



Emerald Coast 2023 Poster Presentation

Abstract 23-01

Title: A Young Female with Severe Abdominal Pain

Presenting Author: Josh Graham, MS-3, UAB School of Medicine

Additional Author(s): Erin Shufflebarger (UAB), Zach Pacheco (UAB)

Patient Presentation: A 20-year-old female with a history of transverse vaginal septum and primary amenorrhea presented to the emergency department (ED) with severe abdominal pain. The patient reported sudden worsening of lower abdominal pain that began that morning as well as associated nausea and one episode of vomiting. On examination, the patient was alert though in severe distress due to pain. She was tachycardic with a heart rate of 144, and other vital signs were within normal range. Physical examination revealed a soft, mildly distended abdomen with tenderness to palpation in the right and left lower quadrants. She was given a 1,000 ml bolus of IV fluid and several doses of IV Hydromorphone with subsequent mild improvement of her pain and tachycardia. Laboratory results were significant for leukocytosis (WBC = 23.51 103/cmm; 83% neutrophils), thrombocytosis (596.9 103/cmm) and mild lactic acidosis (2.6 mMol/L). Bedside transabdominal ultrasound imaging was obtained (Figure A&B).

Diagnosis: Hematocolpos secondary to transverse vaginal septum

Discussion and Conclusion: This case describes a post-pubertal complete transverse vaginal septum, a rare diagnosis which typically presents with abdominal pain, primary amenorrhea and hematocolpos/hematometra.(1, 2) A transverse vaginal septum arises from a failure in the fusion of the urogenital sinus and Müllerian ducts.(3) Diagnosis of transverse vaginal septum can be diagnosed either pre- or post-pubertal. Pre-pubertal patients generally present with hydrocolpos caused by an obstruction in the drainage of secretions from reproductive glands.(2) The patient in our case presented post-puberty with hematocolpos and amenorrhea which is suggestive of a complete septal obstruction without perforation. Ultrasound or MRI is used to help define thickness and location of the septum.(2) Treatment is surgical, with options including excision or incision of the septum with or without vaginal dilatation.(1)

Following bedside imaging, gynecology was consulted and admitted this patient. She underwent placement of percutaneous pelvic drain by Interventional Radiology and had a total of 600ml of fluid drained. After the procedure, she was ambulating and voiding spontaneously and was cleared for discharge. The patient was discharged with combined oral contraceptive pills for menstrual suppression as well as pain and nausea medication. After following up with Gynecology she was referred to Cincinnati Children's Hospital for surgical resection of the transverse septum.

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Emerald Coast 2023 Poster Presentation

Abstract 23-02

Title: Telescoping the Starry Night: A Case of Infantile Intussusception Diagnosed Following a Cyanotic Episode

Presenting Author: Nada Al-Faraj, PGY2, Merit Health Wesley, Hattiesburg, MS.

Additional Author: Supervising attending: Emily Nix, MD

Introduction/Background: Intussusception is the invagination of a proximal part of the bowel into a more distal part. It is one of the most common causes of intestinal obstruction and abdominal emergencies in children, particularly those who are under two years of age. The majority of cases are idiopathic, and only 25% of cases are linked to pathologic lead points 1.

Description: Patient is a 4-month-old male who was born full term via a normal uncomplicated vaginal delivery, with a past medical history of viral meningitis diagnosed at the age of one week, who was brought into the Emergency Department (ED) via ambulance for evaluation of increased somnolence, poor oral intake, and circumoral cyanosis that started 2 hours prior. Patient is up to date on his childhood immunizations and received his four months vaccines three days prior to presenting to the ED. Patient was noted to be pale and lethargic. He was afebrile and had normal saturations on room air. Cardiopulmonary causes were initially higher on the differential. Patient was then noted to have paroxysms of abdominal colic associated with intense crying. He subsequently had two episodes of nonbloody emesis and two episodes of red currant jelly stool.

Labs and Imaging:

CBC and CMP were unremarkable

COVID, Influenza A&B, and RSV swabs were negative

Two view chest x-ray was normal

Transabdominal US showed a concerning target sign

Response to Treatment:

Patient was transferred to the children's hospital for higher level of care where he underwent an air enema reduction of an ileocolic intussusception and was discharged home the next day.

Discussion and Conclusion: The classic presentation of intussusception, which is described as a triad of pain, a palpable sausage-shaped abdominal mass, and currant-jelly stool is seen in less than 15% of patients at the time of presentation 2. Occasionally, the initial presenting sign is lethargy or altered consciousness alone, without pain, rectal bleeding, or other symptoms that suggest an intraabdominal process, 3 as seen in our case. This highlights the significance of having a high level of suspicion for intussusception in the setting of otherwise unexplained lethargy or altered consciousness, especially in infants. Moreover, the association between the rotavirus vaccine and intussusception remains uncertain. An active surveillance study done at 27 hospitals in India, concluded that there was no association between the rotavirus vaccine and intussusception in Indian infants, 4 which was a major concern for the parents. This was also supported by another retrospective cohort study done in Canada over 11 years 5. Nonetheless, the CDC mentions that there is a small increase in the risk of intussusception and considers

a previous history of intussusception as a contraindication to the vaccine 6. Intussusception is a life-threatening condition. If left untreated, the bowel can perforate, resulting in passage of its contents into the abdominal cavity, causing further complications. In rare cases, this can result in death. Prompt diagnosis and management reduces associated risks and the need for surgery.

This case presents an interesting presentation to a life-threatening pediatric emergency that could be easily missed in a busy ED setting. It is important to observe the patient clinically, not to anchor on what is common, and consider intussusception when otherwise lethargy and altered mental status cannot be explained.

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Emerald Coast 2023 Poster Presentation

Abstract 23-03

Title: Cooling Catheter Used for Active Cooling in a Patient with Malignant Hyperthermia

Presenting Author: Brendon Gros, PGY2, University of Alabama at Birmingham

Additional Author(s): Benjamin Von Schweinitz, MD (UAB)

Description: 29 year old male presented to the ED and was found to have Ludwig's angina.

Patient was started on IV antibiotics and there were plans to go to the OR for incision and drainage. He was nasopharyngeally intubated using a fiber optic scope with ketamine and succinylcholine.

Approximately 30 minutes later, patient became tachycardic, febrile to 106.6, masseters clamped down, unable to pass OG tube.

A presumptive diagnosis of malignant hyperthermia was made. He was given dantrolene, sodium bicarbonate, and started on cool IVF. The ventilator heater was discontinued and active external cooling of the patient began with ice packs. His temperature continued to climb. The decision was made to place a right femoral cooling catheter (ZOLL Thermoguard XP) for targeted temperature management to normothermia.

Once patient was stabilized he was admitted to the SICU for further management. He later went to the OR with ENT for abscess drainage and source control. He was extubated after 3 days and was discharged from the hospital after an additional 3 days.

Discussion and Conclusion: Malignant hyperthermia is a rare life-threatening condition that requires prompt recognition and aggressive management. Our patient had received dantrolene and external cooling measures were initiated. The offending agent could not be discontinued or reversed. His temperature continued to climb.

Current guidelines for the management of malignant hyperthermia recommend active internal cooling measures such as thoracic cavity or peritoneal packing with ice, but these patients are typically presenting in the operating room with an open cavity.

This option was not available to us as our patient had no open cavity. It was decided our quickest way to actively cool our patient was with utilization of a cooling catheter (ZOLL Thermoguard XP) typically used for targeted temperature management post cardiac arrest.

To our knowledge this has not been described elsewhere in the literature, but we do believe this to be an effective way to cool patients with malignant hyperthermia when temperatures continue to climb despite other aggressive measures. We suggest cooling catheters are an appropriate and potential life-saving intervention for patients who develop malignant hyperthermia while in the emergency department.

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<https://www.mhaus.org/healthcare-professionals/mhaus-recommendations/>



Emerald Coast 2023 Poster Presentation

Abstract 23-04

Title: The Survival of an Unresponsive Severely Hypothermic Patient After Presentation to a Rural Emergency Department

Presenting Author: Lauren Skolrood, MS-3, Quillen College of Medicine (ETSU)

Additional Author(s): Stephen Blankenship, M.D. (Quillen College of Medicine)

Introduction/Background: Severe hypothermia occurs at core temperature less than 28°C (82°F) – noted by multisystem dysfunction. Unless the cause is obvious, unresponsive hypothermic patients warrant further evaluation for secondary causes. This report demonstrates improved survival with the rapid initiation of emergent treatment in a complex patient with significantly high mortality.

Description: 45-year-old Caucasian male presented by EMS to a rural critical-access emergency department. Patient was unresponsive, hypothermic, bradycardic, with undetectable blood pressures. Blood glucose was 126 and he had been given nasal Narcan.

On arrival, the patient was severely hypothermic at 28.5°C (78.4°F) temporally (as 3 thermometers inserted rectally would not read). He was hemodynamically unstable – heart rate 30bpm and undetectable blood pressure. Carotid and femoral pulses were weak, radials unpalpable. Respiratory rate of 10 and pulse oximetry was unobtainable. The patient was poorly responsive to pain with fixed pupils measuring 2mm and repeat finger-stick blood glucose level of 118.

Labs showed significant abnormalities. CBC: HgB 2.8, HCT 10.2%. CMP: Sodium 118, CO2 13, AST 1437, ALT >1000. ABG: pH 7.09, pCO2 39.7, pO2 35, and HCO3 11.9. Lactate 13.1 and Troponin 0.44.

In the emergency department, treatment involved active rewarming of the patient with the use of an improvised fluid/blood warmer and a Bair Hugger. Extreme care was taken to limit movement of the patient to decrease the risk of arrhythmia. Intubation was delayed. The patient was resuscitated with 3 units of packed red blood cells via intraosseous access after initial assessment and history of hematemesis. A femoral line was placed, then calcium and push dose epinephrine were administered prior to endotracheal intubation. The patient was started on a Levophed infusion for persistent hypotension, received Levofloxacin for probable aspiration pneumonia, and transferred to MICU at regional referral hospital by helicopter.

Prior to departure from the ED, the patient's body temperature improved to 28.9°C (84°F). In the ICU, the patient continued to be warmed and was started on intravenous octreotide, pantoprazole, and piperacillin-tazobactam. He became agitated on the ventilator about 12 hours after transfer and was extubated the following day. The patient's mentation returned to baseline. He underwent an esophagogastroduodenoscopy (EGD) 5 days later for upper gastrointestinal bleed. He was discharged home after 11 days in the ICU with no neurological deficit.

Discussion and Conclusion: This case illustrates the viability of a severely hypothermic and unresponsive patient with emergent initiation of rapid rewarming, and treatment of the underlying cause.

When the cause of hypothermia is non-environmental and unknown, it is pertinent to evaluate and treat for lethal secondary causes.

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Emerald Coast 2023 Poster Presentation

Abstract 23-05

Title: A Review of The Benefits of Implementing Simulated Death in Current and Future Medical Professionals Education

Presenting Author: Samantha Jacobson, OMS-2, Edward Via College of Osteopathic Medicine-Louisiana

Additional Author(s): Samuel Martin, OMS-2 Edward Via College of Osteopathic Medicine-Louisiana; James Colquitt, Jr, PhD, Edward Via College of Osteopathic Medicine-Louisiana Campus, Center for Simulation and Technology, Monroe, LA

Introduction/Background: Simulation is playing a crucial role in medical education and continuing education for medical professionals. Despite the positive impact of simulation-based education, there is still ongoing debate in the academic community regarding the use of simulated patient death in medical education. The aim of this literature review is to provide an overview of the current state of research on the use of simulated deaths in medical education, and to explore its potential impact on both current and future medical professionals. The review will focus on the benefits and drawbacks of incorporating simulated deaths into medical education and continuing education programs. This review provides insights that can inform the design and delivery of simulation-based education programs in the medical field.

Results: The available evidence suggests that simulated patient death may be a valuable teaching tool when implemented in a safe and ethical manner. Further research is needed to understand better the benefits and potential drawbacks of simulated patient death. Still, in the meantime, educators should consider incorporating this experience into medical education programs where appropriate safeguards are in place.

Discussion and Conclusion: The use of simulated patient death remains a controversial topic in simulation-based education. In this study, we conducted a literature review to explore the potential benefits and drawbacks associated with incorporating simulated deaths into medical education and continuing education programs for healthcare professionals. Self-reported data from the Phrampus et al. study supports the idea that exposure to simulated death can be valuable for the learning experience and increase practical knowledge and performance. Our analysis suggests that simulated patient deaths may offer unique opportunities for learners to develop critical thinking, decision-making, and communication skills in a safe and controlled environment. However, the use of simulated deaths must be carefully considered and implemented to avoid causing unnecessary emotional distress to learners and to ensure that the educational objectives are met.

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Emerald Coast 2023 Poster Presentation

Abstract 23-06

Title: Predicting Neurologically Intact Survival for Advanced Age Adults with Return of Spontaneous Circulation Following Out-of-hospital Cardiac Arrest

Presenting Author: Dylana Adams, PGY-1, Department of Emergency Medicine, University of Alabama at Birmingham

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Introduction/Background: Over half of the 424,000 annual out-of-hospital cardiac arrest (OHCA) events in the U.S. occur in advanced age adults (≥ 65 years old), with approximately 30% achieving sustained return of spontaneous circulation (ROSC). Deciding which patients in this population would benefit from aggressive post-OHCA interventions versus those unlikely to benefit is challenging and limited data exists to help guide these time-sensitive decisions. We sought to predict the likelihood of neurologically intact survival to hospital discharge for advanced age adults who present the emergency department (ED) with ROSC following non-traumatic OHCA.

Methods: A retrospective observational cohort analysis was performed using data from the national Cardiac Arrest Registry to Enhance Survival database from January 1, 2013 to December 31, 2021. All non-traumatic OHCA occurring in patients ≥ 65 years old who achieved sustained ROSC and survived to hospital admission were included. The primary outcome measure was neurologically intact survival defined as a cerebral performance category (CPC) score of 1 or 2. Multivariable logistic regression including patient variables (age category, gender, co-morbidities) and OHCA characteristics (location, rhythm category, witnessed status, and who initiated cardiopulmonary resuscitation) was used to predict hospital outcome.

Results: 83,574 patients met predetermined study inclusion criteria with 19,298 (23.1%) surviving neurologically intact. Age was found to have a linear negative association with outcome. Survival with CPC 1 or 2 ranged from 28.8% in those between the ages of 65 to 69 years ($n=23,161$) and 13.7% for those age >90 years ($n=4,666$). The regression analysis produced outcome probabilities ranging from 2.6% to 80.8% with a cross validated AUROC of 0.727 (95% CI 0.722, 0.731) and a Brier Score of 0.151 indicating a well calibrated prediction model.

Discussion and Conclusion: A simple model consisting of readily available patient and resuscitation characteristics can predict hospital outcomes following OHCA in advanced age adults with good accuracy and calibration. The predicted probability of neurologically intact survival exceeds common futility thresholds ($\sim 2\%$) for all age groups. These results may help inform effective post-resuscitation communication between clinicians and family members of advanced age adult OHCA event survivors who present to the ED with ROSC.



Emerald Coast 2023 Poster Presentation

Abstract 23-07

Title: Impending Tamponade following Mitral Valve Replacement

Presenting Author: Katherine Griesmer, PGY2, UAB Heersink School of Medicine

Additional Author(s): Samuel L. Burlison, MD, UAB; Cameron Crosby, MD, UAB

Introduction/Background: Impending or confirmed tamponade from an expanding pericardial effusion (PCE), whether acute or chronic, remains a sobering prospect to any emergency medicine clinician. Point-of-care ultrasound (POCUS) has become a mainstay of diagnosis, with specific and sensitive signs of impending cardiac tamponade.¹ Pericardiocentesis remains a rare procedure, but one that remains potentially life-saving and essential to emergency medicine practice. We present a case of impending tamponade in a young woman who recently underwent a mechanical mitral valve replacement (MVR), where POCUS was used to confirm the diagnosis.

Description: A 34-year-old woman with a history of rheumatic mitral stenosis and recent mechanical MVR presented to the ED with dyspnea for three days. She had recently been supratherapeutic on her warfarin. POCUS demonstrated a large PCE, with a dilated inferior vena cava (IVC), but without diastolic collapse of right ventricle, or systolic right atrial wall collapse. While left ventricular ejection fraction appeared within normal limits, the patient had signs of fluid overload including interstitial edema, pleural effusions, and bilateral lower extremity edema. She was later taken urgently to the OR for pericardial window with 800 cc of blood removed from the pericardium as well as 900 cc of blood from right hemothorax.

Discussion and Conclusion: The classically taught but uncommon Beck's Triad often been utilized for the diagnosis of pericardial effusions but is neither sensitive nor specific. POCUS in the ED aids significantly in the timely diagnosis of tamponade and decreases the time to pericardiocentesis.¹ Echocardiographic criteria for tamponade includes a non-collapsible IVC, systolic right atrial collapse (both sensitive up to 97-100%) diastolic right ventricular collapse (75-90% specific), all of which can aid in diagnosis in the setting of a moderate or large PCE; not all components are required.² Roughly 21% of tamponade cases are iatrogenic, with both cardiac procedures (catheter ablation, pacemaker implantation, etc.) and herniorrhaphy cited as causes. The same study found patients on anticoagulants are also more susceptible to developing tamponade.³ While our patient was not yet in definitive tamponade based on the POCUS exam, knowledge of the risk factors and the diagnostic criteria on POCUS led to rapid definitive treatment and an optimal outcome.

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Emerald Coast 2023 Poster Presentation

Abstract 23-08

Title: Prehospital care received and illnesses of emergency patients at Queen Elizabeth Central Hospital in Blantyre, Malawi: A longitudinal survey analysis

Presenting Author: Petrus Malherbe, PGY1, Ochsner Hospital Foundation

Additional Author(s): Petrus Malherbe (1), Mulinda Nyirenda (2)

1: Department of Emergency Medicine, Ochsner Hospital Foundation, New Orleans, LA, USA;

2: Emergency Medicine Unit, Kamuzu University of Health Science, Adult Emergency and Trauma Centre, Queen Elizabeth Central Hospital, Ministry of Health

Introduction/Background: Malawi experiences a broad burden of communicable and ever-increasing noncommunicable diseases requiring a robust system of prehospital care to provide transport and life-saving interventions for illnesses and injuries [1, 2]. Malawi, however, has no country-wide EMS response, and prehospital care is majorly provided by laypersons, with the transport of patients typically provided by private car or taxi [1,2]. Additionally, sparse literature exists on prehospital care in Malawi.

Methods: This study utilizes a longitudinal survey to analyse prehospital assistance provided to patients with illnesses brought to Queen Elizabeth Central Hospital Adult Emergency and Trauma Centre in Blantyre Malawi. A questionnaire was designed by the research team in both English and Chichewa, which collected demographics of participants, prior first aid training, prior experience in providing first aid, illnesses of patients, type of emergency encountered, public knowledge, perceptions, and beliefs of participants. All people who brought patients to the Adult Emergency and Trauma Centre from February to November 2015 were recruited. Data were analysed using simple descriptive statistics

Results: A total of 336 participants were included. Large variance in characteristics of laypersons providing prehospital assistance was found. Less than 1% of people providing prehospital assistance were health care workers and 14% of prehospital assistance provided was by persons with prior first aid training. A wide variety of complaints were reported including high incidence of pain, (e.g., chest, abdominal), difficulty breathing, and gastrointestinal diseases. The majority of transportation was by private car or public transport and only 16% of patients were transported via ambulance. Additionally, only 16% of patients received care during transport.

Discussion and Conclusion: Given the wide variety of illnesses requiring prehospital assistance in Malawi, a robust system of emergency medical services is required. Given the lack of formal EMS services, patients are left to receive prehospital care from laypersons, who often have no emergency care training. It is crucial that attempts be made to improve prehospital care in Malawi through basic emergency care training for the public and the establishment of formal prehospital services, including ambulance and paramedic capacity.

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Emerald Coast 2023 Poster Presentation

Abstract 23-09

Title: Killer Constipation

Presenting Author: Carly McRae, PGY2, University of South Alabama

Additional Author(s): Michael Sternberg, MD, FACEP, FAAEM

Introduction/Background: 31 y/o black male with past medical history of sickle cell beta thalassemia, CKD, chronic opiate use presenting for evaluation of moderate achy suprapubic abdominal pain associated with severe diarrhea and stool incontinence for 1 day. Patient also describes urinary frequency and urgency, but is only able to pass small amounts of dark brown urine. Denies previous similar episodes, new medications, sick contacts, trauma

Description: In the ED, patient started on oral Vancomycin due to concern for C.diff/toxic megacolon. General surgery (GS) and Colorectal surgery (CRS) consulted, who recommended admission to their service. Patient became increasingly tachycardic over the first 2 days of admission despite aggressive fluid resuscitation. On Hospital day 3, patient taken to the OR for flexible sigmoidoscopy and fecal disimpaction. Patient became hypotensive in the OR and experienced PEA/arrest x2 with ROSC achieved 5 rounds of compressions. Patient admitted to STICU in critical condition, requiring vasopressors. Cardiology consulted. Patient taken back to OR for Ex-lap. Severe bowel ischemia appreciated prompting total abdominal colectomy. Large liver laceration with active bleeding also discovered, likely secondary to chest compressions. Packing placed with hemostasis achieved. Due to patient instability temporary abdominal dressing was placed. Subsequently, patient required hemodialysis due to refractory hyperkalemia. Postoperatively, patient was transferred back to the surgical ICU for continued resuscitation and management. Patient continued to require use of pressers for hemodynamic support. On hospital day 5, abdomen was washed out and packing removed with creation of an end ileostomy and closure of abdomen. Patient status improved, vasopressors weaned and patient extubated. Patient noted to have fever, increasing tachycardia, and abdominal distension on hospital day 17. CT abdomen showed free intra-abdominal air. Patient taken back to OR for emergent ex-lap with washout, suture repair of rectal stump & incisional wound-vac placement. In OR, patient experienced PEA in the setting of aspiration during RSI. ACLS was performed x 2 before ROSC achieved. Patient developed post-operative fever. He was found to have multiple intra-abdominal abscesses which required drainage by IR, as well as escalation of antibiotics. Following drainage, patient continued to improve, fevers resolved, diet was advanced, and ultimately patient was able to be discharged to rehab facility on hospital day 39.

Discussion and Conclusion: Fecal impaction occurs when hardened fecal matter retained in the large bowel cannot be evacuated by regular peristaltic activity. Fecal impaction commonly occurs among the elderly and those under institutional care. Contact between hardened feces and the colonic mucosa leads to an increase in mucus secretion. Fecal impaction also causes an increase in intraluminal pressure in the colon which can lead to decreased perfusion of the colonic wall and mucosa. The resulting localized inflammation can give rise to colitis, ulcerations, and possible perforation. The impacted fecal mass may cause compression of adjacent structures such as urinary bladder, causing urinary retention and kidney

damage. Patients will often present with complaints of constipation and inability to spontaneously pass stool.

Occasionally patients will present with overflow diarrhea. Physical exam is often significant for abdominal distension, palpable fecal masses along the colon, or hard stool ball on DRE. Diagnosis is typically clinical, however sometimes imaging may be necessary. KUB will sometimes show increased colonic stool burden with colonic dilation; but the most useful imaging modality is a CT abdomen with oral or rectal contrast. In cases where hard stool can be palpated in the rectum, manual dis-impaction is an effective treatment strategy. Rectal administration of stool softening agents, usually enemas or suppositories are also reasonable treatment strategies. Early surgical evaluation and intervention are necessary if there are associated signs of peritonitis. Stercoral perforation is associated with a high mortality in the elderly if not recognized and treated early.

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Emerald Coast 2023 Poster Presentation

Abstract 23-10

Title: aVR, The Forgotten Lead

Presenting Author: Devon Wade, PGY-1, University of Alabama Birmingham Medical Center

Additional Author(s): Dr. Kevin S. Barlotta MD

Introduction/Background: Lead aVR records electrical activity from the right upper portion of the heart including the Right Ventricular Outflow Tract (RVOT) and the basal interventricular septum but is electrically opposite of leads I, 2, aVL in the precordial leads. Often, ST elevation in aVR is due to subendocardial ischemia inferiolaterally and is simply a reciprocal change.

However, ST elevation in aVR greater than 0.5 mm with diffuse ST depression in the inferior, lateral, and precordial leads can indicate (Left Main Coronary Artery) LMCA occlusion or severe three-vessel disease. (Kosuge et al. 2011)

ST elevation in aVR with coexistent multi-lead ST depression can indicate subendocardial ischemia due to O₂ supply/demand mismatch. This can be seen clinically due to severe three-vessel disease, proximal (Left Anterior Descending Artery) LAD lesions, or left main disease. Rarely, this can also be seen in the context of occlusion of the first septal branch of LAD causing infarction of the basal septum. (Kosuge et al. 2011)

Description: 51-year-old male presenting with chest pain rating to the left shoulder and associated lightheadedness, who presented after a syncopal episode while at work.

On initial evaluation, the patient was hemodynamically stable and exam was notable for small abrasion to the right forehead and warm, perfused extremities.

The patient had no known cardiac history, but a positive family history of coronary artery disease and was a longtime smoker.

Initial troponin was 115 ng/L. Repeat troponin was greater than 229,730 ng/L. EKG showed ST depression in leads I, 2, 3, aVF, in the precordial leads with ST elevation in aVR and aVL.

Cardiology was emergently consulted. The patient was taken for catheterization which showed 100% occlusion of the LMCA. The patient underwent percutaneous coronary intervention to the LMCA. An Impella CP device was placed for circulatory support.

The patient's echocardiogram after the procedure showed left ventricular ejection fraction of < 20%.

The patient later required extracorporeal membrane oxygenation (ECMO) and had a ventricular assistive device implanted. He was discharged from the hospital nearly 2 months later.

Discussion and Conclusion: Here, we present a less common presentation of ACS with severe left main disease. This patient presented with an appropriate story for ACS, however had an atypical EKG for STEMI.

In the emergency department lead aVR, often be overlooked or hastily examined, however in this case we reemphasize the importance of thorough review of the ECG and early consultation with our cardiology colleagues where suspicion for ACS is high. ST elevation in diffuse ST depression in other leads can be indicative of critical LMCA stenosis or severe three-vessel disease, and in this patient, was evidence of critical LMCA disease.

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Emerald Coast 2023 Poster Presentation

Abstract 23-11

Title: Prehospital Use of Blood Products in Trauma Patients

Presenting Author: Blake Davidson, PGY-4, University of Alabama - Birmingham

Additional Author(s): Will Ferguson, M.D., UAB

Introduction/Background: The use of blood products in trauma patients in the prehospital setting has been heavily researched within the field of military medicine with an associated benefit; however, its use and expansion into the civilian world has lagged significantly. There are many factors that play into this delay in implementation from the feasibility of administration, training of providers, differences in patient populations, lack of randomized controlled trials, along with many others. This case study looks at a traumatic civilian case from which blood product administration could have benefited overall outcome.

Description: Summary of the case is a young patient involved in an MVC with obvious significant blunt trauma. Patient was hypotensive upon initial arrival and had an elevated shock index. Patient continued to be hypotensive after administration of crystalloid which persisted until they arrived to the University trauma center. Patient then went on to receive blood at the hospital.

Discussion and Conclusion: The use of blood products in the prehospital setting has been proven to have a mortality benefit in military data time and time again. Its implementation into civilian EMS care has been severely limited due to lack of controlled trials along with feasibility of use. There are many considerations that needed to be taken into account when implementing protocols relating to blood products such as administration in women of child bearing age and children along with who would carry the products in the field. The economic impact along with the waste of products should also be considered. Overall, it is our opinion that more agencies, especially those with higher volume of trauma, should move to carry blood products on their vehicles.

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Emerald Coast 2023 Poster Presentation

Abstract 23-12

Title: Spotty Skin, Spotty Spleen, What Does It All Mean?

Presenting Author: Christina Mattingly, PGY3, University of South Alabama Emergency Medicine Residency Program

Additional Author(s): Andrew Washington, MS3, Jelani Bender, MS3, USA College of Medicine

Introduction/Background: Sarcoidosis is a systemic granulomatous disease of unknown etiology characterized by the presence of noncaseating granulomas. Patients will often present with nonspecific systems such as fatigue, weight loss, lymphadenopathy, dyspnea, or dry cough, but up to 50% of patients may be asymptomatic [1]. Though the lungs are most commonly affected, virtually any organ can be involved [2]. Here, we present a case of a patient diagnosed with sarcoidosis from the emergency department using a multimodal approach.

Description: A 32-year-old African American male with no past medical history presents to the emergency department complaining of abdominal pain and bloody stools. He reports intermittent upper abdominal pain as well as bright red blood with nearly every bowel movement for the past 6 months. The pain occurs after he eats, immediately after he defecates, and lasts for approximately 1 hour. Additionally, he reports skin lesions have appeared all over his body over the last 6 months. The lesions started on his bilateral legs and have spread to his torso and arms. He also reports a nonproductive cough, exertional shortness of breath, increased fatigue, and unintentional weight loss (unknown amount) over the last 6 months. He denies any associated fevers, chills, chest pain, nausea/vomiting, diarrhea, or other symptoms.

Physical exam was notable for diffuse, scattered, raised irregularly-shaped erythematous papules on the back, bilateral arms, abdomen, chest, and bilateral lower extremities.

The patient underwent CT of the abdomen and pelvis with IV contrast, which incidentally showed splenomegaly with diffuse hypodense lesions throughout the spleen. Findings were concerning for bacterial/fungal infection and/or granulomatous disease.

Chest X-ray was also performed, which showed bilateral interstitial opacities concerning for pulmonary fibrosis.

A skin biopsy was performed in the ED and samples were sent to pathology for staining. Histology revealed “naked granulomas with minimal lymphocytic infiltrates in the dermis. Findings raise a differential diagnosis of sarcoidosis, mycobacterial infection, and less likely foreign body reaction.”

Further diagnostic workup included an antinuclear antibody (ANA), which was positive, and an angiotensin converting enzyme (ACE) level, which was elevated. Together, these findings pointed towards sarcoidosis as the most likely diagnosis. The patient was later called by the emergency physician with his results and outpatient pulmonology follow-up was arranged. He plans to undergo bronchoscopy.

Discussion and Conclusion: Sarcoidosis is a systemic granulomatous disease of unknown etiology characterized by the presence of noncaseating granulomas. Patients will often present with nonspecific

systems such as fatigue, weight loss, lymphadenopathy, dyspnea, or dry cough, but up to 50% of patients may be asymptomatic [1]. Though the lungs are most commonly affected, virtually any organ can be involved [2].

Splenic involvement has been reported in about 40% of cases of multisystem sarcoidosis. Isolated splenic involvement is extremely rare and usually asymptomatic [3]. Diagnosis of splenic sarcoidosis is clinically challenging due to the extensive differential diagnosis. CT of the abdomen and pelvis may show splenomegaly with numerous hypodense splenic nodules, as was the case in this patient. The CT findings can mimic tuberculosis, atypical mycobacterial disease, hemangiomas, histoplasmosis, *Pneumocystis carinii*, disseminated fungal infections, toxoplasmosis, coccidioidomycosis, bartonellosis, leishmaniasis, neoplastic disease (eg. metastasis, lymphoma), microabscesses, systemic vasculitis, and splenic infarcts [2]. A percutaneous or ultrasound-guided endoscopic splenic biopsy can aid in the diagnosis. Histology will show noncaseating granulomas, a nonspecific finding that can be seen in numerous infectious disorders, environmental exposures (eg. beryllium, zirconium, aluminum), certain autoimmune conditions (eg. granulomatosis with polyangiitis), and neoplasia [2].

Diagnosis of sarcoidosis requires a multimodal approach that takes into consideration the history, exam, imaging, laboratory, and histologic findings. This patient presented with fatigue, weight loss, abdominal pain, cough, and exertional dyspnea, all symptoms of sarcoidosis. His chest X-ray showed evidence of pulmonary fibrosis, often seen in sarcoidosis. Classically, hilar lymphadenopathy may also be visualized on chest X-ray [1]. His CT, as mentioned, showed massive splenomegaly with innumerable hypodense splenic nodules. Skin biopsy further aided in the diagnosis by showing “naked” or noncaseating granulomas. The granulomas are formed by clumps of immune cells believed to have originally gathered to fight off an acute pathologic irritant but that subsequently remained in the tissues for unknown reasons. The granuloma is composed of an inner layer of epithelioid cells derived from activated macrophages and a thinner, outer layer of T-cells [4]. The epithelioid cells produce angiotensin-converting enzyme (ACE), a known marker of sarcoidosis [5]. This patient’s ACE level was elevated, further supporting a diagnosis of sarcoidosis.

Clinical pearls:

1. Diagnosis of sarcoidosis is clinically challenging and requires a multimodal approach that combines history, physical exam, imaging, histologic, and laboratory findings.
2. Splenic involvement is found in approximately 40% of cases of multisystem sarcoidosis and can manifest with splenomegaly, abdominal pain, and CT findings of numerous hypodense splenic nodules.
3. The differential diagnosis for CT findings of diffuse hypodense splenic lesions is broad and includes tuberculosis, atypical mycobacterial disease, disseminated fungal infections, toxoplasmosis, coccidioidomycosis, bartonellosis, leishmaniasis, and malignancy.

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Emerald Coast 2023 Poster Presentation

Abstract 23-13

Title: Routine Angina or OMI: Improvements in EKG Algorithms

Presenting Author: Jonathan Lee, MS-3, University of South Alabama College of Medicine

Additional Author(s): Michael Sternberg, MD, FACEP, FAAEM

Description: A 59-year-old Caucasian female with a past medical history of hypertension, hyperlipidemia, tobacco abuse, coronary artery disease, and congestive heart failure arrived by ambulance with a 30-minute complaint of an acute onset, retrosternal, "chest pressure" that radiated to the right arm. She also reported nausea, sweating, and shortness of breath.

She claimed several similar, yet less severe, episodes in the past and had no relief with aspirin 324mg and sublingual nitroglycerin 0.4mg x 3 taken prior to ambulance arrival. The patient reported 8/10 pain severity on arrival to the emergency department.

Home medications: ASA 81mg daily, citalopram 40mg daily, cyclobenzaprine 5mg TID, lisinopril 20mg daily, furosemide 80mg daily, metoprolol tartrate 25mg BID, atorvastatin 80mg daily, and Nitrostat 0.4mg PRN.

Patient has no known drug allergies.

Past surgical history was unremarkable.

T: 36.7 °C (Oral) HR: 58, RR: 18, BP: 163/84, SpO2: 98% RA , WT: 92 kg

General: Alert, oriented, anxious, ill-appearing.

Head and Neck: Normocephalic, atraumatic, PERRLA, EOMI, Neck is supple, non-tender, no carotid bruits, no JVD.

Lungs: Mild tachypnea, bilateral breath sounds, clear to auscultation.

Heart: Bradycardia, regular rhythm, no murmurs, rubs, gallops.

Abdomen: Non distended, bowel sounds +, soft, non-tender.

Extremities: No edema, pulses 2+ bilaterally, no cyanosis or clubbing

CMP WNL

CBC WBC 11,8, Hemoglobin 11.5, Hematocrit 34.7, PLT 271.

PT 12.7 INR 0.93 aPTT 26

Troponin I Initial 326

Troponin I Repeat 2h later 41,428

Pro BNP 1422

D-Dimer 0.60

Left heart catheterization results are below:

Angiographic findings: Left dominant coronary circulation.

#1 Left Main: Left main is angiographically normal.

#2 LAD: Proximal LAD has 40% diffuse disease. Mid LAD has 50% disease. Distal LAD has 30 to 40% disease.

#3 Circumflex: Proximal left circumflex has 30 to 40% disease. Distal circumflex has mild diffuse disease. OMI has mild diffuse disease.

#4 Ramus Intermedius: There is 100% thrombotic occlusion of the ramus in the proximal segment (culprit lesion).

Right coronary artery: RCA is a small nondominant vessel and has 60 to 70% disease in the midsegment.

Hemostasis: patent hemostasis was obtained with TR band.

Post-procedure diagnosis/conclusion:

#1 Atherosclerotic coronary artery disease as described above.

#2 100% occlusion of the ramus intermedius (culprit vessel).

#3 No aortic stenosis.

#4 Elevated LVEDP.

Patient underwent stent placement to the ramus intermedius, was placed on dual antiplatelet therapy, and had an uneventful hospital course.

A presenting LBBB in the context of acute MI suggests a large infarction; however, in practice, many patients present to the ED with a chronic LBBB as seen in our patient. According to National Registry of Myocardial Infarction data, reperfusion of myocardial infarctions in the setting of LBBB are often missed or delayed due to missed identification. For patients with either LBBB or an RV-paced rhythm, suspicion of MI may be assessed using the Smith-modified Sgarbossa criteria; however, in the context of extreme tachycardia, pulmonary edema, severe hypertension, or hyperkalemia, treat them then repeat the EKG.

The original Sgarbossa criteria, as shown below, is specific with a specificity of >98% for >3 points, sensitivity is notoriously poor at 20-36%.

Sgarbossa et al proposed requiring at least 3 points from the following criteria for the diagnosis of acute myocardial infarction in the presence of left bundle branch block:

- 1) Concordant ST elevation of at least 1mm in any lead (5 points)**
- 2) Concordant ST depression of at least 1mm in V1-V3 (3 points)**
- 3) Excessive discordant ST elevation or depression in any lead that is >5mm and also >25% of the depth of the preceding R-wave or S-wave, respectively. (2 points)**

In order to address the sensitivity of the Sgarbossa criteria, many revisions have been made, one of which involves the ratio of ST elevation to S wave ratio by Smith et al resulting in the Smith-modified Sgarbossa criteria. The Smith-modified Sgarbossa criteria is an unweighted criteria that retains the first two criteria but adjusts the third criteria of excessive discordance. Smith et al identified that in any lead, a ratio of the ST elevation to the preceding S wave less than or equal to -0.25 provided significantly greater diagnostic utility than ST elevation discordance alone.

A study by Meyers et al displayed that the Smith-modified Sgarbossa criteria offers a sensitivity of 80% and specificity of 99% whereas a meta-analysis by Tabas et al showed that the original weighted Sgarbossa criteria had a sensitivity of 20%.

Smith-modified Sgarbossa Criteria:

1) ≥ 1 lead with a positive QRS complex that has concordant ST elevation of ≥ 1 mm

2) ≥ 1 lead from V1-V3 that has ≥ 1 mm of concordant ST depression

3) ≥ 1 lead with ≥ 1 mm ST elevation and proportionally excessive discordant ST elevation, as defined by STE $\geq 25\%$ of the depth of the preceding S-wave (an ST / S ratio of $\leq - 0.25$)

A multicenter retrospective cohort study including consecutive patients with suspected AMI and left bundle branch block, referred for primary percutaneous coronary intervention between 2009 and 2018 totaling 484 patients were reviewed with a new BARCELONA criteria to increase the sensitivity and specificity of algorithms to detect an acute myocardial infarction in the presence of a left bundle branch block. The study by Di Marco et al published in 2020 established the BARCELONA criteria with a sensitivity and specificity of 93%-95% and 89-94% respectively.

The BARCELONA criteria from Di Marco et al and is as follows:

The BARCELONA algorithm is positive if any of the following criteria are present:

ST deviation ≥ 1 mm (0.1 mV) concordant with QRS polarity in any ECG lead, thus including either:

ST depression ≥ 1 mm (0.1 mV) concordant with QRS polarity, in any ECG lead.

ST elevation ≥ 1 mm (0.1 mV) concordant with QRS polarity, in any ECG lead (Sgarbossa score 5).

ST deviation ≥ 1 mm (0.1 mV) discordant with QRS polarity, in any lead with max (R|S) voltage ≤ 6 mm (0.6 mV).

Further validation with larger sample sizes are needed to thoroughly validate the BARCELONA Criteria, but it shows that further work in EKG algorithms can become as sensitive and specific for detecting myocardial infarction in the presence of an LBBB as in patients without an LBBB.

As seen with our patient with an abnormal ramus intermedius, the Smith-modified Sgarbossa criteria resulted in differentiating between her pre-existing LBBB and new occluded myocardial infarction.

Timely and accurate identification of acute coronary occlusion in the setting of ischemic symptoms is critical to initiating urgent angiography and appropriate reperfusion therapy. Although the increase or decrease of cardiac biomarker levels is essential to the diagnosis of acute myocardial infarction, positive biomarker results alone do not differentiate ST-elevation myocardial infarction (STEMI) from non-STEMI. ST elevation on the EKG is the primary indication for emergency reperfusion therapy; however, identification of STEMI in the setting of left bundle branch block has improved with the Smith-modified Sgarbossa criteria. In addition, moving from STEMI/NSTEMI nomenclature and towards occlusive myocardial infarction (OMI) and non-occlusive myocardial infarction (NOMI) aids in reducing false positives in analysis.

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Emerald Coast 2023 Poster Presentation

Abstract 23-14

Title: Wunderlich Syndrome

Presenting Author: Noelle Ahmed, PGY2, University of South Alabama College of Medicine

Additional Author(s): Michael Sternberg, MD University of South Alabama College of Medicine

Introduction/Background: Wunderlich syndrome is a rare phenomenon of spontaneous renal subcapsular or perinephric hemorrhage. Diagnosis requires exclusion of trauma and classically will present with Lenk's triad of sudden onset flank pain, flank mass, and hypovolemic shock. Etiologies are varied and include neoplasms, vascular disease, infection, and hematological disorders.

Description: 58-year-old African American male with PMH significant for HTN, ESRF on HD, HIV on HAART, presented to the ED with a new onset left sided flank pain that began 36 hours prior. The patient denied any preceding trauma or injury. On physical exam, the patient had left CVA tenderness. Vitals were remarkable for tachycardia and hypotension. The patient's pain was refractory to multiple doses of parenteral narcotics. CT imaging was remarkable for an enlarging left-sided retroperitoneal bleed surrounding a polycystic kidney with multiple sites of contrast extravasation. Interventional radiology consultation with subsequent intravascular embolization of two left renal arteries was performed. The patient was admitted to the ICU. During the patient's hospital stay, he was noted to have a critically high potassium level necessitating hemodialysis as well as continued anemia requiring blood transfusion. Repeat CTA abdomen pelvis was obtained and ruled out active bleeding. Patient remained hemodynamically stable and was discharged on hospital day 4 with close follow up.

Discussion and Conclusion: Wunderlich syndrome is an uncommon entity with a variety of different etiologies. The patient in this case had ESRD as well as cystic kidney disease. Diagnosis is made when there is noted spontaneous renal hemorrhage; the imaging modality of choice is computed tomography. Emergency department management includes volume resuscitation with intravenous fluids, blood products as needed, and treatment of infection if present.

Definitive management is based upon the etiology of the hemorrhage and includes arterial embolization as well as surgical intervention. Arterial embolization is minimally invasive and allows kidney preservation, and surgical intervention may be necessary when there is a neoplastic cause, for example. The patient in this case had an excellent prognosis after the appropriate intervention was made.

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Emerald Coast 2023 Poster Presentation

Abstract 23-15

Title: Gender Affirming Surgery Complication Care in the Emergency Room: A Cross-Sectional Survey of Emergency Physicians

Presenting Author: Cassidy Bowen, MS-2, University of Kansas School of Medicine

Additional Author(s):

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Adrienne Malik, MD, University of Kansas Medical Center

Introduction/Background: Transgender and gender diverse populations experience worse health outcomes. Lack of medical training, provider bias, discrimination, and abuse contribute to this health inequity. Surgical complications of gender affirming surgeries (GAS) are diverse and often urgent, with many patients presenting to an emergency department for care. While some tools exist to guide care for these unique patients, the extent of emergency physician (EP) knowledge and/or competency in GAS complication (GASC) care remains unknown. This research sought to better understand EPs knowledge of and confidence in GASC management.

Methods: We utilized an electronic, cross-sectional survey of EPs within 50 miles of the Kansas City metro area, as there is a large transgender population and a surgeon that performs GAS procedures in the region. Our survey included questions on management of common GASCs, provider confidence in their ability to treat these complications and data on any GASC education received by respondents. The survey instrument was piloted with 5 EPs and revised based on their feedback. Following the pilot, EPs in the Kansas City Metro area were approached for enrollment via peer-to-peer efforts. We received 57 completed responses of 600 contacts (10% response rate) during the survey period. Data were analyzed using SAS v9.4.

Results: Responses included 31 academic EPs, 13 community, 12 with both appointments and 5 unspecified. 43% of attendings and 32% of residents reported treating GASCs. Vaginoplasty complications were the most encountered (26%, n=15) and 64% of respondents disagreed that they were confident in its treatment. There was no significant difference in the number of GASC's encountered by EPs based on practice setting ($p=0.92$). No respondent reported being "very aware," of standards of care for any GASC. Attending EPs were the majority reporting, "not at all aware" (66% n=14). For most of the questions, there was no significant response difference based on practice type, years practicing, or training level. Most respondents (84%, n=47) agreed more GASC education would be beneficial.

Discussion and Conclusion: This study indicates that practice setting, years practiced, and training level alone do not adequately prepare EPs to confidently and competently care for transgender and gender diverse patients as it relates to GAS complications. This population disparity is consistent with other studies, such as a 2019 study by Moll et al, that reported 42.6% of survey respondents stated history and physical exams were more challenging for transgender patients. 1

This study is limited by small numbers and its focus on a mid-west metropolitan area. The high number of transgender and gender diverse patients receiving gender affirming surgeries in this area highlight the need for standard GASC training. The small and specific sample of this novel study adds to the literature a necessary and important perspective on transgender and gender diverse surgical populations. This study is subject to potential bias inherent to this type of research including response bias (social desirability, extreme response, question order, non-response bias).

To support standardization of GASC training, future studies are needed to characterize training protocols and their effectiveness.

Confidence in treating GAS complications was overall low and not influenced by EP years of experience. Our study highlights the need for EP specific training on managing GASCs as our data shows these patients are encountered in all practice settings by EPs at all levels of training.

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Emerald Coast 2023 Poster Presentation

Abstract 23-16

Title: Vertebral Artery Dissection Leading to Ischemic Stroke in a Pediatric Patient

Presenting Author: Peyton Bennett, PGY2, LSUHSC Pediatric Residency

Additional Author(s): Anna McFarlin - LSUHSC Pediatric/Emergency Medicine Residency Program Director

Introduction/Background: Diagnosis of vertebral artery dissection is often delayed or missed due to nonspecific symptoms at presentation. However, vertebral artery dissections are an important cause of acute ischemic stroke in pediatric populations making prompt diagnosis imperative.

Description: A 4-year-old male presented with altered mental status and emesis following a minor fall the previous evening. The patient's mother provided a video of the incident where he dove into the center of a couch with a slight axial load while playing with his father. He did not lose consciousness and only complained of mild neck pain. His mental status remained at baseline that night and the following morning. Around 1:30 PM on the following afternoon, the patient woke from his nap at school and started vomiting. He walked to the bathroom with a stumbling gait and bumped into walls along the way. His mother picked him up from school and noticed that he was unusually sleepy and unable to speak clearly. She took him to his pediatrician who sent them to the emergency department for further evaluation.

On initial examination, he was lethargic and unable to sit on the stretcher unassisted. Due to the extent of his altered mentation, he was unable to follow commands well enough to participate in a cerebellar exam. The differential diagnosis at this time included trauma, infection, ingestion, electrolyte derangement, and intussusception. Basic labs were obtained demonstrating a mild leukocytosis but were otherwise unremarkable. CT scans of the head and cervical spine were normal. Abdominal ultrasound was negative for intussusception. Following observation in the emergency department, he had persistently altered mentation. At this time, the differential diagnosis was revisited with a focus on the neck pain following his fall from the night prior. A CT angiogram revealed left vertebral artery dissection and suspicion of cerebellar infarct that was confirmed on MRI/MRA. Under guidance of the neurologist and neurointerventionalist, he was given aspirin, started on a heparin drip, and admitted to the PICU.

Discussion and Conclusion: This case highlights the importance of maintaining a broad differential diagnosis, including arteriopathy, in the setting of a seemingly innocuous injury with persistently altered mental status.

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Emerald Coast 2023 Poster Presentation

Abstract 23-17

Title: Toxicologic considerations to consider with Lithium ion battery combustion in a pediatric patient

Presenting Author: John Nguyen, PGY2, LSU Emergency Medicine Program

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Introduction/Background: Lithium ion batteries are present in everyday household objects. Lithium ion batteries are generally safe and help power hand held objects from small body cameras to cellular phones. Lithium ion batteries when damaged or exposed to temperature extremes may lead to fire and explosion. Besides the obvious thermal injuries, toxicologic exposures may occur that may be overlooked. Here, we describe the management of a potential toxic exposure of a pediatric patient to combustion due to a lithium ion battery from a mobile phone.

Description: 9 year old M w/ PMH of ADHD presents to the ED with complaints of sore throat. Patient is accompanied by his mother who is concerned that her son may have had a chemical burn. Patient reports cutting up a cell phone battery twenty-four hours earlier when it caught on fire. Patient reports breathing in a large puff of smoke. Today, he presents with non bilious, non bloody vomiting and a sore throat. Patient denies any voice changes, trouble breathing, drooling or burns to any region. Patient vitals are unremarkable and within normal range. Physical exam reveals erythematous uvula and posterior pharynx with a tender anterior neck. No acute evidence of thermal burns. Work up notable for: No major electrolyte abnormalities. EKG unremarkable. Imaging with mild soft tissue thickening of the epiglottis. Toxicology and poison control was consulted recommending admission to a pediatric facility for observation and possible nebulized calcium gluconate for possible hydrofluoric acid exposure.

Discussion and Conclusion: In short, this patient presented to the ED secondary to possible inhalation injury involving smoke/fire exposure from a cell phone battery. It is important to be aware that many portable devices contain a lithium ion battery. Acute health effects related to lithium can cause irritation to the nose and throat causing build up of fluids with acute shortness of breath. Furthermore, related hydrofluoric acid exposure is known to cause severe pain and electrolyte abnormalities. It is important to remember that toxic exposure may occur following Lithium ion battery exposure.

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Emerald Coast 2023 Poster Presentation

Abstract 23-18

Title: Pre-Hospital Use of POCUS – Practicality and Utility in HEMS

Presenting Author: Melissa Willett-Caldwell, PGY-4, University of Alabama Birmingham

Introduction/Background: The benefit of point-of-care ultrasound (POCUS) for both trauma and medical patients in the emergency department is well established. Ultrasound allows for rapid and accurate identification of many life-threatening conditions. It can assist with critical interventions as well as assess the success of interventions performed. Miniaturization and portability of US has made it more practical for pre-hospital use. A substantial amount of literature exists regarding the benefits of US in the pre-hospital setting, particularly the use of the eFAST in trauma patients, identification of pneumothorax, volume and cardiac assessments. However, significant limitations to its use in the field may include time constraints on scene and the need to perform other interventions, space constraints in the aircraft, comfortability and proficiency of the operator, and the ability to invest in training and a QI/QA process.

Description: 54yo male w/ CAD, previous CVA w/ mild L sided deficits, COPD and chronic hypoxic respiratory failure on home O2. His wife called altered mental status. Pt is confused but protecting his airway. He states he has had worsening SOB and chest pain over the last few days. Ground EMS reports tachycardia to 110, BP 1150/95. SPO2 was 80% on home 2L NC but improved to low 90s with 4L. Some increased WOB but speaking in full sentences. Unilateral weakness at his baseline. Initially felt to have bilateral lung sounds. However, the patient began to complain of worsening chest pain while loading onto the helicopter and required up titration of his O2 to 5L NC. Lungs sounds were difficult to appreciate and POCUS was utilized to identify a PTX. The patient was successfully needle decompressed just prior to transport resulting in improvement in his symptoms and hypoxia. During transport he again required needle decompression.

Discussion and Conclusion: Many studies have shown that with adequate training, continuing education, and quality improvement programs that EMS providers can accurately identify potentially life-threatening conditions which may require pre-hospital intervention or alter management and transport decisions. Examples may be proper identification of a pneumothorax or intraperitoneal bleed requiring blood transfusion or needle decompression. Identification of a thoracic aortic aneurysm that may be mimicking a CVA that will now be properly routed to a hospital with cardiothoracic surgery instead of a smaller hospital with tPA capabilities. Some agencies have the ability to upload their US images to the receiving hospital for review by physicians which may result in more timely decisions in preparing an OR or making appropriate consulting services aware of the incoming patient. However, EMS providers are often burdened with an overabundance of tasks to perform that must not delay transport time. Transporting helicopters may be limited on space and every ounce of weight carried is important. Also, it is a significant investment in time and money to adequately train providers to be confident and proficient in the use of US. A robust QI/QA process is needed. Despite this, the literature, as well as many case studies, suggest that use of US in HEMS is practical and beneficial. With a reasonable amount of training and ongoing education, combined with the appropriate selection of patients that may benefit, US can

facilitate identification of potentially life-threatening conditions requiring immediate intervention or changes in management and transport destination.

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Emerald Coast 2023 Poster Presentation

Abstract 23-19

Title: Gone, or Just Forgotten? Pneumococcal Meningitis Remains Formidable Foe

Presenting Author: Margaret Baldwin, MS-3, UAB Heersink School of Medicine

Additional Author(s): Kathy Monroe, MD; Children's of Alabama, UAB Heersink School of Medicine

Introduction/Background: Since the introduction of the 13-valent pneumococcal conjugate vaccine, meningitis due to *Streptococcus pneumoniae* has decreased significantly. However, the high morbidity and mortality surrounding its diagnosis requires a high index of suspicion. We present a case of meningitis secondary to *S. pneumoniae*.

Description: An 11-year-old girl initially presented to her primary care physician for right otalgia. The subsequent diagnosis of otitis media resulted in amoxicillin and IM steroid treatment. The following evening, the patient was found unconscious at home by her mother. She was taken to an outside hospital, where she presented with otalgia, neck pain, fever to 103.5 F, and altered mental status. Labs were notable for a leukocytosis to 43,000. Head CT without contrast demonstrated bilateral mastoiditis and sinusitis. She received a dose of IV clindamycin before transfer to a tertiary care center.

Upon arrival, she had mild clinical improvement with subsequent CSF analysis revealing low glucose (21 mmol/L), elevated protein, pleocytosis (2025 WBC, 91% polymorphonuclear cells), and 105 RBCs. Gram stain showed rare gram-positive cocci, and rapid BioFire testing was positive for *Streptococcus pneumoniae*.

She was started on ceftriaxone and vancomycin pending cultures. On day 3, Pressure Equalizer tubes were placed, ciprofloxacin drops were initiated, and antibiotics for meningitis were narrowed to IV penicillin G. On day 14, she returned to baseline mental status, had resolution of fever and neck pain, and normalization of labs. Audiology testing showed bilateral sensorineural hearing loss. Patient was discharged in good condition upon completion of IV penicillin G course.

Discussion and Conclusion: *Streptococcus pneumoniae* is the most common cause of bacterial meningitis in the pediatric population. Pediatric case studies have shown a lower mortality rate than adults, but there is still a high risk of neurologic sequelae (52%) and hearing loss (30%) in survivors. Dexamethasone administration just before or with the initial antibiotics dose has been shown to prevent this potential hearing impairment. Early recognition, and prompt delivery of steroids and antibiotics, are essential to the treatment of pneumococcal meningitis.

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Emerald Coast 2023 Poster Presentation

Abstract 23-20

Title: Needle Cricothyrotomy for Pediatric Emergency Airway Management – Fact or Fiction?

Presenting Author: Rajesh Pareta, MS-3, University of Kansas School of Medicine

Additional Author(s): Matthew Johnson, Jeff Higdon, Elspeth Pearce, Andrew Pirotte

Introduction/Background: Failed endotracheal intubation in the pediatric patient population prompting surgical airway management is challenging. The procedures available to manage such life-threatening clinical scenario are needle cricothyrotomy or surgical tracheostomy or slash. However, lack of adequate training, instructions, and opportunities for needle cricothyrotomy in emergency medicine are rare.

Methods: The cricothyroid membrane in pediatric patients less than eight years old is not fully developed, small, and difficult to access with a scalpel. The standard recommendation is a needle cricothyrotomy, followed by oxygenation and ventilation via bag-valve mask (BVM) or jet ventilation. These concerns reasonably call into question the practicality of continuing to use needle cricothyrotomy as the primary surgical airway option.

Results: There are alternative surgical options such as a “slash” tracheotomy which may be easier for providers to perform, however, this alternative procedure comes with its own set of acute and delayed complications.

Discussion and Conclusion: We aim to evaluate the utility of continued focus and instruction for needle cricothyrotomy as the primary option for surgical airway in pediatric patients with failed airways, to examine alternative surgical options, and to explore optimal training and maintenance of the competency.