, the MRI of the orbits and brain was unremarkable.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-16

**Title:** A Case of Myasthenic Crisis in a Patient Presenting with Acute Hypercapnic Respiratory Failure

**Authors:** Joshua Moore; Amith Skandhan, M.D.

**Introduction/Background:** This report describes a 72-year-old male who was admitted with signs and symptoms of severe respiratory distress and non-radiating chest pain. The purpose of this report is to elucidate the importance of ruling out and recognizing neuromuscular disease in patients presenting with isolated hypercapnic respiratory failure without clear etiology. Uniqueness of this case involves the isolated presentation of myasthenic crisis in a patient lacking typical signs and symptoms that accompany Myasthenia Gravis, such as diffuse weakness involving ocular, bulbar and limb muscles.

#### **Case Description:**

**History:** This patient has a medical history consisting of COPD, dyslipidemia, anxiety, and hypertension managed in a rural outpatient setting.

**Physical Examination:** Physical exam revealed a morbidly obese male (BMI: 30.2kg/m<sup>2</sup>) in severe respiratory distress. There was equally diminished pulmonary air entry with bibasilar atelectasis and increased work of breathing.

**Investigative Studies:** After multiple failed extubation attempts further exploration into the etiology of his respiratory failure was performed. Chest x ray revealed no signs of consolidation. Bronchoscopy and blood cultures revealed no infectious contribution. Acetylcholine receptor antibody analysis was performed late in his hospital admission revealing a diagnosis of Myasthenia Gravis. Critical care and pulmonology support was required throughout his hospital stay. Plasmapheresis, pyridostigmine, and high dose steroids were utilized after the diagnosis of myasthenia gravis was confirmed. His status improved with appropriate treatment and after 21 days he was discharged and advised to follow up with a neurologist for his newly discovered diagnosis.

#### **Discussion/Conclusion:**

It has been shown that approximately 67% of individuals with myasthenia gravis present with ocular muscle abnormalities, vision changes and bulbar weakness as their initial complaint.

This report seeks to enlighten health practitioners to consider the possibility of Myasthenia Gravis in individuals who present with isolated and severe hypercapnic respiratory failure without clear etiology. This consideration should take place regardless of the individual's lack of typical signs and symptoms associated with Myasthenia Gravis.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-17

**Title:** Jejunal Diverticulitis with Abscess: A Case Study

**Authors:** Samuel Foldy, OMS-III; Valerie Smart OMS-III; Dr. Robert Scott Everett, MD; Dr. James J. Lyons, MD; Dr. Jeffrey B. Whitehurst, MD

**Introduction/Background:** This case study showcases an atypical presentation of the already uncommon condition of jejunal diverticulitis.

#### Case description:

History: 72-year-old white male with history of diabetes, hypertension, and a 26 lb. weight loss since his mother's death three months ago, presented to the Emergency Department after one day of persistent, moderate, right-sided abdominal pain associated with dizziness. He denied fever, chills, nausea, vomiting, constipation, diarrhea, hematemesis, or blood per rectum. He denied ever having pain like this before, and noted that he had not noticed anything that improved or worsened his pain.

- Past surgical history: right inguinal hernia, unspecified back surgery
- Family History: Mother had stomach and ovarian cancer
- Social History: Drinks beer daily and denies smoking

Physical examination: Tall, thin male. Moderate right lower quadrant tenderness, voluntary guarding, normoactive bowel sounds.

Investigative studies:

- CBC: WBC of 15.7 on presentation. Segmented neutrophils elevated at 84; bands elevated at 6. Lymphocyte count was low.
- CT A/P: CT revealed an inflammatory mass showing small bowel in the right lower quadrant. The appendix was seen and is normal.
- Surgical evaluation and treatment: Laparoscopic hand-assisted small bowel resection with appendectomy
  - Several large jejunal diverticulum seen with abscess.
- Pathology report:
  - Extensive diverticulosis with diverticulitis and abscess.
  - No polyps or suspicious malignancy found

Patient Outcome: Follow up was uncomplicated.

**Discussion/Conclusion:** Small bowel diverticula are a rare occurrence, especially in the jejunum. This case was particularly interesting due to the uncommon presentation that appeared more like an appendicitis or lymphoma, and the lack of diverticula seen on CT despite being quite large when directly visualized (considering the gold standard of diagnosis is CT scan).

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-18

**Title:** Strep Pharyngitis with Subsequent Cervical Lymphadenitis

**Authors:** Este Marks, OMS III

**Background:** Strep pharyngitis is one of the leading causes of the “sore throat.” In the out-patient setting, strep pharyngitis is diagnosed with a good history and physical, a rapid strep test, and CENTOR criteria. Normally, if treated within the first 48 hours of symptoms, the antibiotics will decrease the duration and severity of illness and decrease the risk of complications. Delaying or prematurely stopping treatment may lead to abscess formation, rheumatic fever, or glomerulonephritis. This study hopes to emphasize to clinicians and caregivers the need for early and complete treatment of strep pharyngitis.

**Case Description:** The patient in this case presented to clinic four days after the onset of a sore throat, headache, and fever. The patient was lethargic with tonsillar exudates and soft palate petechiae. There was a painful left sided submandibular mass, measuring 2.5” in diameter, which hindered the patient’s ability to turn his head from midline. The rapid strep test was positive, but because of the CENTOR criteria, the clinician was already making provisions to admit the patient to the hospital. At the hospital, labs, imaging, and IV Ceftriaxone were ordered. The CBC showed elevated leukocytes. The CT scan was reassuring as it showed that the mass was most likely an enlarged and inflamed lymph node and not an abscess that would require surgical intervention. The clinicians decided that the antibiotic would be enough to clear the infection and to decrease the size of the mass. Within three days, the patient’s fever and leukocyte count decreased along with the size of the mass on his neck. The patient was discharged home with oral antibiotics to complete a course of ten days.

**Discussion:** This case draws attention to two possible complications of strep pharyngitis: lymphadenitis and cervical abscess and highlights the need for early and complete antibiotic treatment. The goals should be to identify every case of strep pharyngitis and treat it accordingly, along with educating patients and parents about avoiding complications and in-patient care.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-19

**Title:** Amyloidosis of the Bladder in a Patient with Gross Hematuria

**Authors:** Kimyra Milhouse, MPH

**Introduction/Background:** Amyloidosis, both primary and secondary, is a rare, non-malignant process of the bladder. A case of amyloidosis localized to the bladder is described in a patient, who presented with painless hematuria. This case study aims to highlight this pathology, as there are few references in literature regarding this pathology and its presentation.

**Case description:** This is the case of a previously healthy 42-year-old male, who presented with sudden onset of gross hematuria. Computed tomography of the abdomen revealed results suspicious for nephrolithiasis. After hematuria persisted, patient underwent cystoscopy, which revealed a mass. Transurethral resection of the bladder mass showed no evidence of malignant cells. Amyloid was identified on Congo-red staining of the cells. Initial laboratory evaluation and hematology/oncology workup were unremarkable. Further workup at a local academic institution also revealed unremarkable results. Moreover, the patient was encouraged to discontinue dietary supplements and decrease protein intake. Patient's hematuria resolved after dietary change and is scheduled for follow-up cystoscopy.

**Discussion/Conclusion:** Amyloidosis of the bladder is a rare disease and can be difficult to diagnose, as it can mimic neoplasm of the bladder via cystoscopic, uropathic, and laboratory studies. Differential diagnosis of carcinoma of the bladder should always be considered until pathological studies can confirm the diagnosis.



## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-20

**Title:** Value of CRP Monitoring in Detecting Clozapine-Induced Myocarditis

**Authors:** Mariah Sankey, M3; Tina Jackson, MD, PGY2; Candace Perry, MD

**Introduction/Background:** A patient who was started on clozapine therapy began to complain of chest pain and the decision was made to discontinue therapy after his CRP was found to be elevated. The case study discusses research indicating that CRP may be an early indicator of clozapine-induced myocarditis.

**Case description:** 42 yo AAM with history of schizophrenia and substance use disorder was seen in the inpatient unit because of erratic behavior and medication noncompliance. After failed trials of olanzapine and haloperidol the decision was made to start clozapine. After complaints of chest pain, labs were drawn revealing elevated CRP levels. The decision was made to discontinue clozapine and start an alternative antipsychotic. He improved and was discharged to an intermediate care facility for further stabilization.

**Discussion/Conclusion:** There is developing research indicating that CRP levels may be valuable for predicting impending myocarditis in patients being treated with clozapine. In the face of difficulty accessing medical collaboration in some inpatient psychiatric facilities, this information could assist clinicians in making difficult decisions about medication management. Further research is needed to assess reliability of these values.





## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-21

**Title:** COMPLEX MANAGEMENT OF ACUTE GASTROINTESTINAL BLEED IN THE SETTING OF MULTIPLE RISK FACTORS FOR VENOUS THROMBOEMBOLISM

**Authors:** Josh Kay MS3

**Background:** Deep venous thrombosis (DVT) is defined as a obstructive thrombin clot, or thrombosis, most commonly located in the deep veins of the lower extremities.<sup>1</sup> Standard DVT prophylaxis in the setting of a contraindication to anticoagulation such as bleeding consists of discontinuation of pharmacologic anticoagulation and placement of an inferior vena cava filter<sup>1</sup>; however, there are few reports of the management of such patients when multiple high-level risk factors are present.<sup>2</sup>

**Case:** A 37 year-old African American female presents to the ED with pain and edema in both lower extremities. Past medical history was significant for diverticulosis, morbid obesity, protein S deficiency, multiple DVTs, and pulmonary embolism. The patient was discharged 1 week prior from an outside hospital after requiring ICU level care for anemia secondary to diverticular bleeding. At that time she required multiple transfusions, discontinuation of warfarin, and placement of an IVC filter. In the ED, lower extremity doppler ultrasounds revealed extensive thrombosis in numerous veins bilaterally. The patient was restarted on anticoagulation medication, but soon afterwards developed extensive painless hematochezia. Hemoglobin concentrations dropped precipitously requiring numerous transfusions. Multiple radiologic efforts to localize the bleed were unsuccessful. Plans were made to perform a total abdominal colectomy, but prior to the operation the patient experienced an acute worsening of her lower left extremity pain. The decision was made to delay the total colectomy in lieu of performing a thrombectomy of the left lower extremity, which provided limited improvement; her postoperative course however was complicated by an acute kidney injury eventually requiring emergent dialysis. The patient's hemoglobin stabilized over the following days. Kidney function improved. The patient was discharged on day 34 of hospitalization to a rehab facility.

**Discussion:** The patient presented with multiple high level risk factors for thrombosis including protein S deficiency, previous VTE, morbid obesity, immobility, and recent hospitalization.<sup>3</sup> Very few studies have evaluated long-term morbidity in patients at very high risk for VTE managed with IVC filter placement.<sup>4</sup> Advancements in medical technology such as IR embolization could provide alternative treatment options for patients with acute GI bleeds and high risk massive VTE.<sup>5</sup>

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-22

**Title:** Resolving Aortic Dissection in Giant Cell Arteritis

**Authors:** Sarah Lucente, Roy Lee, Dr. Margaret Davenport DO

**Case Report:** Vasculitides are serious disease that require quick recognition so as to not delay treatment. Presence of inflammatory leukocytes in vessel walls leads to damage of mural structures, loss of integrity of the vessel, and in turn lumen compromise and further damage. The complexity of pathology and the spectrum of symptoms make for difficult diagnosis. However, appropriate treatment can have remarkable outcomes.

A 52-year-old male with poorly controlled HTN, currently off of medication, presented with acute onset left leg pain and right arm pain, migrating to the back with associated abdominal pain. CTA showed concern for Type I aortic dissection with thrombosed false lumen extending from the aortic valve through the diaphragmatic hiatus to both external iliacs and left iliac artery. Patient suffered a Vfib arrest with return of circulation after ACLS, ECG showed a lateral wall STEMI. Patient was transferred to a higher acuity center, at which time his troponin was  $\approx 70$ , TEE showed EF 30% with no valve abnormalities, and he began having bright red blood per rectum. Patient was admitted to the CVICU under cardiothoracic surgery, at which time his LHC was negative. He continued to have GI bleeding and low EF with troponinemia. Rheumatology consulted for further review of CTA findings inconsistent with IMH or dissection, but more indicative of aortitis despite the lack of classic symptoms for vasculitis. Initial lab findings showed RPR negative, blood cultures negative, RF negative, ANCA negative, dsDNA negative, Hepatitis B/C negative, ESR: 75, CRP: 200. Large and medium vessel thickening was seen, and despite negative markers, a temporal artery biopsy was performed, and patient began pulse dose steroids, Solumedrol 250mg q6hours for 3 days with suspected vasculitis. He showed significant improvement in inflammatory markers, and was stable without symptoms. Temporal artery biopsy resulted positive for vasculitis. He was discharged home on Prednisone 30mg BID, and instructed to follow-up with Cardiology. Follow up CT one month later showed mild atherosclerotic disease of aorta and iliac arteries without dissection. This case illustrates the complexity of vasculitides, and the necessity of clinical recognition and prompt treatment with steroids, and the remarkable recovery of involved vessels.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-23

**Title:** A case report of FOLFOX induced necrotizing myopathy

**Authors:** Roy Lee, Sarah Lucente, Aasim Sehbai, MD

**Introduction:** Necrotizing myopathy is a rare clinical entity and is most commonly triggered by viral infections, statins, cancer, or autoimmunity [2]. The patient presentation can be similar to more common inflammatory myopathies, with acute or subacute severe bilateral proximal muscle weakness, but investigation into its pathology has uncovered crucial differences in treatment.

**Case Presentation:** A 65-year-old Caucasian female diagnosed with colon cancer and liver metastasis experienced generalized weakness and sustained a fall six months after starting chemotherapy using the FOLFOX regimen. Chest X-rays at the time were negative for active pulmonary process or displaced rib fracture; right knee x-ray was positive for osteoarthritic changes but no fracture. The following month she reported “fuzzy vision” and significant proximal muscle weakness, stating she could no longer raise her shoulders or legs which limited her activities of daily living (ADL), including clothing and bathing herself. Chemotherapy was held and lab work ordered, revealing creatinine phosphokinase (CPK) 4470, aldolase 30.2, and thyroid panel within normal limits (WNL). Polymyalgia Rheumatic (PMR) and chemotherapy induced toxic myopathy were considered, but it was not until a triceps muscle biopsy was performed that necrotizing myopathy, immune/inflammatory myopathy, mitochondrial abnormality, and type II fiber atrophy was revealed. 3-Hydroxy- 3-methylglutaryl coenzyme A (HMG-CoA) reductase antibody IgG WNL (&lt;3). Muscle pain and weakness was well managed over time utilizing IVIG therapies, prednisone, hydromorphone alongside a decrease in CPK and aldolase lab values. But a PET scan was ordered due to continued rectal bleeding, and it revealed a new hypermetabolic mass in the left lobe of the liver and changes in the activity of cecal and anorectal junction masses. This had to be addressed. Radiation regimen had already been completed, and she was not a good surgical candidate. Chemotherapy was the best available option, so patient started the FOLFIRI regimen. This treatment plan has been effective and well tolerated by the patient.

**Conclusion:** Inflammatory myopathies, such as dermatomyositis and polymyositis, are well-recognized paraneoplastic syndromes, but necrotizing myopathy is poorly understood in association with cancer and cancer treatment [1]. Thus, the goal of this case report is to increase awareness of necrotizing myopathy and at-risk patient populations to drive earlier diagnosis, effective treatment, and overall improved clinical outcome.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-24

**Title:** CO-OCURRENCE OF NEUROSARCOIDOSIS AND INTRATHECAL REACTIVATION OF EPSTEIN-BARR VIRUS

**Authors:** ALEXANDER NGUYEN, OMS-III, RICHARD SALAZAR, MD; TIARA HYPOLITE, MD; ERIC BIXBY, MD

**Background:** Sarcoidosis is a granulomatous inflammatory multiorgan disorder of unclear etiology. Initial presentation with involvement of the central nervous system could be a diagnostic challenge.

**Case Report:** 40-year-old African American male is admitted for lethargy, personality changes and syncope of subacute onset. Physical examination revealed lethargy, bradyphrenia and inappropriate judgment. Additionally, he was noted to have a tonic-clonic seizure and intermittent focal myoclonic jerks. Imaging studies by magnetic resonance imaging revealed increased T2 signaling in the frontal and temporal lobes with diffuse leptomeningeal enhancement. Cerebrospinal fluid (CSF) analysis was abnormal for lymphocytic pleocytosis, hypoglycorrhachia and elevated protein. Comprehensive autoimmune and infectious tests yielded negative results but for positivity of Epstein-Barr Virus (EBV) Real Time polymerase chain reaction. Intravenous ganciclovir therapy was started without clinical response. On repeated CSF analysis, an elevated serum angiotensin converting enzyme level of 9.8 U/L was found. Due to diagnostic conundrum, brain biopsy was obtained which revealed granulomas with multinucleated giant cells surrounded by lymphocytes. Immunohistochemistry studies ruled out EBV invasion of the brain tissue. Treatment of neurosarcoidosis with methotrexate and infliximab was initiated. Four months later, leptomeningeal enhancement was improved with return of baseline cognitive status.

**Discussion:** Several infectious and non-infectious causes have been implicated in the pathogenesis of sarcoidosis. Notably, EBV is associated with autoimmune, inflammatory and neoplastic disorders. Nonetheless, its frequency and relationship with sarcoidosis is not fully elucidated. Likewise, in sarcoidosis there is a paradoxical immune response characterized by an anergic state in the periphery with CD4 lymphopenia, among other immune deficits. This could increase the risk of opportunistic infections or reactivation of latent infections like EBV as seen in this case. Whether EBV infection represents an initiating factor in the development of sarcoidosis or the reactivation of a latent virus remains unknown. To our knowledge, this is the first case reported in the medical literature of intrathecal infection with EBV during the initial diagnosis of neurosarcoidosis.

**Conclusion:** This case underscores the importance of a high index of suspicion for neurosarcoidosis even in case of an atypical presentation such as concomitant intrathecal EBV reactivation.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Case Report Abstract 18-25

**Title:** Paralysis in New Onset Multiple Myeloma Patient

**Authors:** Maria Chaudhry, Mitali Mali, Ty Keith Stansell, M.D.

**Introduction:** Multiple Myeloma (MM) is a hematologic malignancy where monoclonal plasma cell expansion leads to monoclonal immunoglobulin abundance, most often diagnosed due to a pathologic fracture or incidental lab findings denoting anemia, hypercalcemia or renal insufficiency 1, 2 .

**Case Description:** We present the case of a 59-year- old African American male with rapid progression of IgA kappa light chain MM and more remarkably, bilateral lower extremity (BLE) paralysis in less than four months.

**Initial Presentation:** Presented to emergency department (ED) with lower back pain radiating to left hip/leg. Lumbar X-ray revealed no osseous abnormalities; the patient was discharged with sciatica diagnosis.

**Month 1:** Presented to ED with unintentional 21 lb weight loss and back pain—X-ray revealed pathologic fracture of left femur. Bone marrow biopsy revealed 100% plasma cells.

Flow cytometric analysis revealed monoclonal plasma cell population expressing CD138, CD38, CD56, CD13 and cytoplasmic kappa light chain. Light chain levels of 6470, IgA 4781, beta 2 microglobulin 7.0 and arthralgia. Diagnosis of MM was made.

**Month 2:** Started on chemotherapy—Revlimid and Velcade. Patient presented in wheelchair due to BLE weakness alongside a sacral decubitus ulcer (SDU) stage III and empyema throacosis.

**Month 3:** Presented to office with BLE flaccid paralysis—emergent MRI demonstrated pathological compression fracture of T11 with plasmacytoma and paraspinal fluid collection, leading to emergent radiation.

**Month 6:** Presented to office with altered mental status due to osteomyelitis secondary to SDU despite aggressive wound care. Halted chemotherapy for IV antibiotics. IgA 158. Light chains 120.1.

**Month 7:** Presented to office with BLE edema. Ultrasound revealed bilateral DVTs. Patient started on Lovenox and restarted Velcade. IgA 186. Light chains 116.

**Month 9:** Continued paralysis and poor SDU healing. Lenalidomide and Bortezomib added. IgA 143. Light chains 109.

**Present/Month 12:** Patient is progressing well with improved SDU but continued paralysis. IgA 125.

**Conclusion:** In summary, our case highlights an unusual case of MM including rapid progression of BLE paralysis, abnormally high amounts of plasma cells in the bone marrow and limited classic symptoms of MM.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Research Abstract 18-26

**Title:** Favorable Radiographic and Early Post-Operative Results with the Inguinal Crease Direct Anterior Total Hip Arthroplasty

**Authors:** Jesse Raszewski M.B.S., Kwesi Dawson-Amoah, Imraan Khan BS, Edwin Su M.D., Bradford S. Waddell M.D.

**Importance/Background:** We report the results, scar appearance and patients' satisfaction with the scar of a direct anterior approach total hip arthroplasty (THA) performed through an oblique inguinal incision.

**Objective:** The aim of this study was to expand upon the limited amount of research with the inguinal approach to THA, due to its beneficial outcomes for patients.

**Setting:** The study took place at the Hospital for Special Surgery, in New York City.

**Participants:** 67 patients underwent 70 THAs, twenty-nine consecutive THAs (29 patients) were performed via the standard longitudinal approach, while 41 THAs (38 patients) were performed via the oblique, inguinal incision approach.

**Design/Method:** We compared clinical and radiographic data on consecutive patients who underwent standard direct anterior THA (n=29) or an oblique inguinal incision anterior approach (n=41). Scar appearance was assessed by the Vancouver Scar Scale (VSS) (0-13, 0=normal skin), and satisfaction was assessed by a simple questionnaire.

**Interventions(s) for clinical trials or exposure(s) for observational studies:** N/A

**Results:** Both groups had similar ages and height ( $P > 0.08$ ); however, the weight and body mass index in the inguinal incision group were significantly smaller ( $P \leq 0.004$ ). Surgery length, blood loss, and length of stay ( $P \geq 0.2$ ) were similar in both groups. Average postoperative limb length discrepancy, cup inclination, and version ( $P \geq 0.008$ ) were slightly different. Harris Hip Scores significantly improved in each group ( $1.8 \times 10^{-8}$ ) and improved similarly between groups ( $P \geq 0.35$ ). No intraoperative or wound complications occurred in either group. The VSS score was significantly lower in the inguinal incision vs the standard incision group (0.68 [range 0-3] vs 1.56 [range 0-4],  $P = 0.015$ ). Scar satisfaction was higher in the inguinal incision group with 87% of patients being extremely satisfied compared to only 32% in the standard approach group. Numbness in the anterior thigh occurred in 1 patient with the standard approach and 4 patients with the inguinal approach.

**Conclusion and Discussion:** The inguinal incision approach for THA was safe, offered similar postoperative results, and resulted in improved patient scar satisfaction and an incision that more closely resembled normal skin compared to the standard longitudinal anterior approach.

**Interventions:** N/A

**Trial Registration:** N/A

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Research Abstract 18-27

**Title:** The Effectiveness of Cetylpyridinium Chloride Against Preventing Infection from the Adenovirus

**Authors:** Jeffrey Bloom, MS-III, Frank Esper, M.D., Mauricio Retuerto, PhD, Mahmoud Ghannoum, Ph.D., MBA, FIDSA

**Background:** The effectiveness of Cetylpyridinium Chloride (CPC), a broad-spectrum antimicrobial agent, was measured against non-enveloped Adenoviruses.

**Objective:** To determine the optimal concentration of CPC that kills the Adenovirus while destroying the least number of healthy cells in the process.

**Design/Method:** Using various concentrations of CPC against the optimal concentrations of an Adenovirus strain encoding for green fluorescent proteins (AdGFP), Adenovirus reduction percentages were determined for each concentration. The goal was to determine not just the effectiveness against the virus but the optimal concentration against the virus that also had the least effect killing the A549 lung epithelial cells that weren't infected. This study took seven weeks.

**Setting:** Study took place in a research lab but results could one day be beneficial to ophthalmology fields.

**Participants:** N/A

**Intervention for clinical trials:** N/A

**Main outcomes/measures:** Original hypothesis planned around 7 ug/ml to be optimal CPC concentration based on studies with CPC and various enveloped viruses.

**Results:** The results showed that exposing  $10^8$  Adenoviral particles (92.68% rate of infection) to 3, 4 and 5  $\mu\text{g/ml}$  concentrations of CPC before infection, all three of these concentrations reduced viral infection of lung cells by 100%. 2  $\mu\text{g/ml}$  of CPC showed a 54.7% reduction, and 1  $\mu\text{g/ml}$  CPC showed an 85.96% reduction rate of infection. CPC interacts directly with Adenovirus rendering it 100% ineffective at cellular entry at 3ug/ml or higher.

**Conclusions/Discussion:** Adenovirus is the most common cause of pinkeye and as of now there is no cure or pharmaceutical prevention for it. A patient with viral conjunctivitis must just let it run its course. If the optimal concentration of CPC that kills the adenovirus can be determined while also destroying the least number of healthy cells being destroyed in the process, a solution for conjunctivitis could become possible. Further studies are required in this direction. Determining the effectiveness of CPC against non-enveloped, dsDNA Adenovirus could also be used in aiding with research for a treatment or prevention of other non-enveloped viruses such as Rhinovirus.

**Trial Registration:** N/A



## Medical Association of the State of Alabama 2018 Poster Symposium

### Research Abstract 18-28

**Title:** Salvage Post-Prostatectomy Radiation Therapy for Biochemically Recurrent Prostate Cancer

**Authors:** Michael Schloss, MS-III, Suneal Peddada, MS-IV, Arman Allabakhshizadeh, MS-III, Angela Phelps, BS, Arash Velayati, MD, Steven Stokes, MD, Jarrod Adkison, MD

**Background:** Our series reviews the common treatment strategy of salvage radiation therapy (SRT) for patients demonstrating prostate-specific antigen (PSA) biochemical failure following prostatectomy.

**Objective:** To review SRT and whether a specific PSA threshold exists at which SRT initiation led to better patient outcomes.

**Design:** Retrospective study of 102 patients who underwent SRT between 2003-2014. Identifying patient information stripped by Cancer Registry.

**Setting:** Southeast Cancer Center is a Commission on Cancer approved program located at the Southeast Alabama Medical Center, a general medical and surgical hospital.

**Participants:** Post-prostatectomy, biochemically recurrent prostate cancer patients treated with SRT. 102 participants. Median age at surgery was 61 years. 19% with Gleason score  $\leq 6$ , 51% at 7 and 30% scored 8 or higher. Median PSA prior to SRT was 0.33 ng/mL.

**Interventions:** Median SRT dose delivered was 64.8 Gy. Fourteen patients received adjuvant androgen deprivation therapy (ADT) upon completion of SRT. Optimal treatment strategy with ADT was determined according to physician preference.

**Main Outcomes and Measures:** Freedom from biochemical failure, overall patient survival and prostate-cancer specific survival rates were assessed. Biochemical failure was defined as a serum PSA value progression of 0.1 ng/mL or more following initial SRT. Outcomes formulated after data collection.

**Results:** Five-year overall survival for the entire cohort is 92%, with prostate cancer specific survival of 96%. Five-year freedom from biochemical failure rates for Gleason score  $\leq 6$ , Gleason 7, and Gleason 8-10 patients were 87%, 72%, and 49%,  $p=0.0187$ . Patients with pre-radiotherapy PSA  $\leq 0.5$  ng/mL had better five-year biochemical control relative to patients with higher pre-radiotherapy PSA values, 76% versus 51%,  $p=0.0211$ .

**Discussion and Conclusion:** Prompt initiation of radiation upon identification of biochemical failure appears to offer greater success, particularly at PSA  $\leq 0.5$  ng/mL. Biochemical control appears very durable at five years, with few late recurrences.

**Trial Registration:** N/A

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Research Abstract 18-29

**Title:** Oxidative Stress Modification by Acrolein, a Product of Secondhand Smoke, Disrupts Critical Functional Hallmarks of Apolipoprotein E

**Authors:** Tuyen N. Tran1, Yuan Yu Lee, Koji Uchida, and Vasanthi Narayanaswami

**Important/Background:** Apolipoprotein E (apoE), an anti-atherogenic apolipoprotein, plays a critical role in regulating plasma cholesterol homeostasis and in lowering cholesterol/triglycerides level. It lowers plasma lipid levels by acting as a ligand for the low-density lipoprotein receptor (LDLr) family of proteins. ApoE mediates this function via essential lysine residues that interact with the LDLr.

**Objective:** To study the effect of oxidative stress mediated in vitro modification on recombinant rat apoE.

**Design/Method:** (i) Over-expressed, isolated and purified recombinant rat apoE; (ii) carried out dose-dependent chemical modification of purified apoE with acrolein followed by mass spectrometry (MS); (iii) performed chemical denaturant-induced unfolding to obtain information on the conformation of acrolein-modified apoE; (iv) performed lipid binding assay and assessed LDLr binding capability of modified protein.

**Setting:** This is an in vitro study that was carried out with recombinant rat apoE and acrolein obtained from commercial source.

**Participants:** N/A

**Intervention(s) for clinical trials or exposure(s) for observational studies:** N/A

**Main outcome(s) and measure(s):** We initiated the study to test the hypothesis that oxidative modification would disrupt the structural features and the ability of apoE to interact with the LDLr.

**Results:** Acrolein-modification of apoE was confirmed by Western blot analysis using an antibody specific for acrolein-modified lysines. MS analysis identified Lys82, 85, 86, 156 and 252 as likely modification sites by acrolein. Chemical denaturant-induced unfolding studies revealed that the overall fold of acrolein-modified apoE was impaired. Modified apoE also demonstrated a decrease in lipid binding ability. Lastly, the LDLr binding ability of acrolein-modified apoE was significantly disrupted.

**Discussion and Conclusion:** Overall, we conclude that acrolein disrupts the structural and functional integrity of apoE, which is likely to affect its role in maintaining plasma cholesterol homeostasis. Our data provide a molecular basis for the potential role of oxidative stress (due to environmental factors or aging) mediated modification of apoE in altering lipoprotein metabolism, with direct implications in cardiovascular disease.

**Trial registration:** N/A

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Research Abstract 18-30

**Title:** Decreased time of incubation via Thermoplasmonic mixing

**Authors:** Nigel Jagoo, Hao Wang, Dr. Anna Pyayt, Dr. Alvaro Columbie

**Important/Background:** Antibody monolayer immunosurfaces are used as detection elements in different biomedical sensors for the portable clinical diagnostics [1,2]. Previously, studies demonstrated that acoustic waves can be used to decrease incubation time needed for antibody attachment and to remove non-specifically bound antibodies [3].

**Objective:** Our goal was to investigate whether the time for an antibody/antigen reaction detection could be decreased using thermoplasmonic mixing when compared to the conventional method.

**Design/Method:** Preparatory Work: A. Gold Surface Cleaning / Slide Splitting B. Required Solutions Preparation C. Antigen Coating D. Laser Facility Warm Up E. Optical Fiber Alignment:

1. Fluorescent treatment
2. Slide flushing
3. Laser irradiation
4. Picture taking
5. Analysis & Quantification

**Setting:** Thermoplasmonic heating could provide a means towards the development of a Point-Of-Care (POC) device capable of detecting biomarkers, in non-invasive body fluids, that are indicative of a specific disease, in a clinical setting.

**Participants:** N/A

**Intervention(s):** N/A

**Main outcome(s) and measure(s):** Here we propose to use thermoplasmonics for improved mixing and decreased incubation time. To measure this, 'Photoshop' will be used to quantify and analyze the amount of fluorescence produced by all samples at the various set time intervals. Fluorescence will only be produced when there is successful antigen/antibody binding (4).

### Results:

Time (min)	Mean Value at Histogram's Green Channel	
	No Plasmonic Heating	Plasmonic Heating
0	2.07	
2	3.17	3.53
5	3.33	4.13
10	2.98	4.71
15	3.54	4.66
20	3.45	5.5
25	3.05	8.85
30	3.07	5.87

**Conclusions:** Based on the results, thermoplasmonic heating did increase the speed at which an antibody/antigen reaction could be detected versus conventional incubation. The data shows that at 25 minutes, antibody/antigen binding was successfully detected, while the control group did not. This technique could prove useful in developing POC devices, targeted at screening for certain cancers, such as oral cancer.

**Trial registration:** The Research Experience for Teachers (RET) at the Functional Materials Research Institute at USF is funded by the National Science Foundation under award number 1301054.

**Resources:**

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Research Abstract 18-31

**Title:** Dietary intake and health outcomes in rural communities of Verón, Dominican Republic and Columbus, Georgia, USA

**Authors:** Angelin Shajan, Student, Annie Kirby, PhD, RD, Harold Garner, PhD, Fred Rawlins II, DO, Dean Sutphin, PhD

**Importance/Background:** Underserved communities in the United States and Latin America are disproportionately burdened by nutrition-related chronic diseases (1). This is partly due to globalization and urbanization trends that impact dietary intake patterns as well as limited access to health care (1, 2). The provision of preventative health care in the form of education and screenings is important to reduce the disease burden faced by individuals in these underserved communities (3). However, an understanding of current dietary practices and health outcomes is necessary to inform targeted health education and preventative services.

**Objective:** To identify dietary patterns and health outcomes in two underserved, rural communities.

**Design/Method:** This cross-sectional study assessed weekly food intake with a modified Food Frequency Questionnaire that participants completed in their respective language (English or Spanish). Medical diagnoses were determined from ICD-10 logger codes. Anthropometric measures (height, weight, and BMI) were also obtained. Data was entered into excel. SAS 9.4 was used to generate descriptive statistics.

**Setting:** Rural, underserved community clinics in Columbus, GA and Verón, Dominican Republic (DR).

**Participants:** Adults 18 years and older who were willing to be a part of the study. Complete data was obtained on 201 participants.

**Interventions(s) for clinical trials or exposure(s) for observational studies:** N/A

**Main Outcomes and Measures:** Dietary intake and disease prevalence

**Results:** GI, pulmonary, dermatological, ENT, neurological, and reproductive diseases were more common the DR, whereas cardiac, endocrine, hematologic, and psychiatric illness were most common in Columbus, GA. Both communities had deficient diets averaging <4 servings per week of fruits and vegetables. Meat and dairy had the highest reported average serving per week in both communities. Consumption of processed or fried foods was reported to be 1-3 servings per week, respectively, for both communities.

**Conclusion and Discussion:** Individuals in rural communities of Southern United States and Latin America appear to have deficient diets and, though variable, a high disease burden. As osteopathic physicians we can improve and extend the reach of health care to these disadvantaged populations through targeted health education (i.e. increasing fruit and vegetable intake, decreasing processed and fried food intake), and preventative services.

**Trial Registration:** N/A

**References:**

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Research Abstract 18-32

**Title:** The Impact of PTEN Antagonist on rVRG Spinal Cord Regeneration and Restoration of Diaphragm Function Following Spinal Cord Injury

**Authors:** Cole G. Block, Mark Urban, Biswarup Gosh, Megan C. Wright, George M. Smith, Shuxin Li, Angelo Lepore

**Importance/Background:** Axonal regeneration post-spinal cord injury (SCI) is limited due to a number of neuronal-intrinsic and -extrinsic factors. Modulation of these factors can have major impacts upon signaling pathways involved in axon regeneration.

**Objective:** In the present study, systemic *in vivo* injection of Phosphatase and Tensin Homolog antagonist peptides (PAP4) are being tested for their ability to: (1) upregulate the intrinsic growth capability of damaged CNS neurons, (2) provide meaningful reconnection of neural circuitry between the rostral ventral respiratory group (rVRG) and the phrenic motor neuron (PhMN) pool and (3) restore diaphragm functional capacity.

**Design/Method:** Blinded, randomized control model. Bi-daily, subcutaneous administration of systemic PAP4 (treatment)/DMSO (control) following C2-hemisection for 21-day period. Treatment period was followed by 5-week monitoring period, prior to evaluation of diaphragm function via electromyography at 8-weeks post-SCI. Histological analysis completed post-sacrifice at 8-weeks.

**Setting:** Private Medical University Research Lab

**Participants:** Female Sprague Dawley Rats following C2-Hemisection

**Interventions for clinical trials or exposures for observational studies:** N/A

**Main outcomes and measures:** PhMN innervation of the diaphragm was evaluated via immunofluorescent staining, confocal microscopy and measurement of compound muscle action potentials. rVRG axons were quantified bilaterally, by counting the total number of fluorescently labeled axons in sagittal sections grouped in 100um bins. Recovery of diaphragm activation evaluated via spontaneous, *in vivo* EMG activity at the diaphragm neuromuscular junction.

**Results:** (1) PAP4 treatment significantly increased glutaminergic rVRG axonal growth and serotonergic fiber growth caudal to the lesion site ( $P < .05$ ). (2) Histological analysis at 8-weeks post-SCI revealed systemic PAP4 treatment also increased contralateral sprouting of rVRG glutaminergic axons in the rostral cervical spinal cord ( $P < .05$ ). (3) Evaluation of diaphragm motor plate function via electromyography (EMG) showed a significant *in vivo* improvement in diaphragm function upon PAP4 administration ( $P < .05$ ) ( $P < .001$ ).

**Discussions and Conclusions:** Systemic pharmacological inhibition of PTEN increases the neuronal-intrinsic growth capacity of bulbospinal and serotonergic CNS axonal fibers. Analysis of EMGs at the PhMN plate shows a significant increase in diaphragm recovery post-SCI. These findings may help to contribute to recovery of neurological function following SCI and reduction in the patient requirement for ventilation post-injury.

**Trial Registration:** N/A

#### **References:**

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Research Abstract 18-33

**Title:** Injury Rates and Characteristics in Professional Ultimate (Frisbee)

**Authors:** Christine Collins MEd, Matthew Hess BS, David Swedler MPH PhD, Eugene Brabston MD

**Importance/Background:** Ultimate (aka “ultimate Frisbee”) is a popular team sport which lacks epidemiologic injury assessment.

**Objective:** To determine injury rates, profiles, and associated injury factors using the first injury surveillance program for professional ultimate

**Design/Method:** We partnered with the American Ultimate Disc League to establish an injury surveillance program over the 2016 and 2017 seasons. For each team, a representative filled out a weekly injury survey containing mechanism, location, diagnosis, and associated factors for each injury. Injury incidence rates (IRs) were calculated as injuries per 1000 athlete-exposures. Incidence rate ratios (IRRs) were determined to compare IRs with 95% confidence intervals to determine statistical significance.

**Setting:** Professional ultimate teams in North America

**Participants:** Healthy males aged 18+. 16 teams were included. 8 additional teams were approached and either decided not to participate or were excluded.

**Exposure(s):** 8963 athlete exposures — 4193 during practices, 4770 during competitions

**Outcome(s):** As a descriptive epidemiological survey, there were no planned outcomes other than the creation of the first professional ultimate injury surveillance program.

**Results:** 299 injuries for a total IR of 33.36. 48% of injuries resulted in lost playing time. Most injuries affected the lower extremity (72%), including upper leg muscle strains (13%) and ankle ligament sprains (11%), with running as the most common injury mechanism (32%). More injuries in competition than practice (IRR 2.25, 95% CI=1.75-2.89), in the second half of a game (IRR 1.76, 95% CI = 1.32-2.38), when games occurred back-to- back (IRR 2.34, 95% CI = 1.77-3.10), on wet playing surfaces (IRR 1.47, 95% CI=1.01-2.12), and while on offense (IRR 1.58, 95% CI=1.25-2.01) or in the cutter position (IRR 2.93, 95% CI=2.24-3.83). Artificial turf did not impact injury rates (IRR 1.20, 95% CI=0.89-1.63).

**Conclusions/Relevance:** This is the first epidemiologic study of professional ultimate injuries. The injury rate is comparable to similar collegiate/professional level sports. This data will serve as a baseline for future injury interventions, training procedures, or rule changes that teams and the league may implement.

**References:**

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Research Abstract 18-34

**Title:** The Significance of PKGIB in cGMP Induced Death of Breast Cancer Cells

**Authors:** Perrin F. Windham, Nicholas J. Rivers, and Heather N. Tinsley, Ph.D.

**Background:** Breast cancer is the most commonly diagnosed cancer and second leading cause of cancer related death in women in the United States. Identifying proteins that play important roles in breast cancer development and progression is paramount in the quest for improving detection and preventing development of breast cancer

**Objective:** To determine if PKG is necessary for mediating death of breast cancer cells in response to cGMP signaling.

**Design/Method:** The following experiments, conducted between 2013-2015, study the importance of PKG for anticancer activity of cGMP signaling in breast cancer cells. PKGI-specific siRNA was used to knockdown the expression of the protein. Cells expressing PKGI $\beta$  and with knockdown of PKGI $\beta$  were treated with sulindac sulfide (SS) and NOR-3, compounds known to activate cGMP signaling in breast cancer cells. We then measured the effects of knockdown on sensitivity of cells to the anticancer activity of cGMP signaling activation.

**Setting:** N/A

**Participants:** N/A

**Interventions:** N/A

**Main outcomes and measures:** N/A

**Results:** Cells lacking PKGI were significantly less sensitive to the anticancer activity of SS, whereas PKGI expression had no effect on sensitivity to NOR-3. Western blot analysis of cleaved caspase-3 expression in MDA-MB231 cells, untreated and treated with SS or NOR-3 was performed. Cells lacking expression of PKGI were less sensitive to the anticancer activity of SS, but still showed adequate sensitivity to NOR-3.

**Conclusions:** We have confirmed that three days of treatment with siRNA in MDA-MB-231 breast cancer cells causes a significant decrease in the amount of PKGI $\beta$ , as determined by a Western blot. PKGI is at least partially responsible for the anticancer activity of sulindac sulfide, a known PDE inhibitor. However, PKGI does not appear to be largely important for the anticancer activity of NOR-3. Our findings presented here further validate that the cGMP signaling pathway is independent of the estrogen receptor, progesterone receptor, and HER2 signaling pathways, indicating the broad therapeutic utility of this pathway. Moreover, the sensitivity of a triple negative cell line like MDA-MB-231 to the

anticancer activity of cGMP signaling makes this an especially interesting pathway to target for treating these highly aggressive types of breast cancers.

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Research Abstract 18-35

**Title:** Access to Care in the Spanish Universal Healthcare System: Gynecology and cardiology appointments and hospitalizations in the Canary Islands

**Authors:** Chastain L (BS)<sup>1</sup>, Ostrowski SR (DVM, MPVM)<sup>2</sup>, Wright JC (DVM)<sup>2</sup>, Cabrera de León A (MD, PhD)<sup>3</sup>

**Importance/background:** The Spanish national healthcare system consists of binomial organizational structure of primary and secondary/specialty care. The primary author participated in a five-week summer academic program observing the functionality of Spain's universal healthcare system by observing various medical specialty practices at a public hospital. Universal healthcare within the U.S. is a very controversial topic, and implementation of the Affordable Care Act required changes to the American healthcare system. This research provided an opportunity to experience and study accessibility within a universal healthcare framework.

**Objectives:** 1) Examine characteristics of Spanish universal healthcare system through data obtained from the public Hospital Universitario Nuestra Señora de Candelaria (HUNSC) on Tenerife, Spanish Canary Islands  
2) Determine if regionalized structure of the Spanish national healthcare system is able to provide timely and affordable access to care.

**Design/method:** Focused on affordable access to and efficient provision of cardiology and OB/GYN care at HUNSC. Appointment and hospital admissions data for cardiology and OB/GYN for March 2014 from HUNSC. Included patients' home postal code, wait time (days) for appointments, reason for hospitalization/consultation, length of hospitalizations, and, for cardiology, discharge status. Further analyzed to determine average driving distance and time traveled using home postal codes.

**Setting:** Cardiology and OB/GYN services hospitalization and appointment records at HUNSC

**Participants:** N/A

**Exposures:** N/A

**Main outcomes/measures:** Travel distance/time, wait time (days) for medical appointments, reason for hospitalization/consultation, length of time hospitalized, discharge status

**Results:** Average driving distance and time of cardiology appointments/hospitalizations and gynecology hospitalizations approximately 40km and 40min. Gynecology specialty appointments traveled an average 49.7 kilometers and 64.5 minutes. Majority of the appointments were for specialty care rather than routine examinations. Cardiology: 90% discharged, 8% transferred, and 2% died. Gynecology: <2% left

voluntarily before medical release, remainder discharged. Twenty-five percent of patient appointments scheduled within 14 days and 50% within a month.

**Discussion/conclusions:** Category of affordable access could not be determined from the data; however, observation and indirect assessment indicated Spain's universal healthcare system is affordable. Patients appear to be receiving timely and appropriate access to specialty care, as intended. Further compared to American statistics in similar studies.

**Trial registration:** N/A



## Medical Association of the State of Alabama 2018 Poster Symposium

### Research Abstract 18-36

**Title:** Cervical Spine Fractures in the United States Population

**Authors:** Ishan Parikh, Ben McDonald, and Jake Nicholson

**Importance/Background:** Epidemiology on cervical fractures has only been studied on subpopulations in the United States, and is unknown for the generalized population[1]. These fractures carry a severe misdiagnosis risk due to their presentation without clinical signs or imaging evidence. Furthermore, formal guidelines for low-risk cervical fracture are lacking for patients under age 65[2]. This study aims to aid the clinician by increasing awareness to precipitating events.

**Objective:** To query a national United States database for descriptive and longitudinal analysis of cervical spine fractures from 2010 - 2016.

**Design:** Population based retrospective cohort study.

**Setting:** Our study was done using a sample of 100 hospitals which contribute to the National Electronic Injury Surveillance System (NEISS), a probability sample run by the Consumer Product Safety Commission (CPSC). National estimates were then calculated based on NEISS sample design.

**Participants:** Patients between 2-105 years old who presented to NEISS hospitals with a neck fracture injury in the period between January 1, 2010 through December 31, 2016, without excluding criteria. The participants were then propensity matched into three separate cohorts by age.

**Intervention for clinical trials or exposure for observational studies:** N/A

**Main outcome measures:** Primary outcomes were age and precipitating event prevalence, disposition disparity, and incidence trends. A secondary outcome was rate of specific spinal level fractured.

**Results:** Total estimated fractures were 128,339 (98783-157894), with females (49.1%) fractured less often. Increasing annual incidence was observed in females aged 30-64 ( $p < .03$ ) and 65-105 ( $p < .01$ ). Younger females and all males did not increase annually ( $p < .01$ ). Falls associated with bathrooms ( $p < 0.04$ ), floors ( $p < .01$ ), and stairs ( $p < .01$ ) increased annually. Injuries from bicycles ( $p < .08$ ) and swimming ( $p < .052$ ) did not increase. The average age was 59.89 for males and 73.37 for females (difference: 13.48,  $p < .01$ ). Highest disposition disparity was found in fractures associated with open-floors, ladders, and free-standing furniture ( $p < .05$ ). A sub-analysis revealed C2 vertebrae was involved most often.

**Conclusions and relevance:** Overall, cervical fracture prevalence was gender neutral, however incidence in females is increasing. Falls at home are increasing annually, unlike sports and recreation injuries. Further prospective research is necessary to increase pretest probabilities for younger patients.



**Trial registration:** N/A

**References:**

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Research Abstract 18-37

**Title:** Characterization of bone morphogenetic protein II-deficient pulmonary artery endothelial cells

**Authors:** Victoria Brown, Leigh Graziano, Rebekah Morrow, Adam Morrow, and Audrey A. Vasauskas

**Background:** Pulmonary arterial hypertension (PAH) is a disease of the small pulmonary arteries characterized by pulmonary vasoconstriction, vascular cell proliferation, and vascular remodeling 1 . Despite advances, patients with PAH live on average 2.5-3 years post-diagnosis.

**Objective:** Mutations in bone morphogenetic protein receptor-II (BMP2) are seen in ~70% of PAH cases, and these patients exhibit vasculature remodeling marked by proliferation of smooth-muscle-like cells 2-4 . Mutations in BMP2 signaling are associated with upregulation of TGF- $\beta$ , contributing to the remodeling in PAH via an endothelial to mesenchymal (EndMT) process 5-7 . Here, endothelial cells undergo reprogramming to smooth-muscle-like phenotype, much like the epithelial cell reprogramming seen in cancer. The goal of this study was to characterize BMP2-deficient pulmonary artery endothelial cells (PAECs) in order to understand EndMT in BMP2-deficient PAH.

**Methods:** BMP2-deficient endothelial cells were engineered from rat PAECs using a lentiviral siRNA or CRISPR approach to silence expression of the BMP2 gene. Our initial characterization of siRNA-BMP2-deficient PAECs indicated a mixed population of cells. In order to achieve a better knock-down of BMP2 expression, we took two approaches. First, to create a clonal population of BMP2-deficient PAECs, the siRNA-engineered cells were subcloned and a number of promising clones selected (courtesy Dr. A. Morrow). Secondly, a lentiviral CRISPR approach was undertaken to knock-out expression of BMP2 in wild type PAECs (courtesy Dr. Vasauskas). Wild-type and knock-out PAECs were plated in 35 mm dishes, and lysates made. SDS-PAGE gels were loaded, and western blot analysis performed.

**Setting:** ACOM

**Participants:** N/A

**Interventions:** N/A

**Main Outcomes and Measures:** To verify knock-down of BMP2 expression, total RNA was isolated, cDNA made, and real time polymerase chain reaction (RT PCR) for BMP2 performed (courtesy Drs. R. Morrow and Vasauskas). To characterize BMP2-deficient PAECs, we looked at endothelial cell and smooth muscle cell markers via western blot.

**Results and Conclusions:** Our preliminary data indicate ~50% knockdown of BMPR2 expression for several clones tested. These clones are currently in testing for expression levels of PECAM, von Willebrand Factor,  $\alpha$ -SMA, and transgelin. Future studies will investigate the role of inflammatory mediators like TGF- $\beta$  in the EndMT process in these cell types.

**Trial Registration:** N/A

**References:**

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## Medical Association of the State of Alabama 2018 Poster Symposium

### Research Abstract 18-38

**Title:** Youth Football Associated Fractures and Dislocations

**Authors:** John David Murphy, Abby Halpern, and Ishan Parikh

**Importance/Background:** Playing football is associated with a high risk of morbidity from dislocations and fractures. It is important to establish a baseline on these injuries because national laws and rules are constantly changing.

**Objective:** To query a national database for a descriptive analysis on fractures and dislocations among pediatric football players and to correlate this with the onset of puberty.

**Design:** Population based retrospective cohort study.

**Setting:** Our study was done using a sample of 100 hospitals which contribute to the National Electronic Injury Surveillance System (NEISS), a probability sample run by the Consumer Product Safety Commission (CPSC). National estimates were then calculated based on NEISS sample design.

**Participants:** Patients aged 5 through 18 years injured at a sporting event locale recorded in NEISS carrying the diagnosis of dislocation or fracture, dated January 2005 through December 2016, without any excluding criteria.

**Intervention for clinical trials or exposure for observational studies:** N/A

**Main outcome measures:** The primary outcomes were prevalence and incidence of injury, body part injured, and the average age of injured child.

**Results:** Fractures ranged from an annual maximum of 46189 (95 th CI: 34242-58137) in 2008 to a low of 27356 (19775-34937) in 2016. Dislocations ranged from 6812 (4816–8808) in 2005 to a low of 3224 (2170-4278) in 2015. The majority of fractures occurred in the fingers with 110883 (84077–137588) estimated cases, and 22347 (17262-27433) shoulder dislocation cases were reported. The average age of any fracture was 13.12 (12.97-13.26) and dislocation 15.10 (14.92-15.28). Lower-arm fractures occurred in younger adolescents with an average age of 12.35 (12.11-12.60). Shoulder dislocations occurred in older adolescents, with an average age of 15.79 (15.59-15.99).

**Conclusions and relevance:** In this retrospective cohort study, we observed a higher incidence of fractures in prepubescent children when compared to dislocations which occur more often in older adolescents. Clinically, this study brings attention to football injuries in prepubescent children, who do not have a unified sporting authority.

**Trial registration:** N/A

**References:** No references used.



## Medical Association of the State of Alabama 2018 Poster Symposium

### Research Abstract 18-39

**Title:** Inhibition of mutant p53 signaling in Synovial Sarcoma

**Authors:** Qasim Ghulam, MS, Nikita Patel, MS, Trisha Wang, Le Su, PhD

**Importance/Background:** Synovial Sarcoma is the second most common sarcoma in patients between the age 10 to 35 years old. It is diagnosed by the presence of a fusion protein (SS18-SSX) that interferes with tumor suppression pathways, leading to increased oncogenic properties in cells. Currently, patients are treated with a combination of surgery, chemotherapy and radiation with varying success.

**Objective:** Identify a new therapeutic target site in the mutant p53 signaling pathway.

**Design/Method:** The study was conducted via human Synovial Sarcoma cell lines (SYO1 and Yamato) that were maintained and cultured in a laboratory setting over an 8-week period.

**Setting:** HudsonAlpha Institute for Biotechnology, private laboratory

**Participants:** N/A

**Intervention:** N/A

**Main outcome and measures:** To prove a connection between mutant p53 and increased c-MET levels and measure the effects of c-MET inhibitors on synovial sarcoma cell lines.

**Results:** Western bolt analysis confirm an inherent relationship between mutant p53 knockdown on c-MET protein expression on synovial sarcoma cell lines. Cell viability assays demonstrate a negative correlation in % cell viability and increased concentration of c-MET inhibitors (Crizotinid, Foretinib, MGCD).

**Conclusions and relevance/Discussion:** Our data confirm a key role of mutant p53 (R273C) in tumor cell survival. Mechanistically, we have evidence connecting mutant p53 function with increased expression of c-MET protein, which occurs as an oncogenic kinase in human cancers. Finally, our functional studies support use of clinically approved c-MET inhibitors as a new treatment for synovial sarcoma. This mechanism is a viable approach that could be applied to other types of malignancies bearing similar p53 mutations.

**Trial registration:** N/A



## Medical Association of the State of Alabama 2018 Poster Symposium

### Research Abstract 18-40

**Title:** Surgical Outcomes of Os Trigonum Syndrome in Dancers

**Authors:** Keifer P Walsh MS, Brad R Moser MD, J Chris Coetzee MD, Rebecca M Stone MS, ATC

**Background:** Management of ankle pain in dancers can be challenging due to the complex demands placed on their ankles and feet. Despite the prevalence of ankle pain or injuries in this population, literature on the outcomes of surgical approach is limited.

**Objective:** To determine whether dancers returned to their previous level of activity following open excision of a symptomatic os trigonum syndrome.

**Method:** Retrospective chart review from surgeries performed from 2006-16. Follow-up data was collected across a range of 6 weeks to 8 years post-operative.

**Setting:** Outpatient surgical center.

**Participants:** We followed 54 ankles (44 patients, 91% female, mean age 18.2 years) in patients who underwent surgery for posterior ankle impingement. Dance style varied across patients but was largely ballet and included many professionals. All patients completed a specific, non-surgical rehabilitation protocol prior to surgical discussions, and eventual excision of the os trigonum was done through an open approach. All patients then committed to a specific rehabilitation program and gradually returned to dance.

**Interventions:** N/A

**Main outcomes and measures:** Outcomes were evaluated using the Veterans Rand 12 Item Health Survey (VR-12) Mental and Physical Scores, Foot Function Index – Revised (FFI-R), Visual Analog Scale (VAS) scoring, and patient satisfaction preoperatively and postoperatively.

**Results:** Between pre-operative and most recent postoperative follow-up (mean 32.3 months), there was no significant difference in VR-12 Mental Scores (mean scores of 55.4 and 53.9), however Physical Scores increased 37.8 to 51.2, respectively. Significant improvement was also seen in both the FFI-R cumulative score (63.2 to 42.4) and VAS (54% to 17%). Major complications included transient sural nerve paresthesia and scar tissue buildup that resolved over time. Overall, patients were extremely satisfied with their result (82.7% post-operative satisfaction).

**Conclusions and relevance:** An open os trigonum excision is fairly simple, has a low complication rate, and proves to have a high success rate in returning athletes back to their sport of choice. In this study, dancers of varying level and primary style improved significantly according to various clinical measures and maintained thriving postoperative careers. Successful return to dancing relied greatly on well-structured physical rehabilitation therapy.

**Trial registration:** N/A