Dear Readers,

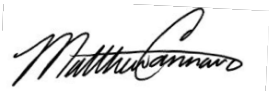
Welcome to the third volume of the Florida Medical Student Research Journal. Research presented in this publication highlights the remarkable scholarly work conducted by our peers. From “Risk factors and predictors for non-supine infant sleep position: A narrative review of the literature” to “Efficacy of social skills training in treating negative symptoms of schizophrenia,” the research in this issue pertains to various different aspects of medicine. This issue also highlights the diverse range of pathologies seen in our clinical sites throughout Miami in interesting case reports, including “A rare finding: The case of an esophageal Dieulafoy” and “Acute appendicitis within an incarcerated femoral hernia: A case report.”

As medicine continues to shift to an evidence-based model, there is even more emphasis on the production and distribution of quality research to contribute to the pool of evidence from which recommendations are made. As future physician scientists that will soon be responsible for expanding our current knowledge base, it is imperative for medical students to be actively involved in research throughout their training. We hope that this journal will act as a platform not only to share the work of our peers, but also encourage further scholarly work. Since the release of our inaugural volume two years ago, and our first volume with full-length manuscripts last year, we continue to be impressed by the quality and diversity of submissions, and believe we have made strides to fulfill this mission.

This volume came to fruition with the unconditional support of the Herbert Wertheim College of Medicine faculty. We are sincerely grateful to our advisory board: John A. Rock, MD, MSPH, Carolyn D. Runowicz, MD, Sheldon H. Cherry, MD, FACS, Karin C. Esposito, MD, PhD, Juan M. Acuña, MD, MSc, Juan M. Lozano, MD, MSc, and Marin Gillis, PhD.

Finally, we would like to thank the co-founders of the journal, Emily Andersen and Roy Lipworth, for their unwavering support and guidance. We would also like to thank our Senior Editors Leah Cohen, Jonathan Dahan, Aaron Malles, and Anusha Reddy for their continued dedication to the journal, and our Junior Editors Amaara Babwah, Nicole Birrer, Michael Delgado, Emily Geisler, Komal Kinger, Nicole Millan, Wilson Mourad, Sydney Resnik, and Jared Weingart for their hard work making the journal what it is today. We look forward to seeing the journal continue to grow under their leadership.

Editors in Chief



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Craniopharyngioma presenting as monocular visual field defect

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Abstract

Craniopharyngioma is a rare, benign brain tumor with an insidious growth. Due to its suprasellar location, it commonly interferes with the endocrine functions of the anterior and posterior pituitary. For this reason, its initial presentation is often a consequence of dysregulated hormone production or release. It also exerts pressure on the optic chiasm and commonly produces a classic visual field defect that follows these systemic symptoms, which may include pituitary dysfunction, adrenal insufficiency, or diabetes insipidus. Here we present a case where the initial manifestation of an otherwise asymptomatic craniopharyngioma was a monocular visual field defect, and was identified in an outpatient ophthalmology office.

Background

A routine, comprehensive ophthalmic exam consists of visual acuity, an external exam, a slit lamp exam, and concludes with an assessment of the fundus. Visual acuity is recorded for near and distance vision, with and without correction, if a patient has glasses. If the patient is unable to see any item on the chart, the ability to count fingers or detect hand motion are used instead. The external exam includes comparing the pupils' size and reactivity to light and accomodation, confrontational visual fields, motility, eyelids and surrounding adnexa. This is followed by a magnified slit lamp examination of the ocular surface and anterior segment, which includes the lens and the structures of the anterior chamber. The exam is concluded with indirect ophthalmoscopy of the fundus, visualizing the condition of the vitreous, optic nerve, cup-disk ratio, macula, retinal vessels, and the retinal periphery. If indicated, additional focused testing may be performed. In the following case, microperimetry was used to spatially quantify retinal sensitivity in order to assess visual field.

Understanding visual field changes is facilitated by familiarity with neuroanatomy. Fibers from the retina exit as the optic nerve, the second cranial nerve. The nerves corresponding to the nasal retina, receiving light from the temporal visual field, cross at the optic chiasm, while the fibers coming from the temporal retina continue uncrossed. After the chiasm they rejoin as the optic tract. They synapse at the lateral geniculate nuclei of the thalamus and send optic radiations to the visual cortex in the occipital lobe. Interruptions anywhere along the visual pathway can cause specific vision changes. For example, interfering with the Meyer's loop, the lower optic radiation passing through the temporal lobe, would result in a characteristic contralateral superior quadrantanopia. A stroke of the posterior cerebral artery would lead to a contralateral hemianopsia with macular sparing due to the collateral vascular supply by the middle cerebral artery. These are two of many hallmark visual field defects associated with identifiable insults.

Case Report

A 62-year old man presented with a 5-week history of intermittent blurry vision from his left eye, which he believed worsened while driving. He is presbyopic in both eyes, corrected by reading glasses. His past medical history was noncontributory, and his review of systems was negative besides his chief complaint. Visual acuity testing recorded 20/20 distance vision without glasses, and J1 near vision with correction. External ocular exam of pupils, confrontational visual fields, motility, adnexa, and eyelids were within normal limits. Slit exam was normal with the exception of inadequate tear films bilaterally. The remainder of his ophthalmic exam, including dilated fundus exam, was entirely normal. He was initially diagnosed with dry eye syndrome and was recommended artificial tears and routine follow up as needed.

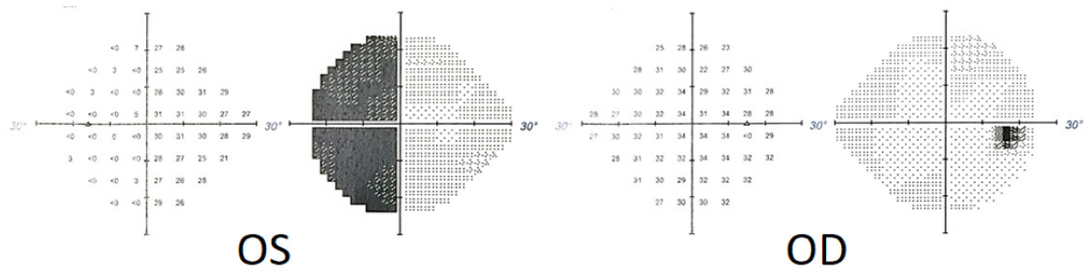

Figure 1. Results from Humphrey visual field analysis of the Central 24-2 Threshold Test, illustrating significant temporal vision loss in the left eye (OS).

Three months later, he returned urgently complaining of persistent loss of vision in the temporal field of his left eye. Upon intake, a significant drop in visual acuity to 20/100 was noted in the left eye, not improved with pinhole. The right eye was unchanged. Normal intraocular pressure in both eyes ruled out angle closure glaucoma. External exam found an afferent pupillary defect in the left eye, and confrontational visual fields were consistent with the patient's report of abnormal temporal vision in the left eye. The Humphrey perimeter registered a left temporal deficit respecting the vertical midline, corroborating his complaint (Figure 1). The remainder of the ophthalmic exam was unchanged. As his symptomology was highly suspicious of an intracranial process, he was urgently referred to the Bascom Palmer Eye Institute for neurophthalmology consultation.

At the University of Miami, magnetic resonance imaging found a partially-enhancing suprasellar lesion without significant expansion of the sella, extending superiorly eccentric to the left (Figure 2). Upon interview, the patient denied the classic symptoms of a space-occupying lesion in this area, including headache, nipple discharge, thinning of the skin, easy bruising, heat or cold intolerance, change in hand or shoe size, change in libido, or other evidence of pituitary dysfunction. He was referred to the department of neurosurgery for evaluation and treatment, with a preoperative diagnosis of craniopharyngioma.

The neurosurgical team performed a right frontal craniotomy guided by neuronavigation stereotaxy. They employed a supraorbital approach through the right eyebrow, aided by an oculoplastic surgeon. The dura was reflected to expose the brain, and a subfrontal approach was performed in order to obtain access to the carotid cistern. Tumor location was confirmed, and maximal safe resection of the craniopharyngioma was completed. Hemostasis was achieved, the dura was closed, and the bone flap was reattached. Two specimens, fresh and formalin-fixed were submitted to pathology, confirming diagnosis of craniopharyngioma, adamantinomatous subtype. The samples were found to be well-differentiated and classified as WHO Grade 1.

At the time of writing, the patient tolerated the surgery without complications, and is scheduled for follow up and reassessment.

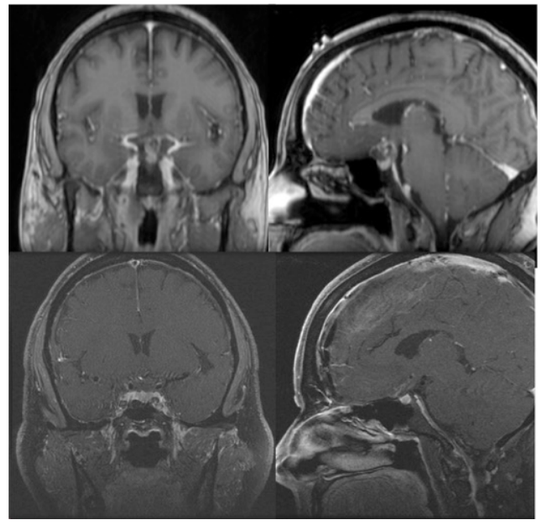

Figure 2. Coronal and sagittal views of T1-weighted MRI with contrast enhancement (above) and without (below) identifying a suprasellar mass extending to the left.

Discussion

Craniopharyngiomas are benign epithelial tumors arising from the Rathke pouch, typically situated above the sella turcica. It is a rare tumor, representing 1-3% of all brain neoplasms, with an estimated 338 new cases annually in the United States[1]. A 1998 review of three American tumor registries found an incidence rate of 1.3 per million person-years, with no gender or ethnicity predilection. There is a bimodal age distribution with peaks in children and older adults. There are no known risk factors, though mutations in two genes, CTNNB1 and BRAF have been strongly implicated[2]. Post-diagnosis survival has been calculated to be 86% at 2 years and 80% at 5 years, strongly favoring a younger age at diagnosis[1]. The prognosis and quality of life depends on treatment strategy. The surgeon typically opts for total resection. If complete removal is not safe or feasible, subtotal resection can be followed with radiotherapy. The rates of mortality, recurrence, and operation-related injury vary across reports due to the paucity of available long-term data.

Patients with craniopharyngiomas often present with a predictable clinical picture. Mass effect from tumor bulk can increase the intracranial pressure, resulting in headaches, nausea, and vomiting. Hydrocephalus may result from interference with cerebrospinal fluid circulation. Due to its proximity to the anterior and posterior pituitary, impingement by a growing tumor may result in dysregulation of the production or release of their corresponding endocrine hormones. Patients commonly experience, but are not limited to, signs of growth failure, sexual dysfunction, and diabetes insipidus[3]. Additionally, compression of

the optic chiasm can lead to visual disturbances. Notably, unlike this case, visual manifestations are typically preceded by systemic symptoms.

A 2003 retrospective study of 36 consecutive craniopharyngioma patients seen at three Australian hospitals between 1966 and 2001 specifically reviewed the ophthalmic complaints of these patients[3]. While bitemporal hemianopsia is the most recognizable symptom of craniopharyngioma, blurry vision was the most frequently reported (96%) visual symptom in this cohort, reconciling our patient's original complaint. Visual field defects were less common; of these, 16 (44%) presented with bitemporal hemianopsia, and 5 (14%) presented with a unilateral temporal defect. Similarly, the patient's presentation of unilateral temporal visual defect may trigger other differential diagnoses, which was explored by the neurophthalmology unit of The Toronto Hospital. In 1993, they published their 15-year experience of monocular temporal hemianopia comprising a total of 24 patients, one of which was diagnosed with a craniopharyngioma[4]. Other space-occupying lesions that were responsible for this visual pattern include pituitary adenoma, meningioma, and astrocytoma. Non-tumor etiologies identified among this group include optic neuritis and optic disc dysversion (segmental hypoplasia).

In this case, an ophthalmic exam was able to identify the heralding presentation of an otherwise asymptomatic brain tumor. An appropriate referral was made early in the disease course, and the patient was treated in a timely manner.

Acknowledgements

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Acute appendicitis within an incarcerated femoral hernia: A case report

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Abstract

The presence of the appendix within a femoral hernia sac is a rare condition called a de Garengeot hernia. Inflammation of the appendix within the hernia is rarer still. We report the case of a 59-year-old woman who presented to the emergency department with a chief complaint of progressive right lower quadrant abdominal pain associated with an increasingly painful mass in her right groin for 36 hours. A CT scan of the abdomen and pelvis with intravenous contrast showed a right sided femoral hernia containing an inflamed appendix. The patient underwent successful laparoscopic hernia reduction and appendectomy followed by primary hernia repair. We suggest that laparoscopic appendectomy followed by McVay repair is a viable treatment option of this rare condition.

Introduction

The presence of the vermiform appendix within a femoral hernia sac is a rare occurrence known as a de Garengeot hernia, named after French surgeon Rene Jacques Croissant de Garengeot who first described the condition in 1731[1]. There are fewer than 100 published case reports of de Garengeot hernia and an incidence estimated between 0.15% and 5%[1,2]. The presence of acute appendicitis within the hernia sac is rarer still, encompassing less than 0.13% of all cases[3]. Preoperative diagnosis is difficult due to a lack of specific symptoms or imaging findings, and, as such, it is often diagnosed intraoperatively[3,4].

Unsurprisingly, there is much controversy surrounding appropriate surgical management of de Garengeot hernias[1,2,5]. In this report, we describe a patient with a de Garengeot hernia complicated by an acute appendicitis who was successfully treated with laparoscopic appendectomy and anterior femoral hernioplasty.

Case Presentation

MM is a 59-year-old woman with a medical history significant for chronic constipation who presented with two days of right lower quadrant abdominal pain radiating to the right groin as well as four days of constipation. The abdominal pain was described as sudden in onset, sharp in quality, constant in nature, and 8/10 in severity. Approximately 36 hours after the onset of the pain, the patient noticed a bulge in her right inguinal area that was exquisitely tender to palpation, at which time she presented to the emergency department.

In the ED, the patient was found to be afebrile and without leukocytosis. On exam a 2x4 centimeter mass was appreciated in the right inguinal area. The mass was tender to palpation and nonreducible. A CT scan of the abdomen and pelvis with intravenous contrast was completed which showed a right sided femoral hernia containing fat tissue and the vermiform appendix. The appendix measured up to 11 millimeters in caliber and demonstrated mural hyperenhancement and moderate adjacent inflammatory fat stranding. The cecal tip was noted to protrude toward the neck of the hernia and was thick-walled. Mild fat stranding was appreciated extending towards the right lower quadrant with a small amount of free fluid seen within the hernia sac as well as in the pouch of Douglas and immediately adjacent to the hernia. No evidence of bowel obstruction or perforation was appreciated. Findings were consistent with acute appendicitis within a right femoral hernia.

The patient underwent laparoscopy. The taenia coli was tracked distally along the cecum revealing the vermiform appendix incarcerated within a femoral hernia. Extensive inflammation was noted in this area but no perforation was identified. The appendix was reduced from the femoral hernia with careful dissection and subsequent appendectomy was performed laparoscopically. Following the laparoscopic procedure, primary repair of the right femoral hernia was accomplished via McVay technique. The pathology report confirmed acute appendicitis.

The patient had an uneventful postoperative course. She received a total of four doses of piperacillin/tazobactam and was then discharged home on postoperative day one without any complications. She returned to normal activity shortly thereafter.

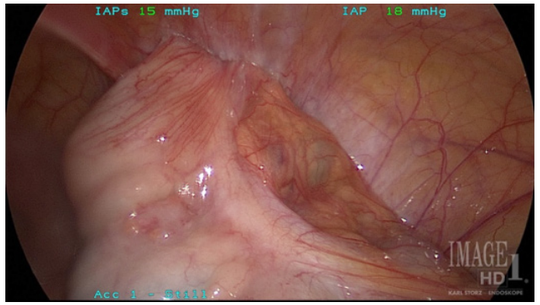

Figure 1: Incarcerated femoral hernia containing inflamed appendix.

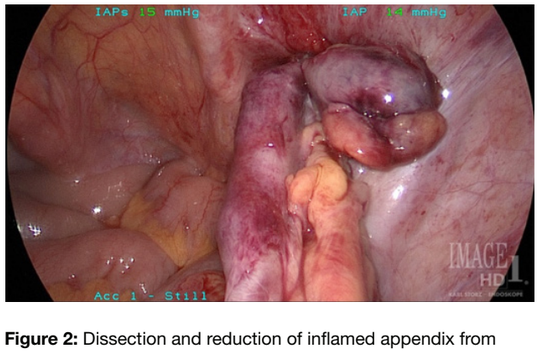

Figure 2: Dissection and reduction of inflamed appendix from femoral hernia.

Discussion

The presence of an inflamed and incarcerated appendix within the femoral ring, formally known as the de Garengeot hernia, is a rare clinical finding that has been sparsely described within the medical literature[1,2]. 93% of de Garengeot hernias occur in women, with a ratio of nearly 13:1, likely due to the female predominance of femoral hernias as a whole[6]. This type of hernia affects postmenopausal women four times as often as premenopausal women, and is associated with risk factors that include multiple pregnancies, increased abdominal pressure, smoking, defects in collagen synthesis, and advanced age[1,7].

The pathophysiology leading to the disease is still somewhat controversial, but is generally believed to be the result of abnormal intestinal rotation during embryological development. This malrotation then theoretically leads to an erroneously placed cecal appendix with a high risk of herniation through the femoral canal. However, there is a competing school of thought that believes that an abnormally large cecum may also inadvertently force the appendix into the femoral canal[8-11]. There are also several theories as to the exact cause of the appendiceal inflammation. One hypothesis states that the appendix is first inflamed within the peritoneum before migrating through the femoral canal; others postulate that the appendix first herniates through the femoral ring and is subsequently strangulated within the femoral canal, leading to ischemia, necrosis, and potentially perforation[3].

Patients with acute appendicitis within the hernia sac do not typically present with classic signs of peritoneal inflammation but rather local signs including erythema and tenderness because the tight femoral ring acts to prevent the spread of inflammation throughout the peritoneal cavity[1,4,12]. Often, the signs of appendicitis are obscured by the symptoms of incarcerated femoral hernia; patients typically present with vague abdominal pain, tenderness, and an erythematous irreducible lump in the groin[2,6,15]. 97% of patients experience a painful swelling[3]. Diagnosis requires a high index of suspicion and is rarely made preoperatively due to nonspecific radiological findings[2]. Despite the relative rarity of preoperative diagnosis, CT scan has proven to be the most reliable modality when preoperative diagnosis is possible[1-4,13]. Regardless of the presence of confirmatory imaging (or lack thereof), the surgical approach indicated for cases of incarcerated hernia is unchanged. As such, most patients are diagnosed intraoperatively and managed accordingly within the OR[8,14].

Surgical treatment of de Garengeot hernia traditionally involves replacement of the appendix within the abdomen and repair of the femoral hernia with mesh[1,12]. In cases complicated by acute appendicitis, however, the best approach for appendectomy and hernia repair is still a matter of debate. In most previous reports, emergency open appendectomy and herniorrhaphy were performed through the same inguinal incision. This is the most common approach likely because the presence of the appendix within the hernia is not known preoperatively. Alternative approaches such as Cooper's ligament repair and a preperitoneal approach have also been described[4-7]. In our patient, preoperative diagnosis of incarcerated appendicitis was achieved via CT scan and thus allowed us to perform a laparoscopic approach involving reduction and resection of the appendix followed by open primary hernia repair. To the best of our knowledge, this is one of the first cases of de Garengeot hernia managed with laparoscopic appendectomy followed by open primary hernia repair via the McVay technique. The primary benefit of performing the procedure with this two-step approach is a decreased likelihood of wound infection. Naturally, open hernia repair and appendectomy via the same incision has a higher chance of spreading infectious material through the surgical incision as compared to laparoscopic removal of the appendix with a specimen pouch[16].

Conclusions

De Garengeot hernia is a rare condition and a difficult preoperative diagnosis. This case involved a de Garengeot hernia complicated by an acute appendicitis. Early diagnosis and emergent surgical management are critical, and a laparoscopic initial approach is a viable treatment option.

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Esophageal dieulafoy: Atypical lesions in a gentleman with stage IV pancreatic cancer

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Abstract

Dieulafoy lesions (DL) are an uncommon but important cause of upper GI bleeding. While most DLs present with hemodynamically stable hematemesis or melena, about 10% of these lesions can cause life-threatening bleeding[1]. Esophageal Dieulafoy lesions (EDL) lesions makeup less than 1% of total DLs. This case is of a 49-year-old male with diabetes and stage 4 pancreatic cancer presenting with melena and hematemesis. Upper endoscopy found a non-bleeding lesion in the lower esophagus with a classic DL appearance. The lesion was clipped via hemoclip. This case highlights the importance of urgent upper endoscopies in acute bleeds, the challenge with identifying DL, particularly those in atypical locations, and an area for possible research because advanced-stage pancreatic cancer could be found to have an association with an increased incidence of DL compared to unaffected individuals and/or an increased incidence in atypical DL such as the esophagus.

Introduction

DLs were the perplexion of French surgeon Paul Georges Dieulafoy, who first described these vascular gastrointestinal malformations in 1898[7]. First called exulceratio simplex, they were believed to be an aneurysmal degeneration of an artery in the GI tract[7]. Now, we understand them to be single, vascular malformations in the submucosal layer that are an important cause of GI bleeding. It is estimated that roughly 2-5% of all upper GI bleeds are due to a DL[1]. They are twice as common in men and frequently associated with coexisting comorbidities such as cardiovascular disease, hypertension, diabetes, and renal failure. About 75% of the time, DL can be found in the stomach, usually in the proximal portion[1]. DL are also sometimes seen in duodenum (14%), colon (5%), and gastric anastomosis (5%)[1]. Rarely, they have been found in the ileum, jejunum, and lower esophagus. Patients with DL usually present with upper GI bleeding without a history of peptic ulcer disease. They may have hematemesis, melena, or a combination of both. About 10% of the time, patients with DL present with life-threatening bleeding[1]. With the creation and widespread use of the flexible endoscopy, diagnosis typically involves direct visualization over the bleeding vascular malformation. Angiography and endoscopic ultrasonography can be used in difficult cases. Treatment is also usually done via scope. It involves monotherapy with epinephrine injections around the lesion, combination therapy with pharmaceutical and thermal therapy (ablation/cryotherapy), and/or mechanical therapy with band ligation or hemoclip[1]. In only about 3-16% of cases, bleeding cannot be controlled by one of these options and patients must be sent to surgery[1]. This case report is of a 49-year-old stage-IV pancreatic cancer patient who was ultimately diagnosed and treated for a bleeding DL in an uncommon location - the distal esophagus, 30cm from the incisors (<1% of all DL's).

Case Presentation

A 49-year-old male with a history of stage IV pancreatic cancer and insulin-dependent type II diabetes presented to the emergency room for an evaluation of nausea, coffee-ground emesis and melena. Two days prior to presentation, he woke up with nausea and proceeded to have several episodes of black emesis with a small amount of red blood. In addition to these symptoms, he had some bowel movements with black pasty stools.

The patient denied any past episodes of melena or hematemesis. He also denied a past history of peptic ulcer disease or reflux. During this episode, he reported epigastric discomfort. However, he denied lightheadedness, syncope, abdominal pain, fevers and chills, as well as non-steroidal anti-inflammatory, proton pump inhibitor, anticoagulant or alcohol use. He uses two teaspoons of baking soda a day for the treatment of his pancreatic cancer in addition to chemotherapy. His last chemotherapy session was one month prior to presentation and a repeat CT scan at that time showed decreased size of both pancreatic and liver lesions with no evidence of gastric infiltration. He denies any past endoscopies and colonoscopies. Once in the ER, he was hemodynamically stable. His initial hemoglobin was 9.4g/dl on arrival that evening. It dropped to 7.4g/dl by the next morning. He was transfused two units of packed red blood cells and was scheduled for an upper endoscopy for suspicion of upper gastrointestinal bleeding.

CASE REPORT

During the endoscopy, the patient was positioned in the left lateral decubitus position and an adult-sized endoscope was introduced orally and advanced to the duodenum with clear views. 30 cm from the incisor teeth, a visible nonbleeding vessel most compatible with an esophageal DL was found (Figure 1). Despite the lack of bright blood found around the lesion, this was believed to be the most likely etiology for the patient's recent melena, anemia and coffee-ground emesis due to the classic DL appearance. The lesion was clipped without complication. The endoscope was further advanced into the stomach and first and second portions of the duodenum. The gastric mucosa showed mild erythema with no evidence of blood and the duodenum showed normal mucosa with a prominent periampullary diverticulum. The diverticulum was deemed unlikely to be the source of the patient's bleeding. No complications were encountered during the procedure and the patient tolerated it well.

Discussion

Cases of EDL are exceedingly uncommon and scarcely reported in the literature. Nevertheless, they may occur and clinical suspicion for them should exist when scoping patients for acute upper GI bleeds. This is especially true when patients have no history of peptic ulcer disease or esophageal varices is present and no bleeding is found in the stomach or duodenum on endoscopy. Beyond simply the rarity of an EDL, this case highlights a few points.

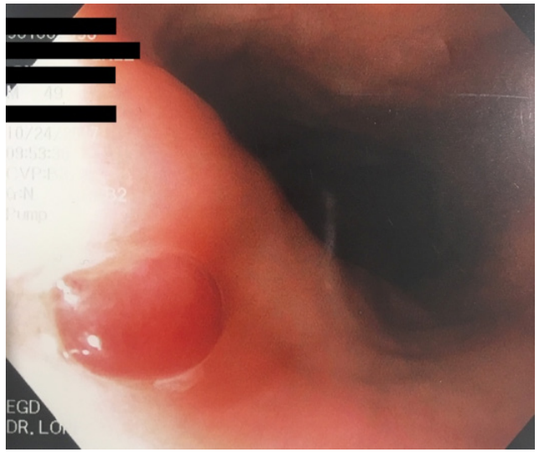

Figure 1. Esophageal Dieulafoy lesion

First, it reminds us about the need for urgent upper endoscopies in patients with acute bleeds for the evaluation and treatment of DL and other pathologies. Second, even with an upper endoscopy, diagnosing a patient with a bleeding DL, particularly an esophageal DL, may be challenging for even experienced gastroenterologists. Finally, it is largely unknown what role, if any, severe comorbidities such as stage IV pancreatic cancer can play in both the likelihood and atypical presentation of DL.

In the past, diagnosis and treatment of DL has included invasive surgical procedures such as gastrectomies[2]. With the invention of the endoscopy, diagnosis and treatment of acute GI bleeds including DL has greatly improved[2]. Guiding criteria for identification include active arterial spurting from a mucosal defect, visualization of a protruding vessel with or without active bleeding and the appearance of a fresh clot attached to a mucosal defect[2]. Once identified, the endoscopist has a myriad choices with treatment, including clipping of the lesion, thermocoagulation, epinephrine injection or banding of the lesion, all of which have high rates of positive outcomes[2].

DLs, even those in the stomach, can be hard to diagnose. It is estimated that only 49-92% of DL, mostly in the stomach and duodenum can be assessed on the first endoscopy[1]. Repeated endoscopies may be necessary as up to 6% of DL are diagnosed on the third endoscopy[1]. Small size of vessels, intermittent bleeding, and hidden locations may all contribute to this[3]. Furthermore, DL in less common regions of the GI tract seem to show similar or lower sensitivities to endoscopy. Studies of colonic DL have suggested that only 49% of these lesions are located during the first endoscopic procedure, whereas the remaining 33% are identified in subsequent procedures[1]. Due to its rarity combined with the general challenge in spotting DL, it may be even more challenging to spot a DL in the esophagus should they occur.

Finally, it is understood that certain comorbidities such as vascular disease, alcoholism, diabetes, and chronic kidney disease have an association with DL[1]. Cancer, in particular pancreatic cancer, is less reportedly associated with DL's in the literature. In Pubmed, only 5 case reports exist of patients with gastric carcinoma who develop DL. No other case reports exist in patients in patients with pancreatic cancer and DL. Thus, it is curious to note what role, if any, this patient's pancreatic cancer played in contributing to existence of a DL, let alone a rare esophageal one.

Vascular changes have been reported in pancreatic adenocarcinoma. For example, numerous studies have found that pancreatic cancer is associated with VEGF overexpression in the tumor cells[4,5]. For instance, according to Tang et al, 80.4% of 51 patients with pancreatic cancer found an increase in VEGF-C[5]. Furthermore, platelet derived growth factors (PDGF) have been found to be increased in patients with pancreatic cancer. For instance, Ebert et al found a 7-fold increase in PDGFRa and PDGFRp in patients with pancreatic cancer vs. a normal pancreas[6]. While pancreatic adenocarcinomas do predominantly spread through the lymph, numerous organs in the region including the esophagus, pancreas and stomach share a similar blood supply with arterial blood coming from branches of the celiac trunk and venous blood from these organs draining into the splenic vein. Therefore, it is reasonable to suspect that

the vascular instability that surrounds the pancreas in advanced pancreatic adenocarcinoma may contribute to the rare EDL seen in this patient. More published case reports with patients similar to the one described here could add further insight. Furthermore, possible case control studies could be performed to determine if an association exists between ongoing GI cancer and DL.

In spite of advances in care and understanding of these lesions, ED's remain a largely unexplored territory of medicine. It is imperative to not only identify and treat them, but also to gain a deeper understanding of their etiology and ideal treatment due to their high risk of mortality. The symptoms of upper gastrointestinal bleed such as melena, coffee-ground emesis warrant an emergent endoscopic procedure. However, even despite the effectiveness for endoscopies in identifying and managing DL, they have their own set of complications. Sensitivities to spotting DL are not perfect and furthermore, not all DL can be successfully treated without the need for surgery. Future research can help us identify which of the previously mentioned treatments yield the best results in caring for these lesions while permitting a latitudinous appreciation of their etiology. In addition, establishing a relationship between advanced pancreatic cancers and the incidence of DL in general and DL in atypical locations can help identify preventative measures.

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Efficacy of social skills training in treating negative symptoms of schizophrenia: A systematic review and meta-analysis

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Abstract

Objective: The purpose of this study was to assess the efficacy for social skills training (SST) as a form of treatment for negative symptomatology in adults diagnosed with schizophrenia.

Methods: We searched several online databases to identify randomized controlled trials on SST for adults with schizophrenia in both outpatient and inpatient settings for inclusion into the review. Data was extracted from, and a meta-analysis was conducted on included studies.

Results: The effects of SST on negative symptomatology were compared to control conditions in 11 studies with 710 subjects. The random effects model meta-analysis indicated a moderate treatment effect size for SST [SMD (95% CI) = -0.615 (-0.340, -0.889)].

Conclusions: SST is efficacious as a treatment for the negative symptoms of schizophrenia, especially when provided in conjunction with pharmacological treatment, though further research is needed on long-term retention of gains from SST and the efficacy of specific elements of SST.

Introduction

Schizophrenia is a chronic neurocognitive disorder characterized by abnormal social behaviors, cognitive dysfunctions, and deficits in the perception of reality. According to the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-IV-TR*), characteristic symptoms of schizophrenia include delusions and/or hallucinations (known as positive symptoms), disorganized speech, grossly disorganized or catatonic behavior, and negative symptoms[1]. Negative symptoms are deficits in normal mental functioning and include blunted or flat affect, anhedonia (inability to experience pleasure), alogia (poverty of speech), social withdrawal, attentional impairment, and avolition (decreased motivation to initiate self-directed activities)[1]. The prognosis of the disorder is marked by a lengthy prodromal phase, eventual manifestation of symptoms (typically in late adolescence or early adulthood), and chronic residual symptoms as well as acute, sometimes recurrent, episodes of psychosis[2].

Despite existing difficulties in accessing and maintaining care and the absence of a true cure for the disorder, treatments for schizophrenia allow many patients to effectively manage their symptoms and vastly improve the quality of their lives. However, it remains one of the costliest most costly conditions regarding health burdens placed on the patient, his/her family and community, and society in general. Estimates of the prevalence of schizophrenia range from 0.3% to 0.7% being affected at some point in their lives[3], or more than 21 million people worldwide as of 2011[4]. Of all mental disorders in adults, schizophrenia has the highest disability rating[5], and people with schizophrenia are likely to suffer from additional comorbidities, especially substance abuse disorders[6].

Rationale

Perhaps because of the more visible severity of the positive symptoms of schizophrenia such as hallucinations and delusions, negative symptoms are often perceived as being relatively "benign." In addition, because antipsychotics are usually only effective in treating positive symptoms, negative symptoms often persist long after an acute psychotic episode has been resolved. For these and other reasons, the National Institutes of Mental Health (NIMH) have designated the negative symptoms of schizophrenia to be "an area of unmet clinical need[7]". This designation is very much warranted, as negative symptoms are more strongly associated with quality of life than are positive symptoms[8], and improvements in negative symptoms can lead to improvements in social and occupational functioning[9]. Approximately 25% of patients with schizophrenia experience chronic primary negative symptoms, known as deficit syndrome[10].

Recommended treatments of schizophrenia involve an antipsychotic medication regimen and often some form of psychotherapy. Though antipsychotic drugs are effective in the treatment of positive symptoms and in decreasing the risk of relapse of psychosis, psychosocial interventions also provide invaluable aid such as social support, education about the condition, and rehabilitation when utilized in conjunction with medication. Thus, non-pharmacological interventions that focus on treating negative symptoms present a promising yet relatively underutilized avenue for treatment.

One of these interventions is known as social skills training (SST), a form of behavioral psychotherapy. Based on the assertion that social skills can be learned or re-learned, SST aims to improve an individual's level of social functioning. Various deficits in social functioning are quite common among individuals with schizophrenia[11]. Though heterogeneous in structure, SST programs teach patients social skills through similar methods such as role-playing and modelling interactions. Practicing social skills in the therapeutic environment while receiving encouraging, corrective feedback allows patients to generalize what they have learned in the sessions to "real-life" situations, leading to improved interpersonal functioning. According to the social skills rehabilitation model, certain interpersonal problem-solving skills interact with self-efficacy to determine a person's social competence, defined as the degree to which they are able to use interpersonal skills to meet their instrumental and affiliative needs[12]. SST programs are designed to treat the individual's deficits in these skills in addition to boosting his/her self-efficacy as a means of improving social competence. In addition, effective psychological coping skills and strong social support, both of which depend on social competence, serve as protective factors against the effects of psychosocial stress, as shown by the stress-vulnerability-coping model of mental illness[13]. Thus, SST may also be able to achieve long-term goals such as buffering against life stress and reducing risk for relapse by empowering individuals with these skills.

The most recent systematic review on SST, conducted in 2008, only examined six studies that investigated its effects on negative symptomatology and found an unstable effect size[14]. However, since then, a number of new trials on SST have been published. Because of its potential as a tool for psychiatric rehabilitation and the lack of consensus on its efficacy, it is appropriate to conduct a systematic review in order to properly analyze the potential benefits of SST.

Objectives

This systematic review examined the efficacy of social skills training in the treatment of negative symptom psychopathology in adults with schizophrenia.

Methods

Criteria for selecting studies for this review

Types of studies
The only types of studies that were eligible for inclusion in the systematic review were published randomized controlled trials (RCT) that had undergone peer-review. Only studies published in English were considered.

Types of participants
Only adult subjects (aged ≥18 years) were considered for inclusion. The participants must have received a diagnosis of schizophrenia or schizoaffective disorder based on criteria in either the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*) or the International Statistical Classification of Diseases and Related Health Problems (ICD). If a study contained subjects without a schizophrenia or schizoaffective disorder diagnosis, we only considered it for inclusion if it reported results exclusive for the schizophrenia-spectrum subgroup. We included studies conducted in both inpatient and outpatient settings.

Types of interventions

Experimental interventions. For an intervention to be considered SST, it needed to have consisted of each of the following techniques: instructions on social skills, modelling or role-play activities, and corrective feedback from a psychotherapist.

Comparators. For a study to be included, it needed to contain at least one control group. The control condition could have been treatment as usual or any other psychosocial intervention, unless it was another form of SST.

Types of outcome measures

Negative symptomatology. Negative symptomatology was required as an outcome measure for studies to be included into the review. It needed to have been assessed by a validated quantitative measure of the negative symptoms of schizophrenia, such as the Positive and Negative Syndrome Scale (PANSS) and the Scale for the Assessment of Negative Symptoms (SANS). A study must have contained sufficient data to calculate an standard mean difference (SMD) between intervention and control conditions in baseline to post-treatment changes of negative symptom scores.

Search methods for the identification of studies

Electronic resources
Four electronic databases were searched – PsycINFO, PubMed, EMBASE, and the Cochrane Library – for studies that had been published prior to April 2015.

PsycINFO. PsycINFO was searched using the following Boolean search expression: "(schizophrenia OR schizoaffective) AND ("skills training" OR "social skills training")." By using the Advanced Search feature, the results were limited to clinical trials on adult subjects that were published in English.

PubMed. PubMed was searched using the following Boolean search expression: "(schizophrenia OR schizoaffective) AND ("skills training" OR "social skills training")." By using PubMed's Advanced Search feature, the results were limited to clinical trials.

EMBASE. EMBASE was searched using the following Boolean search expression: "(schizophrenia OR schizoaffective) AND ("skills training" OR "social skills training")." We used the search filter to restrict results to randomized controlled trials published in journals. *Cochrane Library*. The Cochrane Library was searched using the following Boolean search expression: "(schizophrenia AND schizoaffective) ("skills training" OR "social skills training")." We used the search filter to restrict results to only trials.

Data Collection and Analysis

Selection of studies
Two reviewers examined the titles of all of the publications found through the four online databases. Studies deemed to be potentially eligible for inclusion, by either reviewer, were exported to RefWorks. Once exported, duplicates were eliminated, and we reviewed each abstract. Based on the abstract reviews, articles deemed to be potentially eligible were subsequently assessed for eligibility. If all inclusion criteria were met, the study was included in the review. We each conducted all of the steps in this search methodology independently. At the end of the search process, we presented our final results to each other and discussed any differences between the studies that we each deemed eligible in order to reach a conclusion.

Quality assessment of included studies
Risk of bias was assessed for each included study using the Cochrane Collaboration's tool for assessing risk of bias, which can be seen in Supplementary Table 1 online[15]. Separate judgments were made for the risk of bias for each included study regarding the six of the tool's criteria. Based on the degree to which studies met these criteria, the studies were subsequently categorized into the following groups: low risk of bias, unclear risk of bias, and high risk of bias. At the end of the quality assessment process, we presented our final results to each other and discussed any differences encountered. Any study deemed to have a high risk for bias was not included in the final analysis, but its' results were reported.

Data extraction and management
Data on sample size, method of diagnosis (e.g., *DSM*, ICD), experimental intervention, control condition, outcome measure, reported outcomes, and clinical setting in which the study was conducted (i.e., inpatient and/or outpatient) were extracted from each included study onto a Microsoft Office Excel spreadsheet and presented in Supplementary Table 2 online.

Measures of treatment effect

Continuous outcomes. As stated previously, the SMD (Cohen's *d*) for baseline to post-treatment changes in quantitative negative symptom outcomes between the intervention and control conditions was calculated for each study. SMDs were derived from raw means and standard deviations, in addition to *t* or *F* statistics reported in the original study. If a study included multiple time points, a paired *t*-test was conducted for each group for pre-post changes in mean negative symptom scores, using a pooled standard deviation [$(M_{post} - M_{baseline})/SD_{pooled}$]. Then, the *t*-score from each group was used to calculate the SMD for the study. For studies that included only two time points (i.e., baseline and post-treatment), the same procedure was conducted; however, if means and standard deviations for each time point were unavailable, a between-groups *F* score was used for the calculation of the SMD.

Assessment of heterogeneity
Because several different modalities exist to conduct SST interventions, statistical heterogeneity was formally tested. This was done by using the I^2 statistic, which calculated the percentage of variability due to heterogeneity between the included studies rather than chance alone.

Data synthesis
Because there will likely be considerable heterogeneity between the approaches taken by each SST intervention and substantial clinical differences between each study sample, a random effects model was used to determine a weight SMD.

Risk of Bias in Study Selection Process
Unpublished studies and those not published in the English language were not considered in the meta-analysis. Potential reporting bias was also not assessed because the effect measure used in this meta-analysis (SMD) was not appropriate for conducting a funnel plot assessment. Thus, the potential of unrecognized publication bias remained.

Results

Study Characteristics

Description of included studies
Of the 382 titles initially identified during the literature search, only 20 met all of the selection criteria. Of these studies, only 12 contained sufficient data to calculate SMDs and to potentially include in the meta-analysis. One study, whose methodology and design were deemed to have high risk for bias[16], was ultimately not included in the meta-analysis. The results of our search strategy are shown in Figure 1. As can be seen in Supplementary Table 2 online, the majority of the studies were conducted on outpatient samples (~72%), and most utilized the PANSS as the measure for negative symptom outcomes. Sample size varied considerably between the studies with the smallest having 28 subjects and the largest having 119 subjects[17,24]. Regarding interventions, there was a substantial degree of diversity between the SST-based interventions used by each study. Most of the included studies combined SST with other psychotherapeutic techniques. Three of the studies integrated elements of cognitive-behavioral therapy into their SST interventions[19,22,23], two studies included elements of cognitive remediation therapy[18,27], and four studies utilized family-focused approaches that included psychoeducation and group therapy sessions[24-27]. Other interventions also incorporated training in other skills necessary for illness management, such as the Community Re-Entry Module, which helped transition patient from inpatient to outpatient treatment[27]. Five studies had control conditions that were

LITERATURE REVIEW

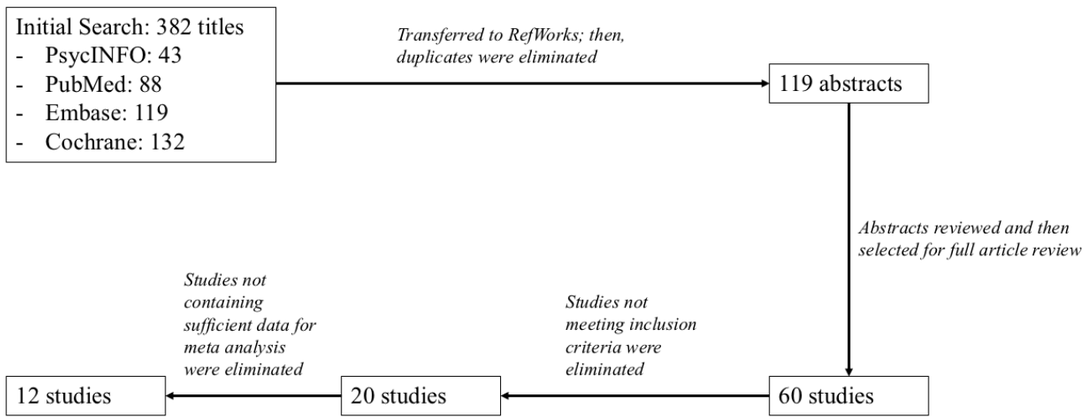

Figure 1. Selection of studies for the meta-analysis

active non-SST psychosocial interventions[17,18,21,22,27], with the rest using treatment as usual as a control condition[18,20,23-26]. These characteristics are described in further detail in Supplementary Table 2 online.

Risk of bias in included studies

For most of the included studies, the degree to which they suffered from risk for biases was unclear. The main reasons were deficits among the studies in reporting concealment of allocation from participants and blinding of outcome of assessors, both of which are somewhat common issues in clinical psychology research. Quality assessments for each included study are presented in Supplementary Table 2 online.

Effects of the Intervention

As stated previously, the SMDs of 11 studies were synthesized into the final analysis, the results of which can be seen in Figure 2. The results of the random-effects meta-analysis demonstrated a moderate weighted effect size of social skills training interventions compared to control conditions for the treatment of negative symptoms [SMD (95% CI) = -0.615 (-0.340, -0.889)]. Effect sizes for individual studies were consistently positive; however, the efficacy of SST varied in each. The I^2 statistical test revealed that there was substantial heterogeneity between the included studies (I^2 = 70.303%). This was not surprising, as there was noticeable diversity in the SST-based interventions, control conditions, composition of the samples, and clinical settings in the studies. Heterogeneity among practitioners of a specific modality is generally very common in psychotherapeutic interventions[28]. Even though the number of studies was not large enough to perform appropriate sub-group analyses, there were certain trends among the studies. The trials on SST interventions which included family-focused elements demonstrated larger treatment effects [23-25], though it is important to note that the control conditions for these studies were treatment as usual rather than an active control.

Study name	Statistics for each study						
	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Dobson 1995	-1.036	0.403	0.163	-1.827	-0.245	-2.568	0.010
Gohar 2013	-0.539	0.314	0.099	-1.155	0.078	-1.712	0.087
Granholm 2007	0.060	0.248	0.062	-0.426	0.546	0.242	0.809
Kopelowicz 2003	-0.345	0.220	0.049	-0.777	0.087	-1.565	0.117
Ng 2006	-0.387	0.336	0.113	-1.047	0.272	-1.151	0.250
Pinto 1999	-1.065	0.351	0.124	-1.754	-0.376	-3.030	0.002
Rus-Calafell 2013	-0.652	0.373	0.139	-1.384	0.080	-1.747	0.081
Valencia 2013	-1.283	0.203	0.041	-1.681	-0.885	-6.319	0.000
Valencia 2010	-0.699	0.228	0.052	-1.146	-0.252	-3.066	0.002
Valencia 2007	-0.873	0.231	0.054	-1.326	-0.419	-3.772	0.000
Xiang 2007	-0.132	0.197	0.039	-0.519	0.255	-0.670	0.503
	-0.615	0.140	0.020	-0.889	-0.340	-4.389	0.000

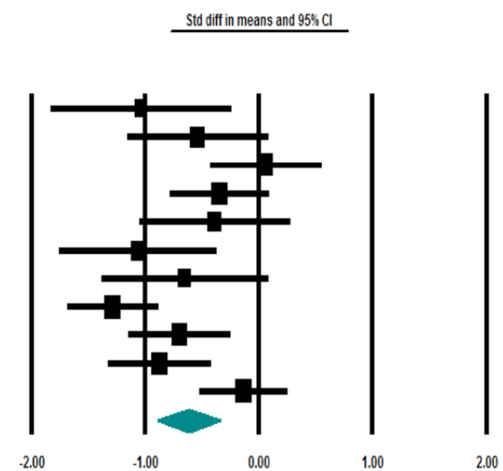

Figure 2. Forest plot on the efficacy of SST for negative symptoms of schizophrenia.

In addition, it seems like outpatient samples benefited more from SST than did the inpatient samples.

Discussion

As described previously, the results of this review indicated a moderate effect size (baseline to post-treatment) for SST as a treatment for negative symptoms of schizophrenia in adults. This finding contrasts with previous reviews, which found small treatment effects or none. Likely reasons for this are the publishing of several new trials on SST, as most of the trials that demonstrated the largest effect sizes were conducted after the most recent review was published, and this review's utilization of a greater number of electronic databases[14]. However, this review also suffered from some limitations. As mentioned previously, this review only included studies published in English, which introduces the possibility of publication bias. Clinical trials with positive results (i.e., findings that demonstrate an intervention having a significant effect) are more likely to be published in medical and scientific journals relative to trials which found no significant effects[29]. This can lead to an overestimation of treatment effect in meta-analyses. Also, the meta-analysis only focused on immediate post-treatment outcomes, which may have led to an overestimation of SST's benefits.

In addition, risk of bias in most of the studies was unclear due to issues in reporting in most of the included trials. The meta-analysis sample size (n = 11) for the meta-analysis was also somewhat small, making it inappropriate to conduct sub-group analyses that might help better determine the most efficacious elements of SST interventions. This was a major issue, given the heterogeneity observed between the studies. Because SST was often modified or combined with other psychotherapeutic techniques, it was difficult to ascertain a single effect measure for the efficacy of SST.

Conclusions

Implication for Practice

Despite the limitations of this review, the beneficial effects of SST on the treatment of negative symptom were observed in almost all of the included studies. Because of the mixed effectiveness of pharmacological treatments on negative symptomatology, SST and other psychosocial interventions should be utilized more often by mental health care providers and inpatient treatment centers as part of a treatment plan in combination with antipsychotic medications. In fact, some of the included studies specifically demonstrated an additive treatment effect of SST and antipsychotic drug regimen greater than the effect of the drug alone for both negative and positive symptoms [22,24-26]. In addition, as shown by some of the studies that focused other aspects of rehabilitation besides social skills, SST may be a feasible means of social and occupational rehabilitation and possibly decreasing risk of re-hospitalization in patients[27].

Implications for Research

Future randomized controlled trials should focus on comparisons of the efficacies of different variants of SST (e.g., social cognition training program versus the Community Re-entry Module) and the efficacies of SST and other active psychosocial treatments (e.g., cognitive remediation). Future studies on SST should also place greater emphasis on reporting negative symptomatology as a primary outcome of treatment and examining variables that may moderate SST treatment gains. In addition, studies on cost-effectiveness of SST (and also other therapies) as a treatment for negative symptoms would provide greater incentive for inpatient treatment centers to utilize SST as a tool in psychiatric rehabilitation. As more studies on SST are conducted and published, meta-analyses should examine whether or not improvements in negative symptomatology due to SST are retained over time and use subgroup analyses to determine the most appropriate treatment settings for SST and the most efficacious elements of SST interventions.

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Unintended pregnancy and postpartum depression: A literature review

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Abstract

Postpartum depression (PPD) is an illness defined as maternal depression occurring after birth with symptoms appearing within one month after delivery.[2] Many negative health and behavioral consequences of PPD have been determined including future maternal depression and ADHD in the child.[5] Many risk factors for the development of PPD have been described in recent literature, including the incidence of unintended pregnancy. Studies have found a statistically significant relationship between PPD and unintended pregnancy. Mercier et al. found that 12% of women who identified with having an unintended pregnancy had symptoms of PPD compared to only 3% of intended pregnancies and Suh et al. reported mistimed pregnancies were 15% more likely to develop mild symptoms and 50% more likely to develop severe symptoms of PPD compared to intended pregnancies.[1,9] Therefore, many interventions have been proposed and put in place to lower the rate of unintended pregnancies and related health outcomes in the US including teen pregnancy prevention programs and subsidized family planning services.[12] These programs, as well as public awareness about the effects of unintended pregnancy and PPD, are necessary and should continue to be encouraged and implemented in our society.

Introduction

Unintended pregnancy is common in the United States; nearly 49% of all pregnancies are classified as unintended each year.[1] Many negative health outcomes have been linked to unintended pregnancies including poor prenatal care, high-risk pregnancy behaviors, low birth weight, preterm birth, and increased medical costs.[1] Postpartum depression (PPD), the occurrence of major depressive symptoms occurring within a month after childbirth, has recently been studied as possibly being correlated with unintended pregnancy, and studies have demonstrated that both PPD and unintended pregnancies can have negative outcomes for both the mother and child. Therefore, interventions aimed at decreasing rates of unplanned pregnancies may help decrease PPD and the associated negative health outcomes to both conditions.

Case Study

The patient is a 30-year-old woman with a past psychiatric history of anxiety and depression who was seen at a private psychiatric clinic for feeling depressed, anxious, and having difficulty with her child. She became upset and tearful as she explained how she unintentionally became pregnant at 19 years of age. She didn't want to have the child at that time and has felt guilty about this for most of her life despite ultimately deciding to give birth and raise the child herself. She had one inpatient psychiatric admission at a local mental health facility following the birth of her healthy child due to having suicidal ideations, depression, and difficulty caring for her child. She was minimally involved in the care of her infant throughout her treatment. Following that admission, she began seeing an outpatient therapist to help her cope with depression. She has no other past medical conditions or hospitalizations besides a cesarean section with no complications. She has taken multiple antidepressants and other medications since that time, including buspirone, amitriptyline, bupropion, citalopram, nortriptyline, venlafaxine, and dextroamphetamine-amphetamine. She states that she is currently depressed, rating it an eight out of ten, and admits to hopelessness, worthlessness, helplessness, and anxiety. One main stressor she is facing is the difficult relationship with her 11 year old son. She now reports that he has developed oppositional defiant disorder and attention-deficit and hyperactive disorder. She states they have a strained relationship, she often becomes irritable with him, and she is anxious and worried about their relationship

Postpartum Depression

PPD is a significant medical condition that affects a large number of women in the US and is defined as maternal depression occurring after birth with symptoms appearing within one month after delivery. Up to one in seven women experience PPD within the first year following childbirth.[2] Mothers may experience anger, anxiety, irritability, and guilt that may interfere with their ability to care for their baby and themselves.[3] Initially, PPD can affect a mother's diet, sleep, activity levels, immune system and ability to fight infections, but this condition can also have serious long-term health and behavioral consequences for both the child and the mother.[4] Women who have experienced PPD have a 50-62% risk of having future depressive episodes.[5] Furthermore, 30% of women with untreated severe PPD are found to be depressed after one year and up to 50% may still experience symptoms after two years.[4] It is also noted that the number and severity of mother's symptoms can affect long-term outcomes for both mother and child including future maternal depressive episodes and the development of cognitive and behavioral conditions in children.[4]

The effects of PPD on children can be measured at various points in their development. Infants may develop an insecure attachment, negative affect, or dysregulated attention and arousal.[5] Toddlers can show poor self-control, difficulty in cognitive functioning, and challenges with social interactions.[5] School-age children have impaired adaptive functioning, internalization/externalization problems, and have a greater incidence of affective, anxiety, conduct, attention-deficit, and learning disorders.[5] Adolescents can develop similar problems, including affective, anxiety, phobias, panic, conduct, substance use, alcohol, ADHD, and learning disorders.[5] The nature of the relationship between PPD and the development of these long-term effects is extremely complex and there are a multitude of other risk factors that contribute to these outcomes, but the correlation between PPD, disturbances in mother-infant bonding and the child's emotional and cognitive development has been demonstrated repeatedly and are supported by evidence-based research.[3]

Unintended Pregnancy

There are a plethora of risk factors that contribute to the development of depression in women during the postpartum period, including a prior history of depression, lower socioeconomic status, and lack of support during pregnancy.[3] Unintended pregnancy is another factor predicted to affect the development of PPD. It is estimated that 45% of pregnancies in the US were unintended in 2011, 27% being considered mistimed and 18% considered unwanted.[6] Among teenagers, nearly 75% are unintended and the rate is highest among women who are 18-24, African American, less than 100% federal poverty level, have no high school diploma, or cohabitating women who were never married.[6] Among those pregnancies classified as unintended, about 58% will result in a livebirth.[1]

In Cheng et al.'s article "Unintended pregnancy and associated maternal preconception, prenatal, and postpartum behaviors," the potential consequences of unintended pregnancy were evaluated.[7] These include tobacco use, alcohol use, physical abuse, prenatal care utilization, low birth weight, preterm birth, and breastfeeding.[7] Although these consequences may also be related to the fact that unintended pregnancies are associated more with women from disadvantaged backgrounds, the study indicated unhealthy behaviors were more prevalent in women with unwanted pregnancies/births.[7] This included being more likely to report inadequate folic acid intake, delay in prenatal care, exposure to teratogens, smoking, and not breastfeeding for at least eight weeks.[7]

Relationship between Unintended Pregnancy and PPD

In addition to the negative outcomes of unintended pregnancies/births stated above, current research has shown a correlation between pregnancy intention and the development of PPD. In Mercier et al.'s study, women were questioned about pregnancy intention at 15-19 weeks gestational age and were then evaluated for PPD at three and twelve months postpartum using Edinburgh Postnatal Depression Scale (EPDS).[1] Of the 36% of women who identified as having an unintended pregnancy, 11% showed evidence of PPD at three months post-birth compared to 5% of the intended pregnancy group.[1] At 12 months, 12% of the unintended pregnancy group had symptoms of PPD compared to only 3% of intended pregnancies.[1] After adjusting for confounding variables, such as age, poverty, and education level, they found women with unintended pregnancies were twice as likely to have PPD at 12 month follow-up (RR 2.3; 95% CI 0.8-6.5).[1]

Another study from Pennsylvania found that the prevalence of PPD was higher among women with unintended pregnancy but that pregnancy intention was not independently associated with this outcome (adjusted OR 1.41; 95% CI 0.91-2.18).[3] This association may be attributed to certain baseline characteristics that overlap between PPD and unintended pregnancy such as young age, non-white, non-married, and prepregnancy anxiety/depression.[3] They also identified independent predictors of PPD to be pre-pregnancy anxiety/depression and race/ethnicity.[3] Furthermore, Barton et al. found that women with unplanned pregnancies were 1.73 (95% CI 1.53-1.95) (adjusted OR 1.47: 1.3-1.66) times more likely to exhibit signs of psychological distress at 9 months postpartum and a more pronounced association exists among women who had a negative response to finding out they were pregnant (OR 2.72; 95% CI 2.17-3.41).[8]

A cross-sectional analysis performed in 2002-2003 by Suh et al. reported 36% mistimed and 16.7% unwanted pregnancies among participants.[9] Results indicated that mothers with mistimed pregnancies were 15% more likely to develop mild symptoms (OR 1.15; 95% CI 1.01-1.33) and 50% more likely to develop severe symptoms of PPD compared to those with intended pregnancies (OR 1.52; 95% CI 1.19-1.95).[9] Women with unwanted pregnancies were twice as likely to report severe PPD (OR 2.12; 95% CI 1.58-2.84).[9] These results are further supported by two studies performed in Brazil, one of which found women with unintended pregnancies to be 1.48 (OR 1.48; 95% CI 1.09-2.01) times more likely to have symptoms of PPD and the other 2.3 times more likely to have persistent depression than those with planned pregnancies (RR 2.3; 95% CI 1.2-4.3).[10,11] It should be noted that abortion is illegal in Brazil which could affect the validity of comparing women in these studies to those living in a country where abortion is legal and available. It is also of interest that the risk of depression was determined to be much higher among American women with unintended pregnancies even though these women decided not to terminate but instead to continue the pregnancy. Researchers noted that PPD risk and other negative outcomes may be worse among women who wished to terminate the pregnancy but were prevented from legally or safely doing so.[1]

Potential Interventions

All of the studies described above provide statistically significant evidence that unintended pregnancy is associated with the development of depression in the postpartum period. PPD, as detailed above, is shown to have negative outcomes for both the mother-infant relationship and for each one individually. Therefore, reducing the rate of unintended pregnancies may contribute to diminishing the incidence of PPD in high-risk populations.

Many interventions have been proposed and implemented in an attempt to lower the rate of unintended pregnancy in the US. These interventions aim to target the three most common reasons for unintended pregnancy: lack of sufficient motivation to avoid becoming pregnant until ready, a limited understanding of how to avoid pregnancy, and the high cost and limited access to most effective forms of contraception.[12] These interventions take on very different forms and include mass media campaigns to avoid unprotected sex, classroom based pregnancy prevention programs aimed at teenagers, and expansions in publicly subsidized family planning services to enhance affordable access to contraceptives.[12]

In 2010, President Barack Obama introduced the Teen Pregnancy Prevention Program, one of the largest federal programs ever created aimed specifically at targeting this issue in the US.[13] This program, run by the Office of Adolescent Health and Centers for Disease Control and Prevention (CDC), looks at evidence-based programs proven to be effective and provides grants to public and private entities to fund medically accurate and age-appropriate interventions.[14] In addition to implementing these education programs, access to affordable and available long-term contraception must be addressed by removing barriers to care and providing adequate family planning services. The Affordable Care Act (ACA) contained provisions aimed at these important issues including providing states the option of expanding eligibility for Medicaid family planning services, providing $75 million dollars annually for evidence-based interventions to reduce teen pregnancy and $50 million dollars for abstinence only programs, providing $110 million dollars for teen pregnancy prevention programs, and removing all co-pays, cost charges, or deductibles for contraceptives.[12,13]

The existence of these provisions, as well as other family planning facilities like Planned Parenthood, have been threatened with the induction of the new White House administration and the ACA repeal and replace initiative. The literature has shown that the implementation of evidence-based programs and affordable access to family care services are important to help combat public health issues like unplanned pregnancy. Long-term consequences of unintended pregnancy, like PPD, should be publicized to encourage support of family planning programs and services and to protest policies that threaten their existence.

Conclusions

Nearly half of all pregnancies in the US are unplanned. Pregnancy intention has been shown to be correlated to a multitude of health outcomes, one of which is the development of PPD. A history of PPD is known to cause an increased risk for future depressive episodes, negatively influences the maternal-infant relationship, and is associated with the development of certain cognitive and behavioral conditions in children including affective, anxiety, panic, attention-deficit, and learning disorders. Therefore, educational interventions, such as teen pregnancy prevention programs and policies to increase affordable and accessible family planning services and long-acting contraceptives, are necessary to decrease the rate of unintended pregnancies and the long-term consequences they may cause for women, children, and families.

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Current strategies in the ED management of syncope: A literature review

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Abstract

Syncope and near syncope is common presenting complaint in the emergency department (ED) which accounts for nearly 3% of ED visits and costs of over $2 billion annually. Despite this significant prevalence, there is a relative paucity in the ability to accurately diagnose patients presenting with a primary complaint of syncope. This is most attributable to a lack of standardization in the ED management of syncope and unnecessary utilization of scarce resources. However, a number of risk stratification tools have been created to determine patients at risk of having poor prognosis. This review aims to assess current tools for efficacy in clinical practice. Unfortunately, no single tool has been proven to be effective in identifying patients who may require additional diagnostic testing. An analysis of over 30 articles demonstrates that current risk stratification model efficacies are inconclusive. As such, further development and verification of the 5 most prevalent risk stratification tools (San Francisco Syncope Rule [SFSR], Risk Stratification of Syncope in the Emergency Department [ROSE] Rule, Boston Syncope Rule, Osservatorio Epidemiologico sulla Sincope nel Lazio [OESIL] Rule, and Evaluation of Guidelines in Syncope Study [EGSYS] Rule) is recommended for the ED management of syncope.

Introduction

Syncope is defined by the American Heart Association (AHA) as a symptom that presents with an abrupt, transient, complete loss of consciousness, associated with inability to maintain postural tone, with rapid and spontaneous recovery that has a presumed mechanism of cerebrla hypoperfusion[32]. The AHA defines near syncope as the symptoms before syncope that may include extreme lightheadedness, visual sensations, and variable degrees of altered consciousness without complete loss of consciousness[32]. Near syncope is commonly referred to as the impending feeling of a syncopal episode with no loss of consciousness. Causes of syncope are either primarily due to cardiac anomalies or neurally mediated imbalances. Cardiac etiologies include arrhythmias, low flow states, volume depletion, outflow obstruction, or structural abnormalities. Neurological etiologies are typically due to a vasovagal responses due to specific situations. Occasionally, a neurocardiogenic cause can be identified. Despite these delineations, many syncopal episodes are the result of multiple factors or simply unknown. However, the driving factor found in all of these causes is cerebral hypo-perfusion[1].

Although syncope itself may be benign, the etiology and associated symptoms such as head trauma from loss of consciousness may be life-threatening. As such, assessment, rapid intervention, and/or observation is usually warranted. Given its transient nature, history taking and initial examination are critical in determining cause, risk, and prognosis. Diagnostic testing has largely been based on suspected underlying cause and no one test has consistently confirmed syncope without taking into consideration the clinical presentation and other pertinent information[1]. In the emergency department (ED), patients presenting with syncope can either be admitted or observed in the ED, depending on severity and risk.

Significance

Studies have shown that nearly 3% of emergency department (ED) visits and approximately 6% of hospital admissions are attributable to syncope or near-syncope[2,3]. According to a study by Probst, Kanzaria, Gbedemah, Richardson, and Sun, trends in resource utilization for diagnosis of syncope, most notably imaging, appears to have increased from 2001 to 2010[4]. This accounts for nearly $2.4 billion spent on syncope annually in the United States[3]. Moreover, data from Chiu show that 4 commonly ordered tests for syncope (ECG, ambulatory ECG, telemetry, and troponin) only confirmed etiology in 8% of the study population[2]. Interestingly, a single-center retrospective study of 254 participants comparing admission criteria of standard clinical practice and a standardized admissions algorithm found that there is a significant number of patients being inappropriately admitted to hospitals instead of being discharged (46% vs 22%) and no significant difference in adverse outcomes between the discharged groups (4% vs 3%)[5]. A simulation model from a different study authored by Baugh demonstrated cost savings of over $100 million when patients were transferred to observation units instead of being admitted using a pre-specified protocol (Emergency Department Observation Syncope Protocol). This study also found a decrease in inpatient admission of 235,000 and over 4,000,000 avoided hospital bed hours[6].

Despite high costs and utilization, adverse events occur in at least 30% of the syncope and near-syncope case presentations while hospitalized[7]. Data from another single-center prospective follow-up analysis of the ROSE risk stratification model performed

in England analyzed 1043 patients for development of adverse outcomes (serious adverse outcomes and all-cause death). These adverse outcomes appeared in over 15% of patients in their study population within 1 year[8]. With increased pressure on EDs, proper management of syncope is needed to reduce costs and increase efficiency. As such, there is a clear need for better utilization of scarce resources using a comprehensive set of guidelines aimed at managing the patient presenting to the ED with syncope.

Methods

A literature review of peer-reviewed publications on syncope was performed on July 16, 2016, to assess current strategies on the ED management of syncope. Study selection and analysis was performed by one investigator. The search, performed using PubMed with MeSH terms: Syncope; Emergency Service, Hospital, yielded 229 results. Filtering studies for the past 5 years resulted in a total of 95 studies. Studies were filtered for the past 5 years since most of the risk stratification tools were developed at this time. Of those 95, 32 studies were found to be relevant. Relevance was determined by assessing variables of interest including but not limited to syncopal/near syncopal episodes, adverse effects, admission rates, discharge rates, length of stay, risk factors, and critical interventions. Twenty-eight of the 32 studies were deemed by have an adequate study design which was determined using the NIH Study Quality Assessment Tools. A cross-check performed in PubMed using Boolean operators (syncope and emergency department) for the past 5 years returned 1 additional relevant article. Finally, a Google Scholar search using the following terms: syncope and emergency department, yielded 2 additional articles. Studies published in different languages were not assessed due to potential for errors in translation. In total, 31 studies were found to be relevant for this review.

Current Strategies

There have been a number of risk stratification tools created to aid in the ED management of syncope patients. In each, clinical features are compared against a specific set of criteria to interpret risk of adverse events and admission criteria to some extent. Typically, patients deemed to be high risk by hospitals are admitted, whereas those are deemed low risk are be placed in an observatory unit or discharged. Of note, this risk categorization has largely been dependent on the policies of the institution. As a result, a large number of standardized stratification tools have been created based on various factors, such as risk factors or symptoms at presentation, to better manage patients presenting to the ED with syncope. Unfortunately, few hospitals have adapted these risk stratification tools given their mildly beneficial or inconclusive efficacy.

The basis for creating risk stratification stems from inefficient use of resources and hospitalizations. A study investigating the association between number of risk factors and length of stay (LOS) found that increasing numbers of specified risk factors were associated with an increased LOS (AUC for accuracy: 0.70, 95% CI 0.65-0.76). More specifically, anemia (OR: 0.34, P<0.05), CNS deficits (OR: 0.09, P<0.05), dysrhythmias (OR: 0.3, P<0.05), abnormal vital signs (OR:0.35, P<0.05), and coronary artery disease (OR: 0.33, P<0.05) were all negatively correlated with a LOS of less than one day[9]. Early identification of these patients and better management using a proven standardized approach will ultimately increase favorable patient outcomes. Further rationale for using stratification criteria includes reduced use of low-yield diagnostic tests after quality improvement[10]. Not only can implementation of a proper model increase patient outcomes, but it can also increase hospital efficiency and reduce costs. This has been shown by a study examining the efficacy of a risk stratification tool (Boston Syncope Criteria) which revealed an 11% reduction in admission after training sessions. In the post-intervention cohort, hospitalization costs and greater favorable patient outcomes were subsequently attained through reduced admissions without an increase in adverse outcomes. This single-center study also demonstrated that the Boston Syncope Criteria had a sensitivity of 100% (95% CI 94-100%), a specificity of 57% (95% CI 50-63%), and a negative predictive value of 100%[11].

Common Etiologies and Adverse Outcomes:

An international meta-analysis by D'ascenzo et al. of over 40,000 patients presenting to the ED from 11 studies found that unknown etiology was present in nearly 30% of patients. Of those whose etiology was determined, 29% were diagnosed with situational, orthostatic, or vasovagal syncope. Only 10.4% of patients had a cardiac etiology. The most frequent cardiac diagnoses were bradyarrhythmia and tachyarrhythmia which accounted for 7.4% of cardiac etiologies[12]. Interestingly, a recent observational study of 518 patients presenting to an urban ED investigated the association of substance abuse and syncope with an unknown etiology. The authors found that patients with a history of substance abuse had a significantly greater association with unexplained syncope compared to patients without syncope (17% vs 9.5%, P<0.01)[13]. As such, there remains a number of potential factors that could be triggering syncopal episodes.

With respect to outcomes, the most commonly investigated adverse events included death, serious outcomes while hospitalized, or need for major intervention (pacemaker, ICD, CPR, or ICU admission). A retrospective observational study characterizing adverse outcomes found that nearly 10% of patients had a serious outcome. Of those, dysrhythmia was the most common serious outcome and pacemaker placement was the most common major intervention. Additionally, data found that nearly 1% died during the study period: an alarming proportion[14]. A follow-up meta-analysis by the same author of 11 studies and 43,315 patients found that predictors of serious adverse outcomes (age greater than 75, shortness of breath, systolic BP <80, positive Ottawa ECG criteria, and BUN >15) could be used to stratify subsequent patients[15]. Previous heart disease and abnormal ECG findings predicted an adverse event in 100% of studies in an ED syncope meta-analysis. Age predicted an adverse event in 45% of studies; while abnormal blood pressure values and male gender were each associated with an adverse event in 27% of included studies[12]. A study of over 20,000 patients exploring the relationship between mortality and ED visits for syncope/near-syncope found that hospitalized patients were at a much greater risk of dying compared to non-hospitalized patients[16]. Additionally, the researchers found that the risk of mortality for patients under 60 stabilized at 14 days. However, the risk of mortality for patients aged 60-79 was highest after 6 months and the risk of mortality in patients over 80 was highest 3-6 months after hospitalization[16]. Another study aiming to determine overall elderly risk found that elderly patients with risk factors were most likely to have an adverse event. Elderly patients without risk factors and non-elderly patients with risk factors were at a lower risk[17]. Finally, when comparing syncope with near-syncope, there was no statistical difference between adverse events in patients with syncope compared to near-syncope[3].

Risk Stratification Models

Because of the significant benefits to be gained from better management of patients presenting to the ED with syncope, there have been many risk stratification models created in an attempt to become universally implemented. Nearly all of these models were created using pre-existing data on ED syncope patients' characteristics, risk factors, and outcomes. Due to the high number of single-hospital datasets, it is not surprising that multiple models have been created based on the data used. Unfortunately, studies aimed at evaluating their efficacy has been inconclusive. Perhaps this stems from the high proportion of single hospital study designs with poor generalizability.

Table 1 is adapted from a review of syncope risk stratification in the ED by Dipaola et al. and provides information on risks and predicted outcome on the five most prevalent risk stratification models (San Francisco Syncope Rule [SFSR], Risk Stratification of Syncope in the Emergency Department [ROSE] Rule, Boston Syncope Rule, Osservatorio Epidemiologico sulla Sincope nel Lazio [OESIL] Rule, and Evaluation of Guidelines in Syncope Study [EGSYS] Rule[18]. It is important to note that these are the most common risk stratification models, although there are others. Since long term risks can vary significantly from short term risks, an article by Benditt organized these models based on their timeline. The authors found that the SFSR, ROSE, and Boston models all predicted short term risks of adverse outcomes (days to weeks after hospitalization), while the OESIL and EGSYS models studied long term risks (years after hospitalization)[19].

Discussion

With rising costs of healthcare and greater need for efficiency, hospitals are being forced to find ways to cut costs without compromising patient outcomes. A large proportion of studies demonstrated the need for standardization in the management of syncope across the ED. A review conducted by Probst and Sun provides the following 4 goals to improve management of syncope in the ED: development of accurate and consistent risk-stratification, increased use of syncope observation protocols, evaluation of a discharge with ambulatory monitoring pathway, and use of shared decision-making for disposition decisions[20]. Another review published a year later found very similar goals with the addition of biomarkers, such as D-dimers as a diagnostic method[21].

Current practice does not show a correlation between hospitalization and increased diagnosis of etiology[22]. Using a novel algorithm (Faint-Utah Algorithm), researchers found that inappropriate admissions comprised over 50% of the admitted patient population for syncope[5]. Furthermore, poor diagnostic testing yields may be due to work-up based on empirical evidence instead of individual clinical presentation, resulting in suboptimal resource utilization[23]. As such, researchers continue to create models that can stratify patients on the risk having an adverse outcome based on criteria found in the medical history or clinical presentation. Ideally, patients with a reduced risk can be alternatively managed in observation units, while patients with greater risk are admitted for further work-up.

In creating the risk stratification models, researchers first investigated risk factors most associated with adverse outcomes and/or hospitalization. Using that data, they created a model and tested its efficacy using an interventional study design after a battery of physician trainings, poster placement, and training sessions. Once completed, pre- and post- intervention admission rates, etiology determination, serious adverse events, and a host of other factors were compared. In every study, results showed either marginally better performance or inconclusive results in the post-intervention group, demonstrating that the efficacy of risk stratification in the ED management of syncope is inconclusive.

As shown in Table 1, there is significant overlap in the variables that signify increased risk. Interestingly, all of these models focus on cardiac etiology and the prevention of serious adverse cardiac events. From the syncope articles found relevant for this review, very few significantly considered non-cardiac risks.

Table 1 (Adapted from Dipaola et al18):

Rule/score	Variables	Outcomes	How does it work?
SFSR	Congestive heart failure, history of; Hematocrit < 30%; ECG, abnormal; Shortness of breath; SBP at triage < 90 mm Hg.	Death or serious outcomes requiring admission (myocardial infarction, arrhythmias, pulmonary embolism, stroke, subarachnoid hemorrhage, significant hemorrhage, or any condition causing or likely to cause a return to ED and hospitalization for a related event) at 30 days.	Patient at high risk if a single variable is present.
Rose rule	BNP level ≥ 300 pg/ml *or* Bradycardia ≤ 50 in ED or pre-hospital; Rectal examination showing fecal occult blood (if suspicion of gastrointestinal bleed); Anemia-Hemoglobin ≤ 90 g/L; Chest pain; ECG showing Q wave (not in lead III); Saturation ≤ 94% on room air.	All cause death or serious outcomes [acute myocardial infarction according to the universal definition, life-threatening arrhythmias (ventricular fibrillation, sustained ventricular tachycardia, ventricular pause > 3 s), pacemaker or cardiac defibrillator implant, pulmonary embolus, cerebrovascular accident, intracranial hemorrhage, or subarachnoid hemorrhage, hemorrhage requiring a blood transfusion of 2 units, acute surgical procedure, or endoscopic intervention] at 30 days.	Patient at high risk if a single variable is present.
Boston rule	I. Signs and symptoms of acute coronary syndrome; II. Worrisome cardiac history; III. Family history of sudden death; IV. Valvular heart disease; V. Signs of conduction disease; VI. Volume depletion; VII. Persistent (> 15 min) abnormal vital signs in the ED without the need for concurrent intervention such as oxygen, pressor drugs, temporary pacemakers; VIII. CNS.	Adverse outcome or critical intervention [Pacemaker/implantable cardiac defibrillator placement, percutaneous coronary intervention, surgery, blood transfusion, cardiopulmonary resuscitation, alterations in antidysrhythmic therapy, endoscopy with intervention, or correction of carotid stenosis, death, pulmonary embolus, stroke, severe infection/sepsis, ventricular dysrhythmia, atrial dysrhythmia (including SVT and atrial fibrillation with rapid ventricular response), intracranial bleed, hemorrhage, myocardial infarction, cardiac arrest, or life-threatening sequelae of syncope (ie, rhabdomyolysis, long bone or cervical spine fractures)] at 30 days.	Patient at high risk if a single variable is present.
OESIL risk score	History of cardiovascular disease; Abnormal ECG; Age > 65 years; Absence of prodromal symptoms.	Death at 1 year follow-up.	Single factor counts as 1. Sum ≥ 1 = low risk; Sum > 1 = high risk.
EGSYS score	Palpitations preceding syncope (4 pts); Heart disease, abnormal ECG, or both (3 pts); Syncope during effort (3 pts); Syncope while supine (2 pts); Precipitating or predisposing factors, or both (warm, crowded place/prolonged orthostasis/fear-pain-emotion) (− 1 pt); Autonomic Autonomic prodromes (nausea/vomiting) (− 1 pt).	Diagnosis of cardiac syncope (mechanical cardiac syncope (severe valvular stenosis, or other flow obstruction, acute myocardial ischemia); arrhythmic syncope (sinus bradycardia, 40 beats/min or repetitive sinoatrial blocks or sinus pauses of 3 s; Mobitz 2 or advanced second-degree atrioventricular block or third-degree atrioventricular block; alternating left and right bundle branch block, pacemaker malfunction with cardiac pauses, rapid paroxysmal supraventricular or ventricular tachyarrhythmias) electrophysiologic study alterations) at 2 years.	Score ≤ 3 pts is considered positive.

SFSR: San Francisco Syncope Rule; SBP: systolic blood pressure; CNS: central nervous system.

Supplementary Table 2 online contains a summary of the relevant articles for patients presenting to the ED with syncope or near-syncope. The majority of these articles excluded patients with altered mental status, seizures, coma, hypoglycemia, trauma, illicit drug use, and/or alcohol intoxication. Many studies also did not include near-syncope due to lack of functional definition. Although most studies only focused on patients older than 18, there were two studies that assessed pediatric presentation. The first one was a study by Hurst et al. that affirmed the importance of a comprehensive history in identifying new diagnosis of cardiac syncope[24]. The second relevant pediatric study found much lower admission rates, decreased LOS, fewer consultations ordered, and fewer undefined causes of syncope after implementation of clinical guidelines developed by the Italian National Health Institute[25]. The combination of these studies attest to the importance of using both clinical skills and standardized guidelines when assessing syncope patients.

In a randomized clinical trial comparing observation and routine admission using a standardized protocol found reduced admission rates and hospital costs after the protocol. More importantly, quality of life, patient satisfaction, and serious outcomes at follow-up were not statistically significant between the two groups, showing that observation units are not associated with worse patient outcomes at follow-up[26]. A similar study found that implementation of a standardized approach (European Society of Cardiology guidelines) reduced cardiac enzyme use, EEG use, admission rates, hospital costs, and LOS[31]. The Boston Syncope model was also successful in reducing admissions, but rates of adverse outcomes remained similar in the pre- and post-intervention groups[11]. Testing of the SFSRs short-term capabilities found much better prediction of serious adverse outcomes in patients with an unknown etiology[27]. Another study aimed at identifying the usefulness of the SFSR and OESIL found that both models had good accuracy and sensitivity in predicting adverse outcomes, but had low PPV and specificity[28]. A meta-analysis of 13 papers comparing three risk stratification models (OESIL, SFSR, and EGSYS) with clinical skills and found that those models did not out-perform clinical judgment in identifying adverse outcomes[29]. Assessment of the ROSE model found that it failed to predict adverse events at follow-up[8]. One ongoing study investigating a new risk stratification model termed, RISEDS, expects to publish results in the near future[30].

One significant limitation of this literature review is that articles were selected and analyzed by a single investigator. Therefore, there is potential for selection bias. Perhaps, the addition of another investigator would have mitigated this and allowed for analysis of interrater reliability. Another limitation of this paper is that relevance was determined primarily on variables of interest.

Conclusion

As such, literature shows that both good clinical judgment in combination with a well-tested risk stratification model are crucial for improved management of patients presenting to the ED with syncope. However, current models have either proven to have no significant benefit in outcomes or have been found to have poor generalizability. Therefore, further evaluation of current models or creation of more robust and thoroughly validated models are needed to determine the best method of screening high risk patients presenting with syncope in the ED. In doing so, the standardization in the management is likely to reduce costs, maximize utility, and improve outcomes.

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Risk factors and predictors for non-supine infant sleep position: A narrative review of the literature

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Introduction

Sudden Infant Death Syndrome (SIDS) is the sudden and unexplained death of a seemingly healthy infant less than a year old, often during sleep. It is the leading cause of death of infants between one month and one year of age[1,2]. Sleep position has been identified as a major risk factor for SIDS, and in 1992, the American Academy of Pediatrics advocated the supine sleep position for infants to reduce the incidence of SIDS[3]. The Back to Sleep campaign was initiated in 1994 to spread awareness of proper sleep position. Since then, the incidence of SIDS in the United States has decreased from 130.3 deaths per 100,000 live births in 1990, to 39.4 deaths per 100,000 live births in 2015[4].

By 2001, however, sleep position improvements came to a standstill and the decline of SIDS plateaued (CDC). Despite continued efforts of awareness, counseling, and education, infants are still placed in contraindicated sleeping positions[5, 6]. A 2012 study found that only 69% of informed mothers who were aware of the recommended sleep position placed their infant supine[5]. Many factors have been identified as possible contributors to the plateau of improvement in infant sleep position. However, there are still risk factors and predictors of contraindicated sleep positions left to be identified. This review seeks to identify the evidence on risk factors influencing infant sleep position. Factors previously studied for their role in sleep position can be categorized as health care-related, demographic, socioeconomic, cultural, maternal, and infant factors.

Methods

We conducted a literature review of studies published in the English language using PubMed as our search engine. MeSH terms combining “infant” and “sleep” and “position” were initially used. We then stratified the search with additional MeSH term “Health Knowledge, Attitudes, Practice”. A total of nineteen articles were reviewed using the methods described above and found relevant to the topic.

Healthcare Related Factors: Counseling

One factor shown to be associated with incorrect infant sleep position is inadequate counseling. As many as 20% of mothers report never receiving advice on sleep position[7]. According to one sampling of mothers participating at Women, Infants, and Children Centers across the United States, as many as 43% were unaware that sleep position was related to SIDS[8].

Mothers also appear to rely on advice from the media and friends or family[9], which is not always correct. Moreover, some physicians still provide advice against guidelines and suggest side sleep as a safe alternative[7]. This is particularly important because the source of advice has been shown to affect maternal belief and adherence[9], with the greatest level of trust being granted to physicians.

Demographic Factors: Race/Ethnicity, and Area of Residency

Racial disparities in sleep position are well documented. Black mothers have been consistently shown to be less likely to place infants supine than white mothers[10-12]. A cross-sectional study of 2791 white and non-Hispanic black mothers in Florida by Broussard et al found that infrequent infant supine sleeping was higher among black mothers than white mothers, 60.9% versus 34.8%, respectively[13]. Some studies suggest that maternal belief of infant comfort and risk of choking are a major contributor to racial disparities in infant sleep position, especially among black mothers[9,14].

One point for consideration is that race and ethnicity are not necessarily independent or direct factors affecting sleep position choices, and thus several studies suggest that the factors that influence sleep position vary by race[15,16]. A study of 14,648 mother-infant pairs in South Carolina found an association between normal birth weight and lateral sleep position in white infants, but not black infants[15].

Regional differences in sleep position have also been described. Regions of the contiguous United States situated further south are less likely to follow the supine infant sleep position[9,12,14,15]. Whether this association between geographic regions and choice of sleep position is related to differences in racial composition is unclear.

Socio-economic Factors

Low family income and poverty level have been indicated as additional risk factors for non-supine sleep positioning. One study found that black infants from families with a federal poverty level

of 100-184% had lower chances of being placed in prone sleep position as compared to supine[15]. The same study found that white infants under 100% of the federal poverty level were more likely to be placed in lateral sleep position rather than supine.

Results from a survey across eight states (Alabama, Colorado, Florida, Hawaii, Illinois, Maine, Nebraska, and North Carolina) found that 47.5% of women less than or equal to 100% of the federal poverty level place their infants supine, while 62.2% of those over 200% of the federal poverty level place their infants supine[11]. While income has been described as a risk factor for all races, a cross-sectional study in black parents suggested that socioeconomic status did not predict knowledge or behavior of sleeping position[17]. Thus, it is possible that the effects of income can be modified by race/ethnicity (and vice-versa).

Lower maternal education levels have also been documented as a risk factor for prone sleep position however there is some discrepancy. Three studies using the Pregnancy Risk Assessment Monitoring System, the National Infant Sleep Study, and the Canadian Maternity Experiences Survey all showed significant correlations between higher levels of maternal education and greater use of supine infant sleep position[11,14,18]. A cross-sectional study of women across eight states found that women with less than twelve years of education had a prevalence of 44.9% placing their infants supine, and women with over twelve years of education had a prevalence of 60.3%[11]. However, Broussard et al found no statistically significant association between maternal education level and supine sleep position[13].

Maternal Factors: Age, Marital Status, Parity, Postpartum Depression

Two cross-sectional studies found that younger mothers are less likely to adhere to supine sleep position. Phares et al found that younger mothers (25 years old and below) were less likely to use the supine infant sleep position[11]. Smith et al found that young maternal age (under 30) was associated with greater odds of lateral sleep position for black and white infants, and greater odds of prone sleeping for black infants (odds ratio [OR] 2.14; 95% confidence interval [95% CI] 1.46-3.14)[15]. Incorrect sleep position use among younger mothers could be explained by the presence of grandparents and other family members in the home, who have been shown to have a significant influence on child care[8]. However, Broussard et al found no statistically significant association between maternal age and supine sleep position[13].

The association between maternal marital status and infant sleep position is unclear. A cross-sectional study from 1996 of 178 mothers in Washington found that among mothers unaware of sleep position guidelines, single mothers more often placed their infants prone (OR 14; 95% CI 1.5-133.2)[19]. More recent studies from 2008 and 2012 have found no significant association between maternal marital status and infant sleeping position[10,13].

Maternal parity has shown some inconsistency as a risk factor. Two studies found no statistically significant association between parity and supine sleep position[9,13]. However, another study found that mothers with no other children were associated with a greater likelihood of supine infant sleep position (adjusted odds ratio [AOR] 1.31; 95% CI 1.21-1.42)[14].

Postpartum depression has been proposed as a factor influencing sleep position. In a study of 945 women who delivered infants with birth weights over 2500g (considered an average full term birth weight) in a New York hospital between April 2009 to April 2010, it was found that mothers with postpartum depressive symptoms were less likely to place their infant supine than mothers without depressive symptoms (AOR 0.37; 95% CI 0.22-0.61)[20]. Consistent with these findings, another survey of 774 mostly single, uninsured, black women attending Philadelphia public health centers found that mothers with persistent depressive symptoms before and after delivery were almost half as likely to use the supine sleep position compared to women who had never had depressive symptoms (AOR 0.56; 95% CI 0.35-0.91)[21]. However, Broussard et al found no statistically significant association between maternal depression during or after pregnancy and supine sleep position[13].

Infant Factors: Infant Age, Birth Weight, Preterm Birth

Infant age was seen in a factor in a cohort study of 2300 women across America, which found that the rates of noncompliance with supine sleep position increased with infant age[10]. At 3 months of infant age, 26% of mothers in the study placed their infant non-supine; at 6 months, 29% of mothers lay their infant non-supine for sleep, and by 12 months 36% of infants in the study were placed non-supine[10]. Additionally, a 2012 study found that white infants older than 6 months were more likely to sleep prone as compared to white infants less than 6 months of age (AOR 1.37; 95% CI 1.02-1.83)[15].

Low birth weight has been associated with less adherence to supine sleep positioning. A 2002 study showed that low birth weight infants (born between 1001 and 1500g) (AOR 0.67; 95% CI 0.57-0.79), and extremely low birth weight infants (between 500 and 1000g) were especially unlikely to sleep supine compared to normal weight infants (AOR 0.57; 95% CI 0.45-0.72)[22]. Taylor et al 1996 found that parents of low birth weight infants in Washington were also less likely to be aware of optimal sleep position for infants[19].

Prematurity has been assessed as a possible contributor to non-supine sleep position. Hwang et al 2016 found that late preterm infants (34 to 36 weeks) were less likely to be positioned in supine sleep position as compared to term infants (≥37 weeks) (AOR 0.96; 95% CI 0.95-0.98)[23].

Conclusion

Many risk factors have been identified for non-supine sleep position. Risk factors with corroborated evidence across multiple studies include inadequate counseling, low income (which may be modified by race/ethnicity), infant age, low birth weight, and prematurity. Other risk factors have inconsistent and/or contrasting evidence requiring further research, including maternal age, maternal education, maternal marital status, parity, and postpartum depression. The influence of geographic location on infant sleep position also requires further investigation. Further exploration of relevant risk factors and more conclusive evidence on several existing risk factors is recommended to help increase placement of infants in the supine sleep position, and thus reduce rates of SIDS.

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John Perry Wall, MD (1836-1895): Maverick Florida physician and public health pioneer

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Mosquito borne illnesses made news headlines in Florida long before the arrival of the Zika virus from South America in 2015. In retrospect, it is quite difficult to imagine how nineteenth century Floridians lived through periods of deadly summertime fevers without understanding the role of the mosquito in the transmission of certain diseases like yellow fever. The unfortunate reality was that Floridians learned to expect a visit from "Yellow Jack" as summer wore on in coastal towns. During the 1880s, a year without widespread bilious fever in Florida was an exception to the rule. The staggering number of outbreaks was mainly a product of how little physicians understood about the etiology of tropical disease. For centuries, nobody accused mosquitos for being anything more than a minor nuisance to daily life in coastal and southern Florida. Tampa physician Dr. John Perry Wall was the first person who challenged the thoughts of his colleagues by correctly proposing that mosquitos transmit yellow fever[1]. Although Dr. Wall did not live to see widespread acceptance of his maverick views by the medical community, his career embodied the goals of medicine through patient care and public health until the day he died.

Dr. Wall voluntarily enlisted as a surgeon in the Confederate Army shortly after finishing his medical education in 1858 at the Medical University of South Carolina. Many young physicians who graduated in the years leading up to the Civil War joined the military for reasons other than the politics surrounding the war. Tenure with the Army Medical Service provided a richer clinical experience in medicine and surgery than most medical schools could offer. During the Civil War, Dr. Wall attended patients both on the battlefield and at the Richmond hospital. Through his introduction to communicable illnesses in the close quarters of army barracks, he developed a lifelong interest in the public health of infectious diseases[2].

Upon returning to Florida, Dr. Wall established a residence in Brooksville and welcomed consultations from all over the peninsula. He quickly set himself apart from other physicians through the selfless act of risking his own health so he could provide supportive care to patients suffering from fevers. His first exposure to yellow fever occurred during a call to Cedar Key in 1871. While the patient survived, Dr. Wall ultimately contracted the fever himself. Upon returning home, his wife nursed him back to health through the rigors of the Yellow Jack. He recovered, but his wife and daughter fell victim to yellow fever and both died[1].

Dr. Wall's closest friends claimed that he never truly recovered from the undue tragedy. His subsequent immunity was merely a consolation prize for his survival. In memory of his wife and daughter, he went on to devote the rest of his medical career to understanding the mechanism of infectious disease transmission and minimizing its impacts on society.

Over the next two years, Dr. Wall engaged himself in a pursuit of a possible vector for yellow fever. His astute clinical observations led him to believe that the "tree top mosquito," later canonized in Linnaean as Aedes aegypti, was the culprit. By 1873, Dr. Wall developed a well-rounded hypothesis based on three key considerations. First, patients generally presented after a significant amount of time outside at night when mosquitos were most active. Second, yellow fever, much like the mosquito, made an appearance immediately after the onset of the rainy summer season and left as soon as temperatures dropped and the weather became dry. Third, children were generally unaffected, presumably because their parents kept them inside at night. One key exception were the children of healthcare providers who had more exposure to pathogens[2].

Two notable cases from Dr. Wall's Tampa clinical practice added evidence to his blossoming work on yellow fever. On one summer evening, a civilian found Dr. Wall at a wedding and called upon him to see a man who was deteriorating from fever. The patient was a local craftsman named Mr. McKenzie who fell ill during an ongoing project to restore the interior of a newly arrived ship from Cuba. Dr. Wall reasoned that mosquitos aboard the ship made the voyage from Cuba and likely bred in the damp puddles of the ship's bilge. He ordered an isolation of the ship and effectively halted the spread of infection, but Mr. McKenzie ultimately passed away. Another patient, a man named Mr. Turk who worked as a tropical fruit importer, received a consult from Dr. Wall during his battle with bilious fever. Mr. Turk fell ill shortly after returning from a Caribbean fruit haul to the Port of Tampa. Dr. Wall palliated the man through his illness, but Mr. Turk also fell victim to the insidious disease[3].

Dr. Wall fought on the front lines for public health safety in Florida against the backdrop of a rigid medical community. Many nineteenth century physicians in the American south believed in the tenets of sanitarianism and followed the hygienist movement. Florida doctors from all levels of training and backgrounds of expertise seemed to agree upon the idea that ordinary dirt was responsible for fevers. They were skeptical of the emerging microbial theories in infectious disease and laughed at Dr. Wall's outlandish concept of a mosquito vector that carried a hypothetical germ. They pointed fingers at the so-called noxious and filthy air of low-lying Florida wetlands, but never gave a second thought to the mosquitos that bred in those areas. Their rationale for how disease spread rapidly through larger towns like Key West, Tampa, and Jacksonville was that many people in those areas lived in close proximity to fuming sewage and urban filth.

The Florida medical community laughed in the face of Dr. Wall for years every time he correctly proposed that mosquitos were the culprit for the nearly annual appearances of deadly summertime fevers. Nonetheless, Dr. Wall rose as a medical leader in Tampa and used his ideas about mosquito control to prevent mosquito breeding and truncate the spread of disease. Coincidence or not, Tampa experienced no epidemics from 1873 when Dr. Wall first presented his observations regarding mosquitos through 1880 during an interval of time when he served as public health officer and as the mayor of Tampa[4].

In 1885, Dr. Wall rose to accept several influential leadership positions. Despite the fact that many disagreed with his views, Dr. Wall's career in Tampa led to his recognition as a public health hero and election as president of the Florida Medical Association. At their 1885 meeting in Sanford, Florida, one physician presented an incredibly thorough clinical lecture on early diagnosis of yellow fever as the "bane of the seaboard." Throughout the presentation and rich discussion that followed, nobody spoke of its infectious transmission. In the same meeting, Florida physicians recognized the need for public health measures to combat the upcoming summer fevers. Dr. Wall carried their recommendations to Tallahassee where he also served as a representative in the Florida state legislature and a delegate to the Florida's third constitutional convention. He gave a speech at the constitutional convention on the importance of following other states in funding and establishing a Florida Board of Health to curb the effects of widespread disease epidemics. Unanimous approval at the constitutional convention seemed uplifting and Dr. Wall pushed forward with his plans for a state board of health. Despite its initial praise, political drama prevented the acquisition of funds for the creation of the proposed Florida Board of Health[5].

While state politicians fumbled, epidemics became worse as transportation methods improved and moved people at faster rates across the sunshine state. Floridians now carried infectious diseases with them to towns further away than mosquitos could naturally fly. In one notable case during the summer of 1888, a man who arrived in Jacksonville by train immediately began to deteriorate with a 104-degree fever. Careful history taking revealed that his inoculation occurred in Tampa and he traveled to Jacksonville before anybody realized he was infected. By autumn, over 7,000 cases were reported across the state and nearly 600 Floridians had lost their life[5].

The chaos of the 1888 pandemic reignited Dr. Wall's 1885 bill for the provision of a Florida Board of Health. The Florida gubernatorial election of 1888 set politicians into action on public health policy after yellow fever personally affected the Jacksonville family of governor-elect Francis P. Fleming. His brother Lewis Fleming died during the 1888 pandemic, which launched public health back into the Florida political spotlight. Immediately following his inauguration, Governor Fleming made final arrangements for the long awaited Florida Board of Health. Dr. Wall served as its first president and his friend from Key West, Dr. Joseph Yates Porter, assumed the role of state health officer.[2] Public health measures began to blossom, but some less informed doctors who practiced in rural Florida still scoffed at the idea that mosquitos play a role in disease. Prominent physicians who stayed current with medical literature were cordial with Dr. Wall and respected him as a medical leader, but were reluctant to accept Dr. Wall's mosquito hypothesis without solid proof.

Scientific disagreements did not hamper Dr. Wall's recognition across the southeastern United States. The US Surgeon General summoned him for advice and leadership in controlling an outbreak at the Maritime Hospital in Brunswick, Georgia in 1893. While working with federal authorities across the border in Georgia, he received word from home that his second wife was ill with an incessant fever. He ended his work at the Maritime Hospital early and made it home only a few days before his wife passed away[2]. Although people looked up to Dr. Wall for his exhaustive efforts to arrest the spread of communicable diseases, he felt powerless against the unpredictable nature with which fevers took his loved ones.

Dr. Wall's last public appearance was for an invitation to speak at the 1895 meeting of the Florida Medical Association in Gainesville. He presented a paper titled, "Public Hygiene in the Light of Recent Observations and Experiments," in which he spoke out against the remaining members of the sanitarian faction who vehemently disagreed with his twenty-three yearlong argument over mosquitos. Throughout his passionate speech, some of the bystanders noticed that he began breathing rapidly and appeared uncomfortable. Shortly after stepping away from the podium, he "reeled and fell, striking the floor," and was reportedly dead from a cardiac arrest before help arrived[1].

Five years later, Americans applauded US Major Walter Reed, M.D. for proving through human experiments that mosquitos caused yellow fever in Cuba in November of 1900[6]. The work of Dr. Wall never surfaced in the flurry of publicity.

American physicians now had little choice but to shift their thought process on tropical diseases. The Florida Board of Public Health went on to enforce stricter public health guidelines to prevent outbreaks at the source. The subsequent mosquito campaigns followed the original recommendations of Dr. Wall. His personal connection allowed him to approach medicine from a unique perspective. Through enactments of his wisdom in

infectious disease, epidemiology, and public health, Yellow Jack has not visited Florida since 1905. Although he did not receive any recognition for his scientific reasoning, Dr. Wall had a lasting legacy on public health in the state of Florida. The Florida Board of Health and many different types of mosquito control programs are still in place across Florida today.

References

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Proceedings of the 2018 FIU Herbert Wertheim College of Medicine Research Symposium & Awards Ceremony

Friday, April 27, 2018 Graham Center Ballrooms

TIME	EVENT	LOCATION
7:30 - 8:30 a.m.	**Registration Opens**	Lobby
8:30 - 8:45 a.m.	**Welcome Remarks** Juan M. Acuña, MD, MSc, FACOG *Chair of the Department of Medical and Population Health Sciences Research* **Introduction of Florida Medical Student Journal** Komal Kinger and Nicole Millan *Junior Editors*	East Ballroom
8:45 - 10:15 a.m.	**Oral Presentations I**	Lobby
10:30 a.m - 12:00 p.m.	**Oral Presentations II**	East Ballroom
	Oral Presentations III	West Ballroom
12:00 - 1:30 p.m.	**Open Poster Session** (Lunch Served)	Middle Ballroom
1:30 - 3:00 p.m.	**Oral Presentations IV**	East Ballroom
	Oral Presentations V	West Ballroom
3:00 - 3:15 p.m.	**Break**	
3:15 - 4:00 p.m.	**AOA Speaker** J. Patrick O'Leary, MD *Executive Associate Dean for Clinical Affairs* *Associate Vice President for Medical Affairs*	East Ballroom
4:00 - 4:15 p.m.	**Break**	
4:00 - 5:00 p.m.	**Awards Ceremony**	East Ballroom

J. Patrick O'Leary, MD, '67

Dr. J. Patrick O'Leary, '67, is the Founding Executive Associate Dean for Clinical Affairs and Assistant Vice President for Strategic Planning at Florida International University. Prior to his position with FIU, Dr. O'Leary was the Isidore Cohn Jr., MD, Professor and Chairman of the Department of Surgery at Louisiana State University Medical Center. He was also Associate Dean of Clinical Affairs and former Interim Dean of LSU Health Sciences Center. He remains Emeritus Professor and Emeritus Chairman of the LSU Department of Surgery.

Dr. O'Leary completed medical school and then his residency in general surgery at UF and the Shands Teaching Hospital. He has earned nearly a dozen teaching awards from the students and faculty of the University of Florida, Vanderbilt University and LSU School of Medicine. He is an authority in the field of surgical gastroenterology, having written more than 200 peer-reviewed scientific publications and four editions of the Physiologic Basis of Surgery textbook.

Dr. O'Leary has held several leadership positions with the National Board of Medical Examiners, has served as the President of the Southeastern Surgical Congress and the Association of Program Directors of Surgery, and as the First Vice President of the Southern Surgical Association. Most recently, he has been Chairman of the Board of Governors and then First Vice President of the American College of Surgeons.

A VERY SPECIAL THANK YOU

On behalf of the directors and participants of the Fourth Annual FIU Herbert Wertheim College of Medicine Research Symposium and the Department of Medical and Population Health Sciences Research, we would like to extend a warm thank you to the amazing judges and reviewers who have worked tirelessly to support and recognize FIU research. We are tremendously appreciative of their selfless involvement in this process and are particularly grateful for their help in continuing and improving the Second Annual Research Symposium Awards.

This symposium would not have been possible if it were not for their generosity with their time and expertise. They completed more than 240 abstract reviews and were tasked with judging the quality of more than 70 final presentations. Because of their efforts and support, this year's symposium has proven to be the most successful to date.

Working together, we are preparing students for their future careers and driving FIU research to new heights. We hope that their generosity will inspire others to follow in their footsteps and volunteer their time and effort to support our FIU student researchers and the Herbert Wertheim College of Medicine community at large. Please join us once again in thanking these incredible women and men.

Oral Presentations I

Friday, April 27, 2018
8:45 a.m. – 10:15 a.m. | East Ballroom

AUTHORS	TITLE	FIELD	ABSTRACT ID
Michael Burzynski, Roy Lipworth, Claudia Ocampo	Effect of increased number of hydraulic fracturing drill sites on pediatric health outcomes in Pennsylvania	Pediatrics	O1
Ali Dosani, Natalia Pineda, Mohammed Shan Uddin	Association between physical activity and drug use among United States high school students in 2015	Pediatrics	O2
Brandy Compton, Daniel Goldberg, Katherine Klein	Prevalence of traumatic brain injury in children with attention-deficit/hyperactivity disorder	Pediatrics	O3
Melissa Díaz, Danielle Mitchel	The dose effect of kangaroo mother care on psychomotor outcomes in preterm infants at 12 months	Pediatrics	O4
Amira Said, Semerjit Bains, Kadeem Walker	The association of age at discontinuation of breastfeeding and speech and language delay	Pediatrics	O5
Abner David Wilding, Juanita Melau, Ryan Thomas	Breastfeeding duration and ADHD during early childhood in the United States	Pediatrics	O6

Oral Presentations II

Friday, April 27, 2018
10:30 a.m. – 12:00 p.m. | East Ballroom

AUTHORS	TITLE	FIELD	ABSTRACT ID
Rebecca Le, Lana Nguyen, Lea Remolona	Association between race and receipt of pregnancy testing preceding computed tomography imaging among adolescent females visiting emergency departments in the US	Health Disparities	O7
Nicolas Ramsay, Athena Failla, Ana Martinez	Ethnic disparities and chest x-rays in the emergency room	Health Disparities	O8
Madiha Ahmed, Komal Kinger, Anjali Shankar	The association between health insurance coverage and in-hospital mortality in patients hospitalized with a myocardial infarction in the state of Florida	Health Disparities	O9
Joseph Barbera, Michael Helbig, Mohammad Hashim	Relationship between race and mobility disability among 2016 NHIS survey participants	Health Disparities	O10
Scott Amrhein, Peter Kim, Ilya Luschitsky	Association between health insurance status and in-hospital stroke mortality	Health Disparities	O11

Oral Presentations III

Friday, April 27, 2018
10:30 a.m. – 12:00 p.m. | West Ballroom

AUTHORS	TITLE	FIELD	ABSTRACT ID
Yelenis Seijo De Armas, Manual Obando, Konstantinos Sebekos	Association between ED time of arrival and receiving PTCA for patients with ST-elevation myocardial infarction	Cardiology	O12
Daniel Garrido, Christiaan Myburgh, Miquel Gonzalez	The prognostic value of TIMI vs HEART for major adverse cardiac events in Hispanic AMI patients	Cardiology	O13
Arun Amble, Alexander R. Nelson, Patrick Quade	Coffee consumption and hypertension in northern Colombia in 2014-2015	Cardiology	O14
Michael Dias, Christopher Julien	Association between chronic sleep deprivation and hypertension in the adult population of Florida	Cardiology	O15
Kelly Foster, Alexandra DeQuesada, Chrisanne Roach	Association between prostate-related diseases and the development of major adverse cardiac events in post-myocardial infarction patients	Cardiology	O16

Oral Presentations IV

Friday, April 27, 2018
1:30 p.m. – 3:00 p.m | East Ballroom

AUTHORS	TITLE	FIELD	ABSTRACT ID
Yves-Dany Accilien, Stevenson Chery, William Isom	Impact of mode of transportation on hospital discharge disposition in Puerto Rican acute ischemic stroke patients	Emergency Medicine	O17
Diane Edgar, Carlos Linares, Rishi Rane	The association between intraoperative cholangiogram and short-term postoperative complications in patients undergoing laparoscopic cholecystectomy	Surgery	O18
Ashley Mendez	The association between race/ethnicity and the anatomic location of cutaneous melanoma in Florida patients	Oncology	O19
Eduardo B. Castro, Ricardo Herrera, Dhruv Bellapu	Is Insurance Status Associated With Mortality in Late-Stage Prostate Cancer?	Oncology	O20
Gloria Figueroa, Tiyash Parira, Marisela Agudelo	Alcohol drinking induces extracellular release of histones into blood plasma	Basic Science	O21

Oral Presentations V

Friday, April 27, 2018
1:30 p.m. – 3:00 p.m. | West Ballroom

AUTHORS	TITLE	FIELD	ABSTRACT ID
Stephanie Fernandez, Lindsay Ballard, Christian Irias	Opioid prescribing in the ED: Investigating the association between year and frequency of prescriptions upon discharge from the ED, 2010-2014	Public Health	O22
Andrew Miller, Alyssa McCauley, Sarah Yu	Insufficient gestational weight gain and low birth weight according to maternal race	Public Health	O23
Lalitha Chintam, Julee Sunny, Jennifer Thompson	Investigating the association between children who witness domestic violence in their household and being clinically diagnosed with childhood depression	Mental Health	O24
Kathryn Dasburg, Michelle Hernandez, Bianca Alvarez	The association between cyberbullying and suicidal behavior in US adolescents	Mental Health	O25
Sophia Meziani, Andrew Newman, Stephanie San Martin	Development of a predictive tool to identify adolescents with concurrent depressive behavior	Mental Health	O26

Poster Presentations

Friday, April 27, 2018
12:00 p.m. – 1:30 p.m. | Middle Ballroom

AUTHORS	TITLE	FIELD	ABSTRACT ID
Margaret Cookson, Jessica Milian, Brittany Roberts	The association between race and human papillomavirus vaccination status in females aged 18-49 years in North Carolina, South Carolina, Texas, and Alabama in 2016	Epidemiology	P1
Miriam Weisberg, Molly Kidder, Serena Joseph	Prevalence, disparities, and social correlates of mobility disability in the US population over 65: Insight from the 2013 national health interview survey	Epidemiology	P2
Christopher J. Cantwell, Zoe Feld, Katelynn Hyman	Association of maternal age with infant mortality	Epidemiology	P3
Bryan Herzog, Jason Ceavers, Karam Basra, Adriana Baron, Edgar Vieira, Melissa Peterson, Paulo Chaves	Short physical performance battery scores and fall prevalence in older adults from Miami-Dade, Florida	Epidemiology	P4
Ashton Sequeira, Meaghan Frederick	The impact of interest rates on Medicare Part A spending in the US from 1967-2015	Public Health	P5
Neeti Goel	Determinants of infant sleep position in the participants of the Florida PRAMS	Public Health	P6
Blake Bendixen, Emilio De Narvaez, Robert Schmidt	The association between the presence of a child in the home and smoking prevalence in south Miami households	Public Health	P7
Mohamed El-Menshawi	First time cannabis use and sexual debut in adolescents	Public Health	P8
Cathy Ng, Nicolas Reyes, Alexandra Dadrat, Sarah Stumbar, Elizabeth Gray	Using non-traditional standardized patient encounters to teach sexual history taking to pre-clinical medical students	Public Health	P9
Danielle Vachon, Michala Lee, Annie Hang Ho	Association of race/ethnicity and age at the time of diagnosis of endometrial cancer in the United States (1994-2014): An analysis of the surveillance, epidemiology, and end results (SEER) program	Health Disparities	P10
Richard Barrios, Alex Finlinson, Nasherwan Zahid	Hispanic ethnicity and survival in pediatric acute lymphocytic leukemia (ALL) patients in Florida	Health Disparities	P11
Brad Kincaid, Robert Camacho, Jerry Chih	The association between gender and length of stay of acute stroke patients in Florida hospitals	Health Disparities	P12
Corey Weinstein, Evan Goldart	Racial disparities in receipt of treatment for localized prostate cancer: Results from the SEER database, 2007-2014	Health Disparities	P13
Yessenia Marquez, Joanna Barreiro, Jacqueline Tschanz	Racial disparities in 5-year survival rates in U.S. patients with oropharyngeal cancer between 1975 and 2014	Health Disparities	P14
Victoria Garland, Emily Andersen, Alyssa Stauber	Mobile mammography screening targeting uninsured women of Miami-Dade County	Health Disparities	P15
Christopher A. Febres-Aldana, Sabrina Oneto, Garrett Van Ostian, Marc Csete, Cristina Vincentelli	The deadly storm: An unfortunate combination of factors leading to fatal asthma and barotrauma	Pathology	P16
Christopher A. Febres-Aldana, Sarah Alghamdi, Kritika Krishnamurthy, Robert J. Poppiti Jr.	Histopathology of drug-induced liver injury with autoimmune features versus autoimmune hepatitis: A pilot study	Pathology	P17
Christopher A. Febres-Aldana, David T. Wymer, William F. Burke III, Cristian Vincentelli	Hidden under the ground glass: Pulmonary tumor thrombotic microangiopathy in recurrent breast cancer	Pathology	P18
Kritika Krishnamurthy, Siba El Hussein, Ymna Omarzai	The lethal twist - A story of unspoken pain: Small intestinal volvulus, a fatal complication involving an infrequent site in a patient with cerebral palsy	Pathology	P19

AUTHORS	TITLE	FIELD	ABSTRACT ID
Kritika Krishnamurthy, Christopher A. Febres-Aldana Cristina Vincentelli	Pulmonary ciliated muconodular papillary tumor (CMPT) – A sheep in wolf's clothing	Pathology	P20
Kritika Krishnamurthy, Amilcar A. Castellano-Sanchez, Christopher A. Febres-Aldana, Jyotsna Kochiyil, Carole Brathwaite, Robert J. Poppiti Jr.	Pontocerebellar hypoplasia type 3 maps to chromosome 7q11.23: An autopsy case report of a novel genetic variant	Pathology	P21
Odille Mejia, Ana Maria Medina, John Alexis	Accessory spleen: An unusual cause of pancreatic mass	Pathology	P22
Pukhraz Basra, Roy Williams, John Alexis, Ana Maria Medina	Primary pleural neurofibroma: A rare diagnosis of a localized and benign spindle cell neoplasm of the pleura	Pathology	P23
Amaara Babwah, Joshua Gustine, Kirsten Meid, Toni Dubeau, Patricia Severns, Steven Treon, Jorge J. Castillo	Survival rates and clinical characteristics of young patients with Waldenstrom macroglobulinemia	Oncology	P24
John Bryant, Jose Lutzky, Nicolas Kuritzky	Dual checkpoint blockade with both CTLA4 and PD1 antibodies and hypofractionated radiation in patients with metastatic melanoma: Initial 3 patients	Oncology	P25
Maurillio Garcia-Gil, Corey Weinstein, Eric Martin Nikita Bodoukhin, Johnathan Dahan, Akshay Bhandari, Alan Nieder	Neoadjuvant chemotherapy utilization in South Florida: A single-institution report of barriers to receipt of neoadjuvant chemotherapy	Oncology	P26
Maurillio Garcia-Gil, Corey Weinstein, Eric Marten, Nikita Bodoukhin, Jonathan Dahan, Akshay Bhandari, Alan Nieder	Pelvic radiation as a risk factor for the development of ureteroanastomotic strictures in patients undergoing radical cystectomy and ileal conduit creation	Surgery	P27
Gene K. Lee, Austin Pourmoussa, David P. Perrault, Ketan Patel, Alex K. Wong	Supercharged free transverse rectus abdominus myocutaenous flap: Optimizing autologous reconstruction for the thin patient	Surgery	P28
Emily Geisler, Saoussen Salhi, Chad Perlyn	Anesthetic management of patients undergoing tongue reduction surgery: A single center experience	Surgery	P29

AUTHORS	TITLE	FIELD	ABSTRACT ID
Andrew Manfra, Arnav Gupta, Israel Mostafa	Diabetes and obesity as risk factors for laparoscopic abdominal surgery in Medicare age patients	Surgery	P30
Niloufar Safvati, Tyler Kalbac, Victor Moas	Association between race and severity of appendicitis: A retrospective cohort study	Surgery	P31
Bruno Panzarini, Chris Wilson, Luis Tornes	Association between race and use of PSA-based screening for the early detection of prostate cancer	Urology	P32
Ajaydeep S. Sidhu, George F. Wayne, Bu J. Kim, Alexander G.S. Anderson, Joan C. Delto, Maurilio Garcia-Gil, Gustavo A. Diaz-Mercado, Billy H. Cordon, Jorge R. Caso, Alan S. Polackwich	High-dose intracavernosal phenylephrine for priapism: Is it safe?	Urology	P33
Cyrus Bhadha, Jeremy King, Emanuel Martinez	Association between screen time and depression in U.S. adolescents: A secondary analysis of the 2016 national survey of children's health	Mental Health	P34
Javier Nahmias, Jiodany Perez, Lazaro Mesa	Impact of electronic device use on childhood flourishing	Pediatrics	P35
Christopher Kinter, Lucas Suder, Zachary Davis	The association between obesity and short-term in-hospital mortality after stroke in Florida	Neurology	P36
Joshua Sixon, Nebras Abu Al Hamayel, Sarina Isenberg, Sydney Dy	Older adults' perspectives on caregiving and quality of medical care: A qualitative study	Internal Medicine	P37
Andrew Lai, Raisa Uddin, Labeena Wajahat	Type II diabetes risk factors: Is being single a risk factor for previously undetected abnormal glucose tolerance?	Internal Medicine	P38
Daniel Samet, Nazir Noor, Samuel Quintero	Association of delay-time and in-hospital mortality in patients with acute myocardial infarction in Puerto Rico: A retrospective cohort study	Cardiology	P39

AUTHORS	TITLE	FIELD	ABSTRACT ID
Chelsea Cosner, Emma Kelly, Cindy Li	A comparison of mortality in hospitalized adult patients most-MI based upon HIV/AIDs status	Cardiology	P40
Ian Ergui	The trial to assess chelation therapy and its implications	Cardiology	P41
Peter Antevy, Caroline Epstein, Patrick Hardigan	A comparison of medications in 38 pediatric EMS protocols to those listed on the Broselow length-based tape	Emergency Medicine	P42
Teshaun J. Francis, Wei-Chiang Lin	Designing an implantable carbon dioxide sensor for complete respiratory control	Basic Science	P43

Oral Abstracts

O1

Effect of increased number of hydraulic fracturing drill sites on pediatric health outcomes in Pennsylvania

Michael Burzynski. Roy Lipworth. Claudia Ocampo. Marcia H. Varella, MD, PhD, MHS. Juan M. Lozano, MD, MSc.

Herbert Wertheim College of Medicine, Florida International University, Miami, FL

Keywords: Fracking, Asthma, Epilepsy/Seizures, Vision Problems, Hearing Problems

Introduction and Objectives: Hydraulic Fracturing ("fracking") is a method to extract underground natural gas deposits through the use of a pressurized water-chemical mixture. Adverse health outcomes including respiratory and neurosensory symptoms have been attributed to this practice, but few studies have been conducted to systematically assess this relationship. This study aims to determine if an association exists between the increase in hydraulic fracturing drilling in Pennsylvania between 2007 and 2011 and the prevalence of certain pediatric health outcomes.

Methods: This is a retrospective cross-sectional study performed using secondary analysis of data from the 2007 and 2011 phases of the National Survey of Children's Health (NSCH). Since zip code data was not available and hence individual counties could not be studied, all respondents from Pennsylvania were included. Respondents from other states were excluded. The study compared the prevalence of four outcomes (asthma, vision problems, hearing problems, epilepsy or seizures) between the two phases of the survey. Multivariate analysis (logistic regression) using STATA was conducted to control for confounders and to obtain adjusted odds ratios. National analysis was conducted to assess for national trends over the same time span.

Results: The NSCH included 1767 and 1886 respondents in the 2007 and the 2011 phases, respectively. The study detected no statistically significant difference in the prevalence of the four pediatric health outcomes assessed in Pennsylvania between 2007 and 2011. Analysis of the prevalence of asthma showed an adjusted odds ratio (aOR) of 1.3 (95%CI 0.9-1.9), vision problems aOR of 0.8 (95%CI 0.4-1.7), hearing problems aOR of 0.6 (95%CI 0.3-1.2), and epilepsy or seizures aOR of 0.7 (95%CI 0.2-2.2). National analysis detected a statistically significant increase in prevalence of asthma between 2007 and 2011 with an aOR of 1.1 (95%CI 1.01-1.2).

Conclusions: This study failed to detect an association between the increase in hydraulic fracturing between 2007 and 2011 in Pennsylvania and certain pediatric health outcomes, but these results are limited by the lack of geographical correlation due to missing zip code data.

O2

Association between physical activity and drug use among United States high school students in 2015

Ali Dosani, BS[1]. Natalia Pineda, BS[1]. Mohammed Shan Uddin, BS[1]. Melissa Ward-Peterson, MPH, PhD[2]. Juan M. Acuña, MD, MSc, FACOG[1]. Juan M. Lozano, MD, MSc[1].

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Keywords: Physical Activity, Sports, Adolescents, High School Students, Substance Use

Introduction and Objectives: Substance use is a major problem among adolescents in the United States. Three systematic reviews concluded that sports participation is associated with higher alcohol use and lower cigarette use. However, their findings on illicit drug use were inconclusive. These reviews did not differentiate among drugs, study the modification effect of gender, or study physical activity in general. For this reason, the purposes of this study were to examine the association between physical activity and use of different types of illicit drugs, and to determine if gender modifies these associations.

Methods: We performed a secondary data analysis using the 2015 Youth Risk Behavior Surveillance System (YRBSS), a cross-sectional survey of high school students across the United States. We examined the association between physical activity and the lifetime use of marijuana, prescription drugs, inhalants, cocaine, ecstasy, hallucinogens, steroids, and other drugs (methamphetamines, heroin, and IV). We included 9th to 12th grade students and excluded those with missing data on physical activity. Chi-square tests were used to analyze the association between physical activity and each illicit drug with possible confounders - sex, grade level, race/ethnicity, school performance, sadness/hopelessness, sleep, lifetime alcohol use, and lifetime tobacco use. Using multivariate binary logistic regression, unadjusted/adjusted odds ratios with 95% confidence intervals were calculated.

Results: Of the 15,624 high school students surveyed, 525 were excluded due to missing information on grade level and/or physical activity, for a total of 15,099 students. Overall, moderate and high activity were negatively associated with lifetime use of inhalants (aOR 0.7, 95% CI 0.5-0.9 and aOR 0.7, 95% CI 0.5-0.98) and other drugs (aOR 0.6, 95% CI 0.4-0.95 and aOR 0.7, 95% CI 0.4-0.99), while high activity was positively associated with lifetime marijuana use (aOR 1.3, 95% CI 1.01-1.8). However, gender modified these associations. There were no significant associations in females, but in males, moderate activity was significantly associated with lower lifetime use of ecstasy (aOR 0.4, 95% CI 0.2-0.9), hallucinogens (aOR 0.4, 95% CI 0.2-0.7), steroids (aOR 0.5, 95% CI 0.2-0.9), and other drugs (aOR 0.4, 95% CI 0.2-0.8), and higher lifetime marijuana use (aOR 1.8, 95% CI 1.3-2.6). Also, high activity was associated with lower lifetime use of inhalants (aOR 0.5, 95% CI 0.3-0.9), hallucinogens (aOR 0.4, 95% CI 0.2-0.7), and other drugs (aOR 0.5, 95% CI 0.3-0.9), and higher lifetime marijuana use (aOR 2.2 95% CI 1.7-3.0) and current marijuana use (aOR 1.5, 95% CI 1.1-2.2).

Conclusions and Implications: For females, physical activity is not associated with illicit drug use. For males, physical activity is associated with lower use of most drugs, but higher marijuana use. More research needs to be done to study these associations.

O3

Prevalence of traumatic brain injury in children with attention-deficit/hyperactivity disorder

Brandy Compton. Daniel Goldberg. Katherine Klein, MSc. Juan M. Lozano, MD, MSc. Juan C. Zevallos, MD.

Herbert Wertheim College of Medicine, Florida International University, Miami, FL

Keywords: ADHD, TBI, Concussion

Introduction and Objectives: Attention-deficit/hyperactivity disorder (ADHD) affects 11% of school-age children in the United States. It is reported that 4.5% of children with ADHD later sustain a non-fatal injury, compared to 2.5% of children without ADHD. By identifying groups of children at higher risk of traumatic brain injury (TBI), providers can more effectively educate patients and their families regarding preventative measures. This study analyzed whether children 2 to 17 years of age diagnosed with ADHD have a higher prevalence of TBI as compared to similar children without ADHD.

Methods: Population-based cross-sectional study of children 2-17 years old, who participated in the 2011-2012 National Survey of Children's Health (NSCH). We excluded children with intellectual disabilities, mental retardation, cerebral palsy, epilepsy or seizure disorder, hearing impairments, or uncorrectable vision problems. NSCH responses were used to determine the presence or absence of ADHD and of TBI. We developed contingency tables and calculated adjusted and unadjusted odds ratios using logistic regression analysis, addressing potential confounding by age, gender, race/ethnicity, socioeconomic status, health insurance status, participation in sports, and comorbidities.

Results: 85,637 children ages 2-17 were initially surveyed. Of these, 6,198 were excluded based on co-existing neurodevelopmental disorders, for a total of 79,439 children. Both bivariate and adjusted analyses showed that ADHD is associated with an increased risk of TBI (OR 2.5; 95% CI 2.0-3.2; $p < 0.001$; aOR 1.5; 95% CI 1.2-2.0; $p=0.004$). Children 14-17 years of age have an 8-fold increase in the risk, as compared to those aged 2-5 years (OR 7.9; 95% CI 4.9-12.7; $p < 0.001$).

Conclusions: Children with ADHD are 50% more likely to sustain a TBI as compared to children without ADHD. Additionally, the prevalence of TBI in children with ADHD increases with age. This study is limited by the method of data collection by the NSCH. First, the clinical diagnosis of both the exposure (ADHD) and outcome (TBI) were reported by the child's parents. Second, temporality between the two diagnoses was not assessed.

O4

The dose effect of kangaroo mother care on psychomotor outcomes in preterm infants at 12 months

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Keywords: Kangaroo Mother Care, Psychomotor, Preterm Infants, Low Birth Weight, Randomized Control Trial

Introduction and Objectives: The purpose of this study was to determine if there is a dose-effect association between days spent in Kangaroo mother care (KMC) and psychomotor outcomes in preterm neonates at 12 months of age, while controlling for potential confounders. KMC is an alternative to the current standard of care in preterm, low birthweight neonates. This intervention has three main components: continuous and prolonged skin-to-skin contact between mother and infant, exclusive breastfeeding, and kangaroo discharge policy. This intervention has been shown to improve many outcomes in preterm infants, but the literature is ambivalent regarding its impact on psychomotor outcomes. This study will attempt to address the gap in the current literature about optimal dose and duration of KMC.

Methods: Secondary analysis of data collected by a randomized control trial in Bogotá, Colombia from 1989-1994. The study included 746 infants born between 1993-1994 who were randomized to either traditional preterm care or KMC. Exposure was time spent in KMC categorized by 0 days, 1-14 days, and 15 or more days. Outcome of interest was psychomotor delay (PD) measured as Griffiths quotient of 0.9 or less at 1 year. Bivariate analyses compared the distribution of potential confounders compared to both exposure and outcome. Both crude and adjusted logistic regression odds ratios (OR) and 95% confidence intervals (95% CI) were computed.

Results: The odds of having PD were not statistically different from the controls in both neonates in KMC for 1-14 days (OR= 1.6, 95% CI= 0.62- 4.16) nor those in KMC for 15 or more days (OR= 1.1, 95% CI= 0.51- 2.50). These results remained non-significant even after adjusting for days spent in the NICU and mother education.

Conclusions and Implications: Our results indicate that the use of KMC in low birthweight infants yielded similar outcomes to those who received conventional neonatal care. However, these findings do not exclude a potential effect of duration in KMC on PD. In this study, PD was very infrequent (only 5.6% of outcomes) which had a negative impact on this study's statistical power. Further research with a larger sample size is required to identify any possible dose-response effect of KMC.

O5

The association of age at discontinuation of breastfeeding and speech and language delay

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Keywords: Communication Delay, Breastfeeding, Developmental Delay, Pediatrics, Language Development

Introduction: Speech and language disorders are among the most common developmental delays of childhood. The benefits of breastfeeding are widely accepted, yet, consistent findings are lacking in regards to its benefits of breastfeeding on speech and language development.

Objective: To assess whether an association exists between age at discontinuation of breastfeeding and speech and language delay.

Methods: We conducted secondary data analysis of children ages 2-5 years in the United States participating in the 2011-2012 National Survey of Children's Health who were ever breastfed. Our main exposure was age in months at discontinuation of breastfeeding and the main outcome was ever receiving a diagnosis of speech and language delay by a healthcare provider. Maternal lifestyle, education, and health status and children's demographic and clinical characteristics were assessed as confounders. Multivariate logistic regression analyses were performed using STATA 14 software.

Results: Among the 12,089 children included, about 19% discontinued breastfeeding at less than 3 months, 3-6 months, and 6-9 months, 14% discontinued breastfeeding at 9-12 months, and lastly 29% discontinued after 12 months. Overall language and speech delay was present in 7% of children, with the highest proportion (9.5%) among the group which breastfed for less than 3 months. In children who stopped breastfeeding between 9 and 12 months and greater than one year, the odds of developing speech delay significantly decreased (OR=0.46, 95% CI=0.27-0.79, p-values = 0.004 and OR=0.63, 95% CI=0.40-0.99, p=0.048, respectively). After adjustments, the odds of developing speech delay remained significant only for the subgroup that discontinued breastfeeding between 9 and 12 months compared to children who stopped breastfeeding within 3 months (OR= 0.53, 95% CI= 0.32- 0.91).

Conclusions: Findings suggest that the optimal timing for discontinuation of breastfeeding as to reduce the odds of speech delays was between the ages of 9 and 12 months. Future research should look towards prospective assessment of the optimal duration and type of breastfeeding for better speech and language development.

O6

Breastfeeding duration and ADHD during early childhood in the United States

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Keywords: Breastfeeding, ADHD, Mental Health, Prenatal Care, Public Health

Introduction and Objectives: Attention-Deficit/Hyperactivity Disorder (ADHD) is one of the most commonly diagnosed behavioral disorders of childhood. ADHD increases the risk for social, psychological, and other adverse health consequences. Breastfeeding has been shown to be associated with better cognitive development scores in children. Whether breastfeeding is associated with the risk of ADHD is yet unclear. The objective of this study is to determine if there is an association between breastfeeding duration and ADHD diagnosis during early childhood.

Methods: Cross-sectional study using data from the National Survey of Children's Health (NSHC), years 2011-2012, a CDC population-based survey done in the US households. The participants were all children 2 to 5 years of age, born at term who participated in the 2011-2012 NSCH. The main independent variable was duration of breastfeeding (categorized as never, < 3 months, between 3 and 6 months, and ≥ 6 months). The dependent variable was rate of diagnosis of ADHD by a doctor or health care provider. The data was analyzed using multivariate logistic regression to identify independent associations. Stata 12 software was used to account for the complex survey sampling.

Results: A total of 17,230 were analyzed. Overall, the prevalence of ADHD was 1.5%. Children breastfed from 3-6 months and for 6 or more months had lower odds of being diagnosed with ADHD when compared to children who were never breastfed (OR: 0.44, CI 95%: 0.23 - 0.872, p= 0.018 and OR=0.40, 95% CI=0.22-0.73, p=0.003, respectively) before adjustments. Those breastfed for less than 3 months were not significantly different than those never breastfed. After adjusting for child's gender, race, and age at interview, family income, and mother's mental/emotional health, only those breastfed for longer than 3 months had significant lower odds of having ADHD (OR: 0.44, 95% CI: 0.20 - 0.97, p= 0.042). After adjustments, children breastfeeding for more than 6 months had lower odds of ADHD compared to never breasted children, but significance was borderline only (OR=0.56, 95% CI=0.28-1.10, p=0.091).

Conclusion and Implications: We found preliminary evidence that breastfeeding for at least 3 months decrease the risk of ADHD in early childhood. Our results further support current recommendations of breastfeeding as a potential way to promote healthy social/cognitive development.

O7

Association between race and receipt of pregnancy testing preceding computed tomography imaging among adolescent females visiting emergency departments in the US

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Keywords: Emergency Service Hospital, Adolescent, Pregnancy Tests, Computed Tomography

Introduction and Objectives: Radiation exposure from Computed Tomography (CT) is teratogenic for first trimester fetuses, which could be prevented by administering a pregnancy test to reproductive age women before imaging. Few studies have examined factors affecting pregnancy testing rates amongst adolescents requiring imaging in the emergency department. Our objective was to examine the most current prevalence of pregnancy testing and to assess if race is associated with pregnancy testing in adolescents requiring CT imaging in emergency departments throughout the US.

Methods: We analyzed data from a cross-sectional study - the National Hospital Ambulatory Medical Care Survey - Emergency Department (years 2005-2015). Only female patients between ages 12-18 years and of White or Black race requiring CT imaging were included in this study. Exposure variable was race (White, Black). Outcome variable was receipt of a pregnancy test (yes, no). Control variables included demographics and visit characteristics. Unadjusted and adjusted (multivariable logistic regression) odds ratios (OR) and 95%CI were computed.

Results: 787 patients were included in the analytical sample, of which 18% were Black adolescents. About 42% and 29% of White and Black adolescents who received CT imaging were tested for pregnancy during the ED visit, respectively (p=0.018). There was significantly lower odds of receipt of pregnancy testing for Black adolescents compared to White adolescents, both in the unadjusted (OR 0.55, 95%CI 0.34 - 0.90) and adjusted analyses (OR 0.53, 95%CI 0.31 - 0.90).

Conclusions and Implications: We found evidence of low overall pregnancy testing frequency in patients receiving CT and of apparent racial disparities in the frequency of pregnancy testing. Our findings might be taken as preliminary evidence suggesting the need for a standard protocol to help improve pregnancy testing in adolescents as to avoid potential teratogenic exposures in the ED.

O8

Ethnic disparities and chest x-rays in the emergency room

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Keywords: Health Disparities, Pediatrics, Pneumonia, Emergency Department, Chest X-ray

Introduction and Objectives: Community acquired pneumonia (CAP) is a frequent cause of hospital admission for pediatric patients. Diagnosis and management of CAP in pediatric patients in the Emergency Department (ED) presents multiple challenges, and only a few studies have assessed healthcare disparities in this setting. We investigated whether Hispanic/Latino pediatric patients receive differential quality of care, measured by chest X-rays (CXR), when compared to non-Hispanic/Latino patients presenting to the ED with a differential diagnosis of pneumonia. Understanding racial and ethnic disparities can influence the design of healthcare policy.

Methods: A secondary data analysis was conducted using the National Hospital Ambulatory Medical Care Surveys from 2009 to 2014. Pediatric (ages 0 through 17 years) ED visits that received a differential diagnosis of "pneumonia" were included. The primary outcome was receiving a CXR, with ethnicity as the independent variable. The association between ethnicity and CXR was assessed obtaining odds ratios adjusted (aOR) for several potential confounders using logistic regression. Sensitivity analysis was conducted for patients with missing data on ethnicity as well as an expanded inclusion criteria ("reason for visit" = cough). All analyses were conducted using Statistical Package for the Social Science (SPSS).

Results: A total of 587 patients were included in the study. Hispanic/Latino patients were less likely to receive a CXR (80.8%) when compared to their Not Hispanic/Latino counterparts (84.1%), but the difference was not statistically significant (aOR 0.8, 95% CI 0.3-2.5, p=0.744). Sensitivity analysis for missing data regarding ethnicity yielded similar results. Expanding the inclusion criteria to cough increased the sample size to 5,631 and established a statistical significant association between ethnicity and the use of CXR (aOR 0.8, 95% CI 0.7-0.9, p < 0.005).

Conclusions and Implications: Hispanic/Latino patients presenting to the ED with symptoms of pneumonia were 20% less likely to receive a CXR when compared to their not-Hispanic/Latino counterparts, but this difference was not statistically significant. Expanding the inclusion criteria yielded the same OR with statistical significance. Further research warrants gathering a larger sample and exploring possible reasons for the association found in this study.

O9

The association between health insurance coverage and in-hospital mortality in patients hospitalized with a myocardial infarction in the state of Florida

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Keywords: Health Insurance, Myocardial Infraction Prognosis, Medicaid/Medicare

Introduction and Objectives: Although many research studies have been conducted on the correlation between different factors and their impact on prognosis after an acute myocardial infarction (AMI), not many studies have been done to understand the role of health insurance on prognosis after an AMI. Currently 11.3% of adults in the United States (U.S.) are uninsured and these numbers may rise if the new health care act is enacted. Health insurance plays an important role in many disease outcomes, including myocardial infarction (MI). Privately insured patients tend to have a better prognosis than Medicaid patients or uninsured patients. The objective of our project is to use existing data to analyze the association between three categories of health insurance coverage: no insurance, private insurance, and Medicaid and mortality in patients in Florida post AMI.

Methods: This is an observational, non-concurrent cohort secondary data analysis from patients participating in the Florida Agency for HealthCare Administration. Patients aged 18-64 who were hospitalized with an acute MI for the first time were included in the study. The independent variable is insurance status (private, no insurance, or Medicaid) of the patients at the time of admission and the dependent variable is in-hospital mortality. The independent association between insurance status and in-hospital mortality post MI was tested using multivariate logistical regression.

Results: The in-hospital mortality of patients after acute MI was significantly associated with insurance status. The adjusted model showed that patients with Medicaid (OR=1.62 (CI 1.45-1.82), $p < 0.05$) and patients without insurance (OR = 1.63 (CI 1.44-1.84), $p < 0.05$) had a similar increase in odds of in-hospital mortality as compared to patients with private insurance. Characteristics that were significantly associated with increased in-hospital mortality were older age, diabetes, heart failure, and atrial fibrillation. Characteristics that were associated with decreased risk of in-hospital mortality were Hispanic/Latino ethnicity, hypertension, and hypercholesterolemia. Patients with “other private” insurance were incidentally found to have lower mortality odds than private insurance patients (OR=0.72 (CI 0.57-0.91), $p < 0.05$), and patients with “other government” insurance were incidentally found to have higher mortality than private insurance patients (OR=1.23 (CI 1.03-1.48), $p < 0.05$).

Conclusions and Implications: Our research suggests that patients with private insurance are more likely to have a better prognosis after hospitalization for an AMI. More research is needed to determine what other factors influence in-hospital mortality of patients after AMI.

O10

Relationship between race and mobility disability among 2016 NHIS survey participants

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Keywords: Mobility Limitation, Mobility Disability, Race, NHIS

Introduction and Objectives: Disability is a growing healthcare problem in the United States, considering the increasing elderly population, and is associated with a large cost burden to the healthcare system. Mobility disability is a precursor to further functional limitations and ultimately complete disability. New evidence suggests interventions are efficacious in preventing progression of mobility disability to more advanced stages, thus identifying those at risk might lead to better tailored preventative interventions. Our study aims to determine if race is associated with rates of mobility disability in patients 65 years and older.

Methods: Using the NHIS 2016 Sample Adult data we identified 8,259 participants 65 years and older. Race categorized as White, Black, Asian, and Other was extracted. The question “How difficult is it to walk 1/4 mile without special equipment?” was used to define presence of mobility. Those who answered “not at all difficult” were said to have no mobility disability. Those who answered with “only a little difficult”, “somewhat difficult”, “very difficult”, or “can’t do at all” were said to have mobility disability. Sex, marital status, BMI, and numerous comorbidities were assessed as potential confounders. Logistic regression analyses were performed to assess the independent relationship between the race and mobility disability.

Results: Our study sample consisted of 85.1% Whites, 8.4% Blacks, 4.2% Asians, and 1.9% other races. Overall, 38.4% reported difficulties walking ¼ mile without use of equipment. After adjustment for demographics and comorbidities, compared to White individuals, mobility disability was significantly greater in those who identified themselves as other races [Adjusted odds ratio (aOR)= 2.2, 95% confidence interval (CI)=1.5-3.2] and Black (aOR=1.4, 95% CI=1.1-1.7). Odds of mobility disability also increased in participants who were older, female, who did not have partners, and who had chronic medical problems.

Conclusions and Implications: The results suggest that race is associated with the inability to walk ¼ mile without the use of equipment. More research needs to be performed to assess the need for tailored interventions for this higher risk group and to determine possible underlying factors for the racial disparities found.

O11

Association between health insurance status and in-hospital stroke mortality

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Keywords: Mortality, Stroke, Medicare, Medicaid, Insurance

Introduction and Objectives: Strokes are a prevalent cause of death and disability with approximately 700,000 Americans experiencing a stroke in 2006. The United States with its aging population also possesses great disparities in healthcare as evidenced by available insurance plans, access to care, and other measures. This research aims to study the association of in-hospital stroke mortality when comparing patients with various types of health insurance in Florida during 2008 and 2012 as a measure for these differences in healthcare.

Methods: A retrospective cohort study was performed based on the Florida Hospital Discharge Database for Stroke. We extracted adult patients who have been admitted to Florida hospitals with a main diagnosis of stroke from 2008-2012. The main exposure variable was the insurance status (Medicare and its replacement plans, Medicaid and its replacement plans, Private Insurance, Self-Pay, and Other) and outcome variable was in-hospital mortality. The Other insurance category includes several smaller programs such as VA benefits, charity cases, and research trial patients. The statistical analyses were adjusted for age, race, ethnicity, gender, presence of comorbidities such as hypertension, area of residence, and type of stroke. Unadjusted and adjusted logistic regression models were used and odds ratio (OR) with their corresponding 95% confidence intervals (CI) are presented.

Results: Compared with Medicare patients, all other insurance patients had an increase in-hospital mortality. Medicaid patients had twice the odds of in-hospital mortality compared with Medicare patients (OR: 2.1; 95% CI: 2.0-2.3). Other types of insurances include private insurances (OR: 1.8; 95% CI: 1.7-2.0), Self-Pay (OR: 2.7; 95% CI: 2.4-3.0), and other insurances (OR: 4.0, 95% CI: 3.7-4.4). After adjusting for type of stroke, Medicaid patients with hemorrhagic stroke had increased odds of in-hospital mortality compared with Medicare patients (OR: 1.5; 95% CI: 1.3-1.7). Similarly, Medicaid patients with ischemic stroke had a three-fold increase in-hospital mortality compared with Medicare patients (OR: 2.8; 95% CI 2.5-3.2).

Conclusion and Implications: Insurance status was a predictor of in-hospital mortality. Interventions may be implemented to decrease health disparity between different insurance groups. Future research should further review the Other insurance category to analyze if the higher mortality extends among its constitute parts. The study was unable to determine stroke severity at time of admission or length of time that the patient had their insurance.

O12

Association between ED time of arrival and receiving PTCA for patients with ST-elevation myocardial infarction

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Keywords: PTCA, Time of Arrival to ED, STEMI

Introduction and Objectives: Time of day at arrival to hospitals potentially impacts the management of STEMI patients. Research results are conflicting and might vary according to type of health care system and geographical location. Our objective is to evaluate the association between time of admission to the ED and the performance PTCA in adult patients with acute STEMI in Florida.

Methods: A historical cohort of adult patients with STEMI was assembled using the Florida Hospital Acute Myocardial Infarction Discharge (FH AMI) database (2010-2015). Exposure variable was time of arrival to the ED (on-hours -7AM to 6:59PM- vs. off-hours) and performance of PTCA was the main outcome. Control variables included demographics, comorbidities and insurance status. Crude and adjusted for potential confounders (multivariable logistic regression) odds ratios (ORs) and 95%CI were computed.

Results: 57,429 adult STEMI patients with available data on time of arrival to the ED and on performance of PTCA were included; 21,289 (37.%) arrived off-hours to the ED. Proportions of STEMI patients not receiving PTCA were 24.9% and 24.5% for off-hours and on-hours arrival, respectively. There was no difference in the odds of failing to receive PTCA between off and on hours arrival, both crude (OR 1.02; 95%CI 0.98-1.06), and after adjusting for demographics, comorbidities and insurance type (OR 1.04, CI 0.99-1.09). The odds of not receiving PTCA increased significantly with age ($p<0.001$), with patients older than 80 years of age being the most affected (OR 3.18, CI 2.93-3.44). Female gender (OR 1.25, CI 1.20-1.31), Black race (OR 1.44, CI 1.35-1.55), Medicare (OR 1.75, CI 1.62-1.89) and Medicaid (OR 1.71, CI 1.56-1.87) insurance types, diabetes (OR 1.43, CI 1.37-1.50), history of prior MI (OR 1.78, CI 1.67-1.91) and presenting to a rural hospital (OR 5.77, CI 4.42-7.54) were also found to be associated with increased risk of not receiving PTCA.

Conclusions: No association between time of arrival to ED and PTCA administration was found. Future studies can look at the various black ethnic groups to determine why they are less likely to receive PTCA. Investigators should also explore why individuals who have Medicare insurance are less likely to receive PTCA.

O13

The prognostic value of TIMI vs HEART for major adverse cardiac events in Hispanic AMI patients

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Keywords: TIMI, HEART, MACE, Prognosis

Introduction and Objectives: Chest pain is a common complaint in the emergency room and represents a significant proportion of all hospital admissions. Prognostic scoring systems, such as the Thrombolysis in Myocardial Infarction (TIMI) and HEART (History, EKG, Age, Risk factors, and Troponin) risk scores, have been used to stratify patients by risk and acuity to help better guide therapeutic interventions and allocation of resources. While both scoring systems have values in a clinical setting, few studies have been performed comparing their prognostic values in a Hispanic inpatient setting. Therefore, the aim of this study was to assess if there is a statistical difference between the TIMI and HEART prognostic scales on in-hospital mortality and major adverse cardiac events (MACE) in a mostly Hispanic population.

Methods: We conducted a secondary analysis of the Puerto Rico Cardiovascular Surveillance Study (PRCVSS) registry for study years 2007, 2009, and 2011. Data were collected from patients across 20 medical centers with suspected acute coronary syndrome (ACS). The primary outcome of MACE was defined as cardiac arrest, all-cause mortality, and patients undergoing revascularization. Elevated troponin was defined as blood cardiac enzyme levels > 10x the normal limit reported by participating hospital labs during the study period. Patients with prior history of myocardial infarction (MI), and those with insufficient data were excluded. Data were analyzed utilizing the STATA version 14.

Results: The study cohort included 2,362 patients with suspected ACS. The receiver operating curve (ROC) analyses demonstrated a TIMI c-statistic of 0.559, and HEART c-statistic of 0.542. In addition, adjusted multivariate analyses of variables contributing to the HEART and TIMI scores showed elevated troponin levels increased risk of MACE [odds ratio (OR): 3.8 (CI 95%: 2.8-5.2)], while factors such as hypertension [OR: 0.6 (CI 95%: 0.4-0.8)], family history of coronary heart disease (CHD) [OR: 0.5 (CI 95%: 0.4-0.8)], and new onset left bundle branch block (LBBB) [OR: 0.3 (CI 95%: 0.1-0.8)] were significantly associated against MACE.

Conclusions: Our findings suggest that there was no clinically significant difference in the prognostic value of HEART scores versus TIMI scores for the outcome of MACE. Furthermore, the accuracy of both scoring systems was shown to be poor in our study. However, elevated troponin levels, a component of both the TIMI and HEART prognostic scales, revealed greater odds of MACE in the study population.

O14

Coffee consumption and hypertension in northern Colombia in 2014-2015

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Keywords: Hypertensions, Coffee, Latin-America, BMI, Blood Pressure

Introduction and Objectives: Coffee is widely consumed and hypertension is the most important risk factor for cardiovascular disease. However, the association between coffee consumption and hypertension has not been studied in a Hispanic population. This objective of this study was to investigate the association between coffee consumption and hypertension in the Northern Colombian population in 2014/2015.

Methods: A retrospective cross-sectional study was performed using the Colombian Diabetic Surveillance Study consisting of adults 18-74 years old, belonging to health-care insurance company “Mutual SER EPSS” living in five departments in Northern Colombia. Exclusion criteria were not being treated for type 2 diabetes (DM), previously diagnosed DM, pregnancy or breast-feeding, history of cancer, regular use of systemic corticosteroids, hemophilia, inability to stand or communicate, living in areas of difficult access, or with missing data on variables used in this study. The primary independent variable, coffee consumption, was measured in cups per day. Hypertension was defined as either taking antihypertensive treatment, systolic blood pressure > 140 mmHg or diastolic blood pressure > 90 mmHg. Following covariates were included in the statistical models: age, sex, smoking status, ethnicity, daily fruit consumption, salt intake, physical activity, education level, age, BMI. Unadjusted and adjusted logistic regression models were used to calculate the odds ratios (OR) and the corresponding 95% confidence interval (CI).

Results: A total of 1697 participants were included in the analysis. Drinking between three to five cups of coffee was associated with a 38% reduction of risk of hypertension (OR 0.63; 95% CI 0.41-0.94) after adjusting for BMI, age and smoking status. No statistically significant association was found between drinking daily half-two cups (OR 0.95; 95% CI 0.70-1.28) or more than five cups of coffee (OR 0.71; 95% CI 0.41-1.25) and hypertension. Whereas overweight (OR 1.75; 95% CI 1.29-2.39) and obesity (OR 3.36 95% CI 2.42-4.65) increased the risk of hypertension, current smoking decreased it (OR 0.46; 95% CI 0.27-0.81).

Conclusions: The association observed between coffee consumption and hypertension supports the theory that certain amounts of daily coffee consumption may be vasculo-protective in nature and benefit certain Hispanic patient populations.

O15

Association between chronic sleep deprivation and hypertension in the adult population of Florida

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Keywords: Sleep Deprivation, Chronic Sleep Deprivation, Hypertension, Florida, Adults

Introduction: Chronic sleep deprivation and hypertension are significant health issues in the United States, resulting in lost productivity and increased healthcare costs. Previous studies have found a positive association between these two variables with the postulated physiologic link being the loss of Slow-Wave Sleep (SWS), resulting in increased sympathetic tone and a pro-inflammatory state. However, this association has not been studied in the adult population of Florida.

Objectives: The study aimed to quantify the association between chronic sleep deprivation and hypertension via a large population-based cross-sectional secondary analysis of survey data from the 2013 Florida BRFSS (Behavioral Risk Factor Surveillance System).

Methods: Adult Florida residents over the age of 18 were identified from the 2013 Florida BRFSS. Status of sleep deprivation, hypertension and potential confounders were assessed using the BRFSS codebook. Chronic sleep deprivation was defined as survey participants reporting less than 7 hours of sleep in a 24-hour period. The primary outcome measured was hypertension, defined as participants reporting being told they have high blood pressure by a nurse or physician. After controlling for potential confounding variables, multivariate logistic regression was used to obtain odds ratios (OR).

Results: After applying the exclusion criteria 34,057 participants were included for analysis and the most represented subgroups in the study population were white (79.7%), female (59.9%) and those over the age of 65 (41.7%). Among those with chronic sleep deprivation, the adjusted odds of presenting hypertension was significantly higher among participants that were black (OR= 1.46, 95% Confidence Interval [CI] 1.21-1.76, $p < 0.001$), obese (OR=2.57, 95% CI 2.26-2.92, $p < 0.001$) or diagnosed with a mood disorder (OR=1.73, 95% CI 1.49-2.01, $p < 0.001$).

Conclusions: Findings of this study suggest that there is an association between chronic sleep deprivation and incident hypertension (OR 1.17, 95% CI 1.03-1.33, $p = 0.016$) after adjusting for confounders in the adult population of Florida. Future research should focus on further characterizing the relationship between hypertension and sleep duration while controlling for confounders such as obstructive sleep apnea and sleep disorders.

O16

Association between prostate-related diseases and the development of major adverse cardiac events in post-myocardial infarction patients

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Keywords: Prostate, Prostate-related Diseases, Major Adverse Cardiac Events (MACE), Post-Myocardial Patients, Prostate-specific Antigen (PSA)

Introduction and Objectives: Coronary heart disease is the single leading cause of death in the United States. There are 161,360 new cases of prostate cancer per year. Prostate cancer is the most common cancer and the third most common cause of cancer death in males. Some studies suggest a link between prostate-specific antigen (PSA) levels and coronary artery disease (CAD). Our study objective was to identify an association between Prostate-Related Diseases (PRD) and major adverse cardiac events (MACE) after an acute myocardial infarction (MI).

Methods: Secondary analysis of data collected from the Florida Myocardial Infarction Registry from 2010-2015, a non-concurrent prospective study. Population included 297,081 post-MI male patients. Primary exposure was PRD while the outcome was the development of MACE. Multivariate analysis was performed to obtain adjusted odds ratios to assess potential confounders. Statistical significance defined as $p < 0.05$. Analysis was conducted through Stata Statistical Software: Release 14.

Results: The odds of having MACE during hospitalization in patients with acute MI and PRD decreased significantly by 8% when compared to patients with acute MI and without PRD (OR=0.92, 95% CI=0.88-0.98). After adjusting the data for race, ethnicity, tobacco use, obesity, hypertension, hyperlipidemia and diabetes, the associated remained statistically significant and became even stronger. The odds of developing MACE decreased by 20% in patients with PRD compared to patients without PRD in the adjusted model (OR=0.80, 95% CI=0.75-0.85). This paradoxical relationship was also observed in patients with hypertension (OR=0.57, 95% CI=0.56-0.59) and hyperlipidemia (OR=0.54, 95% CI=0.52-0.56) in the adjusted model. There was no significant difference in respects to tobacco use, obesity and diabetes and the development of MACE.

Conclusions: There was a statistically significant paradoxical association between post-MI patients with PRD and development of MACE. A prospective cohort study involving the measurement of patient PSA levels during and after an acute MI would be a more effective method to further evaluate this association.

O17

Impact of mode of transportation on hospital discharge disposition in Puerto Rican acute ischemic stroke patients

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Keywords: EMS, Mode of Transportation, Puerto Rico, Hospital Discharge, Ischemic Stroke

Introduction and Objectives: The burden of acute ischemic stroke (AIS) is particularly heavy in Puerto Rico, as there is evidence that Puerto Ricans living on the island are less likely to recognize the onset of stroke symptoms and be transported to receive optimal care in a timely manner when compared to non-Hispanic whites, non-Hispanic blacks, and Hispanics living in Florida. However, research regarding the impact of these factors on short-term mortality is limited. The purpose of this study is to explore whether there is an association between mode of arrival to the hospital and discharge disposition in Puerto Rican patients with AIS.

Methods: We conducted a secondary analysis of the 2007, 2009 and 2011 Puerto Rico Cardiovascular Disease Surveillance electronic database. The data comes from 21 medical centers located in Puerto Rico. Adult patients (≥ 18 years old) with an AIS and a known mode of transportation to the hospital were included. Patients were separated into 2 groups; those who used EMS and those who used private transportation. Discharge disposition was determined as favorable, defined as "patient discharged to prior residence or home without the need of additional assistance," or unfavorable, which included "all other outcomes." We performed logistic regression modeling to adjust for potential confounders.

Results: A total of 3,836 patients were included for analysis. Approximately, 41% (N=1589) of the subjects used Emergency Medical Services (EMS). Patients utilizing EMS as mode of arrival to the hospital had almost 3 times higher odds of an unfavorable disposition (OR=2.7, 95% CI=2.3-3.2) as compared to those using private transportation. Other characteristics associated with increase odds of unfavorable discharge disposition were ages 65 and over (OR=1.7, 95% CI=1.4-2.2), history of atrial fibrillation (OR=1.3, 95% CI=1.0-1.8) and involvement of a neurology team (OR=1.4, 95% CI=1.1-1.7).

Conclusions: Our findings suggest that AIS patients living in Puerto Rico who arrived to the hospital via EMS have an increased odd of unfavorable discharge disposition. This finding may be at least partially explained by the possibility that patients with more severe strokes are more likely to call EMS for assistance and transport. However, additional research is needed to verify this assumption, particularly the impact of stroke severity on post-AIM short-term mortality.

O18

The association between intraoperative cholangiogram and short-term postoperative complications in patients undergoing laparoscopic cholecystectomy

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Keywords: Cholecystectomy, Cholangiogram, Postoperative Complications, Laparoscopic, Gall Bladder

Introduction and Objectives: Intraoperative cholangiography (IOC) is a technique frequently implemented by surgeons while performing laparoscopic cholecystectomies (LC) in order to better visualize the biliary anatomy and to help prevent bile duct injury. Though widely accepted, some medical professionals find the procedure time consuming and costly. There is a lack of sufficient evidence available in support of whether IOC decreases the overall risk of postoperative complications, which begs the question as to whether the benefits truly outweigh the risks with the use of IOC. The goal of this study is to determine whether the use of IOC during LC has an effect on the frequency of postoperative complications.

Methods: Using a retrospective cohort, patients undergoing LC with and without IOC have been identified from the National Surgical Quality Improvement Program (NSQIP) database. The sample of this study consists of 56,868 patients undergoing LC between 2014 and 2016. The main independent variable was the use of IOC with LC, and the dependent variable was postoperative complications. The patients were followed up for 30 days post-surgery. A descriptive analysis determined whether the two exposure groups were similar considering potential confounders: age, gender, race, BMI, type of surgery (elective vs. non-elective), ASA score, history of hypertension, diabetes, smoking, COPD, sepsis, congestive heart failure, chronic steroid use and disseminated cancer. Additionally, a bivariate analysis of patients exposed to IOC and the aforementioned potential confounders with postoperative complications was performed. A multivariable analysis was conducted to determine the association of IOC exposure and confounders with post-operative complications, measured using adjusted and unadjusted odds ratios.

Results: The odds of having postoperative complications increased by 20% in those receiving IOC (n=13,041) when compared to those receiving LC alone (n=43,827), after adjusting for all confounding variables (OR 1.2; 95% CI= 1.1-1.3). Adjusted analysis further showed that non-elective surgery, ASA score of 4+, history of systemic sepsis, and age 80+ were significantly associated with postoperative complications (OR 11.0, 95% CI= 10.4-11.7; OR 4.6 95% CI= 3.8-5.6; OR 2.9, 95% CI= 2.5-3.3, respectively).

Conclusions and Implications: Patients undergoing LC with the use of IOC have a 20% greater likelihood of experiencing postoperative complications when compared with patients receiving LC alone. LC is one of the most commonly performed surgical procedures in the United States. Understanding that the addition of IOC to this procedure may contribute to worse patient outcomes could aide physicians in making the choice whether or not to use IOC. Further research is needed to reproduce these results in different populations and expand the definition of postoperative complications to include a wider list of variables.

O19

The association between race/ethnicity and the anatomic location of cutaneous melanoma in Florida patients

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Keywords: Race, Ethnicity, Melanoma, Anatomic Location

Introduction: Melanoma in non-Hispanic Blacks (NHB) and Hispanics are associated with worse prognosis. Melanoma anatomical location has also been shown to vary with ethnicity.

Objective: Our study aims to analyze whether race/ethnicity is associated with particular anatomic locations of cutaneous melanoma.

Methods: We assessed data from participants of the Florida Cancer Data system. The study sample included adults with a primary diagnosis of melanoma between 1998 and 2014. Race/ethnicities analyzed were White Non-Hispanics (WNH), White Hispanics (HW), and Black-Non Hispanics (BNH). The anatomic locations of interest were the outcome grouped into face, neck and scalp as opposed to upper limbs and shoulders, trunk, and lower limbs and hips. Logistic regression analysis were performed considering the outcome present for melanoma occurring on trunk, limbs, shoulders, and hips and absent if it occurred elsewhere. Stata 14 was used for analysis.

Results: We studied 96,713 melanoma patients, of which 97% were WNH, 2.6% were WH, and 0.54% were BNH. About 18% of melanoma cases occurred on the face. After adjustment for patient's age, gender, stage at diagnosis, marital status, insurance status, and smoking status, the odds of cutaneous melanoma of the trunk and extremities in the NHB population was OR=3.80 (95% CI=2.2-6.6) . There was no difference in the odds of melanoma of the trunk and extremities in the WH population compared the WNH population, both prior to and following adjustment.

Conclusions: This finding suggests that the most common sites for melanoma varies by race. Recognition of the varying susceptibility to melanoma among race/ethnicities should guide skin examinations and patient education.

O20

Is Insurance Status Associated With Mortality in Late-Stage Prostate Cancer?

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Keywords: Prostatic Neoplasms, Health Insurance, Cancer Related Mortality, Socioeconomic Status

Introduction and Objective: Prostate cancer is the most common cancer diagnosis among men in the United States, with over 160,000 new diagnoses in 2017 alone. Poorer men have higher mortality rates for prostate adenocarcinoma than their wealthier counterparts, especially in late-stage diagnoses. Health insurance is one parameter with some value as a proxy measure for socioeconomic status. In regards to prostate cancer, there is abundant data on the effects demographics on quality of life, but little regarding the association between access to health insurance and patients' outcomes. This study aims to investigate whether insurance status at time of diagnosis for men with late-stage prostate cancer is associated with overall survival.

Methods: This study was a secondary data analysis of information gathered through the SEER database submitted from 1973-2013. SEER includes all newly-diagnosed invasive cancer cases from multiple reporting sources (n=12.034). Information includes tumor location, stage, size, grade, and demographic data such as age, sex, race, marital- and insurance statuses. Patients under the age of 65 years diagnosed with late-stage prostate cancer were included. Patients were excluded in case of missing information on any of the above analysis variables. The study compared the 5-year cancer-related mortality rates of patients selected from the database with respect to insurance status at time of diagnosis. Insurance status was stratified into "uninsured", "Medicaid", and "insured". The analysis also controlled for possible confounders, including race, ethnicity, age at diagnosis, marital status and lymph node status. A Chi-squared analysis was used to evaluate the differences among insurance statuses according to mortality. Unadjusted and adjusted Cox regression models were used to calculate the 5-year hazard of death. Hazard ratios (HR) and their corresponding 95% confidence intervals (CI) were calculated.

Results: In total, 91% (n=10.966) of the study participants were insured, 6% (n=733) had Medicaid and 3% (n=345) were uninsured. Adjusted HR showed uninsured patients had a 1.34-fold increased hazard of death (95% CI 1.01-1.77) compared to insured ones. The corresponding HR for participants with Medicaid was 1.75 (95% CI 1.41-1.78). Presenting with grades III or IV tumor, distant metastases and not having undergone prostatectomy also increased the HR statistically significantly.

Conclusions-Implications: Access to private insurance was associated with decreased 5-year cancer-related mortality in

late-stage prostate adenocarcinoma compared to Medicaid or no insurance. This knowledge can guide changes to educational and screening approaches in uninsured and Medicaid men to prevent late-stage diagnosis of prostate cancer and mitigate the morbidity, mortality, and economic toll of this devastating disease.

O21

Alcohol drinking induces extracellular release of histones into blood plasma

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Keywords: Histones, Alcohol Use Disorders, Epigenetics, Substance Abuse, Single Cell Imaging Flow Cytometry

Introduction and Objectives: Histones, the key proteins in chromatin was recently found to be present extracellularly. Release of histones however is toxic and is capable of inducing inflammation. Epigenetic changes like histone modifications have been found to be associated with alcohol exposure. However, the presence and role of circulating histones under the effects of alcohol abuse are yet to be elucidated. The objective of the present study is to investigate whether alcohol drinking induces expression of extracellular histones in human plasma.

Methods: Recruitment of participants was performed under approved protocol from the Institutional Review Board (IRB) at FIU. We isolated plasma from 40 blood donors from Miami, FL consisting of two cohorts: controls (n = 20) and alcohol users (n = 20). The criteria for alcohol drinkers was followed according to the National Institute on Alcohol Abuse and Alcoholism (NIAAA) guidelines which considers a pattern of “at risk” drinking to be more than 14 drinks per week for males (> 4 drinks on any day) and more than 7 drinks per week for females (> 3 drinks on any day). Participants were enrolled in the study by completing a questionnaire followed by a written consent approved by FIU’s IRB guidelines. Blood sample was collected intravenously from each participant followed by plasma isolation using centrifugation. Detection and quantification of circulating histone H3 were analyzed using ELISA-based technique in addition to single cell imaging flow cytometry.

Results: Our results show the presence of circulating histone H3 in plasma from AUs (mean ± SEM: 35.16 ± 2.735 ng/ml) and a significant increase of those levels when compared to non-drinkers (p = 0.05). Furthermore, a gender-specific effect was observed when there was a significant increase of circulating total histone H3 in female AUs (mean ± SEM: 35.52 ± 4.12 ng/ml) when compared to female controls (mean ± SEM: 23.76 ± 2.681 ng/ml). Regression and correlation analysis was also conducted for the relationship between H3 levels and AUDIT scores. There was a significant correlation (r: 0.4449, 95% confidence interval: 0.002984 to 0.7415, R squared: 0.198) between the high amount of circulating histone H3 protein detected and the high scores in the AUDIT survey.

Conclusions and Implications: For the first time, we demonstrate the presence of extracellular histones induced by alcohol drinking and a gender-specific effect. Moreover, using imaging flow cytometry not only facilitated ex vivo detection of histones in human blood samples, but it also allowed the visualization and isolation of circulating histones. We expect circulating histones might eventually provide a novel therapeutic approach or even serve as promising biomarkers for the treatment of alcohol use disorders. However, further studies will be required to clarify the mechanisms that mediate the functional role of histone release during alcohol-induced inflammation and organ injury.

O22

Opioid prescribing in the ED: Investigating the association between year and frequency of prescriptions upon discharge from the ED, 2010-2014

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Keywords: Opioid, Emergency Department, NHAMCS

Introduction: Emergency Medicine physicians have been identified as possible potentiators of opioid use and abuse through ED prescriptions. Overall, opioid prescriptions across the US have been declining in recent years, possibly due to awareness of the opioid epidemic and associated opioid prescription monitoring programs.

Aim: To describe trends in the frequency of opioid prescription at discharge in emergency department visits in the United States from 2010 to 2014.

Methods: We conducted a secondary analysis of data from the National Hospital Ambulatory Medical Care Survey (NHAMCS). We included adults discharged from the ED from 2010 to 2014. The main outcome measure was the frequency of opioid prescription, using year as the independent variable. Opioids were defined using Multum Lexion level 3. Age, sex, race/ethnicity, geographic region, insurance status and pain level (scale of 1-10) were identified as confounders and adjusted for in the analysis. Multivariate logistic regression was performed to assess association between opioid prescribing and year of ED visit, incorporating the NHAMCS survey weights.

Results: We studied 57,500 participants, of which 26% received an opioid at discharge. Adjusted and unadjusted odds ratios identified no association between calendar year and opioid prescription. As compared to 2010, adjusted odds ratios for 2011 were 0.93 (95% CI 0.82-1.05); 2012, 0.96 (95% CI 0.84-1.10); 2013, 0.99 (95% CI 0.86-1.15); 2014, 0.99 (95% CI 0.82-1.19).

Conclusions: No association was found between calendar year and rate of opioid prescription on discharge from the ED. Our findings of no evidence for a trend in decrease in opioid prescription in ED might suggest that the strategies in place to reduce opioid prescription might need to be revised or reinforced as to decrease the source of initial opioid use and abuse.

O23

Insufficient gestational weight gain and low birth weight according to maternal race

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Keywords: Pregnancy, Low Birthweight, Gestational Weight Gain

Introduction and Objectives: Studies show that a disparity exists between mothers of different races and incidence of low birth weight. Our study aims to determine whether, in women with normal BMI before pregnancy, the effects of insufficient gestational weight gain (< 25 lbs) on low birth weight vary with race, as little research has been performed to assess this relationship.

Methods: Researchers analyzed secondary data collected from the Pregnancy Risk Assessment Monitoring System (PRAMS) core survey given between 2009 and 2011 and associated birth certificates. Participants included were singleton mothers with a normal BMI prior to pregnancy and had a baby born at full term (37 weeks gestation). Participants were excluded if the birth certificate omitted infant birth weight or if PRAMS did not include the mother’s race or mother’s weight at delivery. Of the 118,067 women included in the survey, 40,316 met inclusion criteria. The primary outcome assessed was the odds of having a low birth weight infant (< 2500 g). Independent associations between insufficient weight gain during pregnancy and low birth weight were assessed using multivariate logistic regression. Stratification according to maternal race was performed.

Results: When compared to women with adequate weight gain during pregnancy, White mothers, Black mothers, and mothers of Other races with insufficient weight gain had statistically significant increased odds of having low birth weight babies (OR=1.9, 95% CI: 1.6-2.3; OR=1.7, 95% CI: 1.2-2.4; and OR=2.1, 95% CI: 1.1-3.9, respectively). Asian women with insufficient weight gain did not have a statistically significant increased odds ratio of having a low birth weight baby (OR=1.2, 95% CI: 0.8-1.8). The 95% confidence intervals for the odds ratios overlapped for all race stratifications for mothers with insufficient weight gain.

Conclusions: There was no significant difference between races in the odds of mothers with insufficient weight gain giving birth to low birth weight infants. The lack of a statistically significant relationship between insufficient weight gain and low birth weight observed in Asian mothers may represent a type II error due to insufficient power for this subgroup.

O24

Investigating the association between children who witness domestic violence in their household and being clinically diagnosed with childhood depression

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Keywords: Violence, Childhood, Depression

Introduction and Objectives: Depression is the most common psychiatric disorder in the general population. In particular, childhood depression is undertreated. Domestic violence affects more than 32 million Americans, and children who witness violence are more likely to display internalizing behaviors. Although the association between childhood abuse and depression in adulthood has been established, the objective of our study was to determine the association between children witnessing violence at home and being diagnosed with childhood depression.

Methods: We used the 2011 NSCH database, which randomly surveyed parents in the U.S. Our cross-sectional study sample was limited to children 8-17 years old, and whose parents responded to specific survey questions. The independent variable was children who witnessed domestic violence at home and the dependent variable was the diagnosis of childhood depression. Our data analysis included 1) a descriptive analysis of population baseline characteristics, 2) a bivariate analysis to determine the association between baseline characteristics and exposure, and the association between predictors and the outcome, and 3) a multivariate logistic regression to determine the association between the exposure and the outcome while controlling potential confounders.

Results: Our sample included 54,268 children. The unadjusted binary logistic regression indicated that children who witnessed domestic violence were 4.5 times more likely (95% CI 3.6-5.5, p < 0.001) to be diagnosed with childhood depression. However, the adjusted analysis did not find an association between witnessing domestic violence and childhood depression (OR 1.0, 95% CI 0.6-1.4, p: 0.834). Other variables independently associated with childhood depression include, but are not limited to: children whose school contacted the household about problems more than 10 times (OR 8.4, 95% CI 5.9-12.1, p < 0.001), poor general health of the child (OR 7.7, 95% CI 2.6-22.6, p < 0.001), and poor mental health of the mother (OR 7.4, 95% CI 3.0-18.5, p < 0.001).

Conclusions and Implications: Our study found that children witnessing domestic violence do not have an increased risk of childhood depression. We found other factors such as problems at school or instability at home had a significant influence on whether a child was clinically depressed. Further research should be conducted to explore the associations of these other factors with childhood depression because they may be helpful in the future for screening children with symptoms of depression.

O25

The association between cyberbullying and suicidal behavior in US adolescents

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Keywords: Suicide, Cyberbullying, Bullying, Adolescents, Sexual Orientation

Introduction and Objectives: Suicide is among the leading causes of death in adolescents. In the last decade, access to social media has increased dramatically among adolescents. Although the literature suggests strong associations between bullying and mental health disorders in adolescents, there is less research regarding how cyberbullying in particular plays a role in adolescent depression and suicidal ideation. Our objective was to analyze whether being a cyberbully victim increases the risk of suicidal behavior in adolescents. As a secondary aim we assessed whether sexual orientation modified the relationship between cyberbullying and suicidal behaviors.

Methods: This was a population based cross-sectional study that used data from the 2015 Youth Risk Behavior Surveillance System (YRBSS). Adolescents in grades 9-12 in 125 public, Catholic and other private schools in all 50 states participated in the self-reported survey. The association between the exposure (cyberbullying) and the outcome (suicidal behavior) was measured obtaining adjusted odds ratios (aOR) while controlling for several covariates using logistic regression. Stratified analysis was conducted to assess if sexual orientation modified the association between cyberbullying and suicidal behaviors.

Results: After excluding students who did not respond the questions regarding the exposure or the outcome, as well as those with missing information regarding the covariates, the final sample size was made up of 8,687 US high school adolescents. We found a positive association between cyberbullying and suicidal behavior in adolescents (crude OR 3.9, 95% CI 3.3-4.6, p-value < 0.001), that was also present after adjusting for confounders (aOR 1.8, 95% CI 1.5-2.2, p-value < 0.001). Crude ORs for the association between cyberbullying and suicidal behavior stratified by sexual orientation were 3.8 (95% CI 3.3-4.2) and 3.2 (95% CI 3.3-4.2) among self-reported heterosexuals and non-heterosexuals, respectively.

Conclusion and Implications: This study indicates cyberbullying increases the odds of suicidal behavior among adolescent students in the United States, and that sexual orientation does not modify this association. High schools could screen for students experiencing cyberbullying as a way to decrease students' risk of suicidal behavior and pay special attention to students' baseline mental health status and focus on primary prevention of psychosocial problems.

O26

Development of a predictive tool to identify adolescents with concurrent depressive behavior

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Keywords: Depression, Adolescent, Screening, Suicide, Risk Factors

Introduction and Objectives: Recognizing adolescent depression is important but difficult. Prior studies identified associations between depression and psychosocial factors, but few yielded clinically applicable predictive models. Thus, a screening tool based on antecedents and responses to simple questions would have great utility in adolescent primary care. This study sought to develop a clinically useful predictive model of depressive symptoms based on psychosocial variables.

Methods: Secondary analysis of the 2015 National High School Youth Risk Behavior Surveillance System (YRBSS), a nationally representative survey of 15,624 randomly selected high school students. Potential predictors comprise variables measured in YRBSS with known or hypothesized linkage to depression. The outcome was a composite of depression-related questions: sadness or hopelessness and suicidal thoughts, plans or attempts. A predictive model was derived in a random subsample of 2/3 of eligible subjects (most parsimonious unconditional binary logistic regression model) and was internally validated using the remaining 1/3 of the sample.

Results: Thirty-six potential predictors were chosen based on face validity. Seventeen retained significance following bivariate analysis and a stepwise logistic regression generated the predictive model. The model has good test metrics at a cut-off l evel of 0.31: sensitivity=73%; specificity=74%; correctly classified=74%; discriminant ability=0.81. These were maintained in the validation set.

Conclusions and Implications: This is the first study of its kind to produce a predictive tool with high sensitivity and specificity suggesting an appropriate role in pre-screening. The tool requires further validation in other clinical settings.

Poster Abstracts

P1

The association between race and human papillomavirus vaccination status in females aged 18-49 years in North Carolina, South Carolina, Texas, and Alabama in 2016

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Keywords: Race, Human Papillomavirus, Texas, HPV Vaccine, Southern United States

Introduction and Objectives: According to the current literature, there are many socioeconomic variables that affect a woman's likelihood to both initiate and complete the HPV vaccination series. These discrepancies are multifactorial, and are largely due to an interplay between age, race, education, and insurance status. While studies have shown that there is an association between race and HPV vaccination status, there is a gap in the literature regarding this issue in the Southern United States.

Methods: We performed an observational cross-sectional study through secondary analysis of the 2016 Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System (BRFSS). The study population includes women aged 18-49 years living in North Carolina, South Carolina, Texas, and Alabama. The main independent variable is race/ethnicity. The outcome of interest is HPV vaccination series initiation. We performed a multivariate regression analysis to identify social factors that are independently associated with lower rates of HPV vaccination. Statistical significance will be defined as p-values < 0.05 for a two-sided test. Analysis will be conducted using SPSS software.

Results: There was no significant association between women who identified as Black and odds of receiving the HPV vaccine as compared to our reference White women when adjusting for age, ethnicity, state, and education (OR 1.4, 95% CI 0.9-2.1; p=0.127). When reviewing HPV vaccination by state, South Carolina showed significantly lower odds of receiving the HPV vaccine as compared to our reference North Carolina when adjusted for other variables (OR=7, 95% CI=0.5-1.0; p=0.031). Texas showed a statistically significant difference when adjusted for other variables (OR 0.6, 95% CI 0.4-0.9; p=0.020).

Conclusions and Implications: There is no difference in initiation of the HPV vaccination series among those who identify as White, Black, or Other in the Southern States. At the state level, residents of South Carolina and Texas had a lower odds of receiving the HPV vaccination series when compared to residents of North Carolina.

P2

Prevalence, disparities, and social correlates of mobility disability in the US population over 65: Insight from the 2013 national health interview survey

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Keywords: Mobility Disability, Disability, Elderly, Epidemiology, Disparities

Background: Mobility disability is a preventable cause of reduced quality of life and increases healthcare needs and costs in older adults. Nonetheless, its prevention is yet to be considered in major guidelines, including the Preventive Services Task Force. Using the most recently released National Health Interview Survey (NHIS) data, we studied the epidemiology of mobility disability in the older population. Our goal is to contribute to the existing field of evidence, such as that provided by the LIFE trial (JAMA 2014), to facilitate major advances and strategies in disability prevention.

Hypotheses: The prevalence of mobility disability in the US older population is considerably high, particularly in women and minorities. Social factors are independently associated with mobility disability.

Methods: Data from the 2013 NHIS, a nationally representative sample of US noninstitutionalized-civilians, yielded an analytic sample of adults > 65 years old (n=6,910). Mobility disability was based on self-reported difficulty walking a quarter-mile and/or climbing up 10 steps and/or inability to stand for 2 hours. Age, gender, race/ethnicity, smoking, alcohol drinking, chronic diseases, depressive symptoms, region, care access, and social factors were considered in logistic regression analyses.

Results: Disability prevalence was 41.7%. In a model that adjusted for all above-listed variables except social factors, women (odds ratio [OR]:1.85; 95% confidence-interval [CI]:1.58-2.17), and African-American race (OR:1.23; 95%CI:1.01-1.52) were risk factors for disability. The latter association became not significant when the following social factors were added: living with spouse/partner (OR:0.73; 95%CI:0.62-0.86), income adequacy for monthly bills (OR:0.60; 95%CI:0.48-0.76), close-knit neighborhood (OR:0.79; 95%CI:0.67-0.94).

Conclusions: Mobility disability was highly prevalent among community-dwelling older adults, especially in women and African-Americans. Social factors were associated with mobility disability independently of traditional clinical disease burden and demographics. Findings reinforce that culturally-tailored interventions addressing social determinants of health are an essential complement to medical treatment in optimizing disability prevention.

P3

Association of maternal age with infant mortality

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Keywords: Maternal, Age, Infant, Mortality

Introduction and Objectives: The United States ranks among the poorest mortality outcomes for infants in the developed world. In 2010 the U.S. ranked 26th in infant mortality among 29 developed nations, with a rate of 6.1 infant deaths per 1,000 live births. Extremes of maternal age represent potential risk factors for infant mortality. This study examines the association between extremes of maternal age and infant mortality.

Methods: A retrospective, population-based study employing the CDC's birth cohort linked birth-death infant files, including 3,212,205 infants born in the U.S. during the year 2011. Exposure was maternal age categorized as 19 and under, 20-34, and 35 years and older. Outcome was vital status of the infant at 1 year. Both crude and adjusted for confounders (logistic regression) odds ratios (ORs) and 95% CI were computed. Stratified modeling according to race was employed to account for effect modification.

Results: There was a significant increase in odds of death for infants of adolescent mothers: OR 1.49 (95%CI 1.42-1.56). The odds in the advanced maternal age group were not different from the reference group: 1.02 (95%CI 0.98-1.06). After excluding mediators, the adjusted odds for infant death among adolescent mothers remained higher than in the reference group 1.24 (95% CI 1.15-1.34). To account for interaction between race and mother's age, separate models were fitted for each racial group, resulting in adjusted odds of death among infants born to adolescent non-Hispanic white mothers 1.06 (95%CI 0.98-1.15), adolescent non-Hispanic black mothers 1.02 (95%CI 0.93-1.11), adolescent Hispanic 1.28 (95%CI 1.16-1.41), and adolescent mothers of other races 1.39 (95%CI 1.06-1.81).

Conclusions and Implications: Maternal race modifies the effects of maternal age on infant mortality. Our findings corroborate current literature that has identified horrendous racial disparities in birth outcomes in the US. Odds of death in infants born to adolescent black mothers is the same as those born to mothers age 20 to 34, congruent with the Weathering Hypothesis.

P4

Short physical performance battery scores and fall prevalence in older adults from Miami-Dade, Florida

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Keywords: Aging, Screening Instruments, Falls

Introduction and Objectives: Prevention of falls and mobility disability, two prevalent, inter-related but distinct geriatric syndromes with major adverse impact on the quality of life of older adults and their families, are a top public priority. The Short Physical Performance Battery (SPPB) is a validated screening tool for mobility disability (Guralnik et al, 1994). Whether it may be useful for fall risk assessment has not been determined. We assessed the ability of SPPB to discriminate between older adults with and without fall history.

Methods: We studied low-income, community-dwelling Hispanics 65 years and older selected from four senior centers in Miami-Dade, Florida. Outcome was self-reported history of fall in the previous 12 months. SPPB scores (0 [worst] to 12 [best]) were obtained using standardized, validated protocols. Logistic regression analysis was used.

Results: Of 102 participants included (average age of 76.4 years [SD=6.3], 57% females), 36% had low SPPB scores (SPPB<8). Fall had occurred in 24% of those with a SPPB≤8, and 43% in those with SPPB<8 (p=0.046). One unit increase in SPPB score was associated with 24% incrementally lower odds of fall (odds ratio=0.76, 95% confidence interval=0.62-0.93), independent of age, gender, and comorbidities.

Conclusions and Implications: Low SPPB was strongly associated with increased fall occurrence. Prospective studies comparing predictive accuracy of SPBB with that of other traditional tests; e.g., Time Up and Go, while taking account competing risks, and including minorities may help determining opportunities to bundle screening recommendations, which could contribute towards broader application of currently sub-implemented screening recommendations for falls and mobility disability.

P5

The impact of interest rates on Medicare Part A spending in the US from 1967-2015

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Keywords: Medicare, Inpatient Care, Healthcare Spending, Interest Rate, Hospital Insurance Trust Fund

Introduction and Objectives: Because the majority of Part A is funded by payroll taxes, a growing population eligible for Medicare and a diminishing population of individuals entering the workforce will lead to an ever-increasing deficit. One must consider the impact changes to the interest rate have on medical spending in our population. The rate of Medicare spending will thus determine patient access to care. In this study we assessed the relationship

between changes in the federal trust fund interest rate and Medicare part A expenditures from 1966-2015.

Methods: Federal Interest Trust Fund rates were sourced from the Federal Reserve Economic Data Database (FRED). As these rates were reported quarterly, annual averages for the respective year were utilized. Medicare Part A expenditures, and other sources of Medicare Part A funding, were collected from the Center for Medicaid and Medicare Services (CMS). This data was adjusted to a Consumer Price Index (CPI) representative of 2015. Both sets of data spanned 1966-2015. We examined the impact of interest rates on Medicare spending through an unadjusted univariate analysis. Additionally, an adjusted nonparametric multivariate analysis was conducted to evaluate this relationship while accounting for large drivers of Medicare part A expenditures. We also looked at the relationship between Medicare spending and Medicare funding to evaluate potential confounders.

Results: Univariate analysis suggests that a 1% increase in interest rates reduces Medicare Part A Expenditures by $18,249.48 million, and that this relationship was statistically significant. However, the impact of interest rates was no longer significant when accounting for either Medicare Enrollees or Life Expectancy (p=0.086 and 0.137, respectively). Moreover, Medicare Enrollees and Life expectancy continued to demonstrate a significant impact of $7,928.91 million per million enrollees and $30,045.90 million per year, respectively.

Conclusions: The important task at hand is to prevent insolvency of the Medicare program and time is of the essence. In our study, the main drivers of Medicare Part A Expenditures are the Number of Medicare enrollees and Life expectancy. The relationship between federal trust fund rates and Medicare Part A Expenditures was no longer statistically significant after adjusting for these variables. Therefore a shift to less costly delivery system will need to be implemented if Medicare is to remain solvent for generations to come.

P6

Determinants of infant sleep position in the participants of the Florida PRAMS

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Keywords: SIDS, Florida, Supine Sleep, Maternal Sociodemographic Factors, PRAMS

Introduction and Objectives: SIDS (Sudden Infant Death Syndrome) is the leading cause of mortality in healthy infants under 1 year of age and the infant prone sleep position has been strongly associated with SIDS. The objective of this study is to determine the prevalence of supine position of infants in Florida and to explore associations between selected maternal determinants and adherence to the supine sleep position recommendation for infants in Florida residents.

Methods: Data from participants of the Pregnancy Risk Assessment Monitoring System (PRAMS), year 2004-2006, was analyzed. The outcome was adhesion to the recommendation for infant supine sleep position (reported by placing infants exclusively on their back or not). Maternal race/ethnicity, age, education, household income, parity, current smoking status, intent for pregnancy, and marital status were assessed as potential determinants. Multivariable logistic regression analysis was performed to assess independent associations. Stata v.14 software was used in the analysis to account for the complex survey design.

Results: The participants were most often 20-34 years of age (75%), White (66%), had at least a high school level education (79%), had an income of greater than 20 thousand dollars annually (59%), were multiparous (55%), did not smoke (86%), had unintentional pregnancies (58.4%), and were not married (58%). Roughly half of Florida mothers in the sample did not adhere to the recommendation for infant supine sleep, 49.6%. Lower odds of adherence to the recommendation were found for African American mothers (odds ratio [OR]=0.53, 95% confidence interval [CI]=0.43-0.66, compared to White mothers) and multiparous mothers (OR=0.81, 95% CI=0.65-0.99, compared to first time mothers). Mothers who were trying for the pregnancy had a higher odds of adherence with the recommendation of supine positioning (OR=1.28, 95% CI=1.03-1.60, compared to mothers with unintended pregnancies).

Conclusions and Implications: Florida has low rates of adherence to the supine sleep position recommendation. African American mothers, multiparous mothers, and those with unintentional pregnancies were among the lowest groups in adhesion to the supine sleep position. Research for strategies to improve adhesion to the supine sleep position in these groups is warranted.

P7

The association between the presence of a child in the home and smoking prevalence in south Miami households

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Keywords: Smoking, Children, Miami, Household, Cross-sectional Analysis

Introduction and Objectives: The deleterious effects of secondhand smoke on health outcomes have been well studied. Concomitantly, educational and interventional efforts have increased in an attempt to provide the public adequate motivation to quit smoking, particularly in households with children. To determine whether this has come to fruition within an underserved region of South Miami, we have analyzed the association between having a child in the home and smoking prevalence.

Methods: This is a cross-sectional analysis of the 2013 South Miami Survey. Randomly-selected households, defined as eligible by a Community Advisory Board, were chosen to be surveyed in the area of South Miami Hospital regarding several topics. Out of 753 households, the overall response rate was 57%. Interviews were conducted face-to-face, by trained staff, with a single consenting adult. A total of 426 households made up the final count of completed surveys available for analysis. Our inclusion criterion was adequate response to questions regarding smoking and the composition of the household. Four households did not indicate whether a current smoker resided in the household and thus were excluded, which left 422 households for analysis. Our independent variable was the presence of a child in the home and our dependent variable was smoking status. We identified income, family size, education, ethnicity, marital status and insurance status as potential confounders.

Results: In the 422 included households, there was no association between the presence of a child in the home and current household smoking status (OR 0.91, 95% CI 0.42-1.97). Households that reported an income that qualified them as below the poverty line, however, showed a significant association with higher smoking prevalence (OR 3.15, 95% CI 1.14 - 8.66).

Conclusions: Living with a child has no association with smoking prevalence in the South Miami households surveyed. Health education should be further prioritized in this underserved community.

P8

First time cannabis use and sexual debut in adolescents

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Keywords: Cannabis, Marijuana, Sexual Debut, Sexual Intercourse, Adolescents

Introduction and Objectives: Cannabis use is a growing health concern in the United States and studies have shown the detrimental effects of adolescent development when engaging in cannabis use early. Early sexual initiation (ESI) has been found to be associated with early pregnancies, higher rates of sexually transmitted infections, and HIV. The objective of this study is to examine the association between the age that adolescents initiate cannabis use and the age of their first sexual intercourse in the US in 2015.

Methods: A secondary analysis of data from the 2015 Youth Risk Behavior Surveillance Survey, a cross-sectional, nationally representative survey, was conducted (n=7,664). This study examined the associations between ESI (defined as age 14 or younger) as a function of age of initiation of cannabis (i.e., age 12 or younger, 13-14 years of age, and age 15 or older). Distributions of control variables (all of them categorical) according to age at cannabis use initiation and according to age at sexual initiation were obtained and compared using the Chi square test or the Fisher's exact test as appropriate. Using logistic regression models (adjusted for gender, race, sexual identity, age of tobacco and alcohol initiation, use of other drugs, and suicidal attempts within the last 12 months), the odds ratios (ORs) and 95% confidence intervals (CIs) were calculated.

Results: Adolescents who initiated the use of cannabis before the age of 15 were at an increased risk of ESI compared to those initiating cannabis use at 15 or older (OR ranged from 4.2-6.7). Males had higher odds of ESI compared to females (OR 1.8; 95% CI 1.2-2.7). Use of tobacco or alcohol before age 15 was associated with an increased risk of ESI. Hispanic (OR 1.3; 95% CI 1.1-1.6) and black (OR 2.5; 95% CI 1.6-3.8) students were also at an increased risk of ESI compared to white students. None of the variables tested were shown to be protective.

Conclusions: Early use of cannabis is associated with an increased risk of ESI. There should be sex and drug education programs implemented in schools between the ages of 12 and 15. Future research may study these associations between states that have legalized marijuana use with those who have not.

P9

Using non-traditional standardized patient encounters to teach sexual history taking to pre-clinical medical students

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Keywords: Sexual History, Medical Education, Transgender Health, Patient Care, Pre-Clinical Training

Introduction and Objectives: Given that sexual history taking curricula at medical schools vary widely in terms of topics covered and format, a 2014 survey of 221 pre-clinical and clinical medical students at the Herbert Wertheim College of Medicine (HWCOM) found that only 20% reported routinely including questions about sex and gender in their patient interviews; 45% observed that clinical preceptors rarely or never asked patients about sex and gender. In response, we developed two non-traditional sexual history standardized patient (SP) encounters in the second year clinical skills course at HWCOM and assessed medical students' perceptions afterward to improve the sexual history modules.

Methods: In November 2017, we developed a 3-hour sexual history session, given as part of the second-year clinical skills course. A 1-hour didactic on the sexual history was followed by two SP encounters, each of which occurred in a facilitated, 45-minute small group setting. 124 students completed two SP encounters, one with a transgender male patient with abdominal pain and one with a patient with bruising after consensual violence during sex. At the end of the session, 98 students completed an optional, anonymous, online questionnaire assessing the self-perceived impact of this session. IRB exemption was obtained from HWCOM.

Results: 69% of students “Strongly Agreed” or “Agreed” that the SP provided them with valuable feedback. 88% felt that group discussions helped them identify their own strengths and weaknesses in relation to taking a sexual history. 93% “Strongly Agreed” or “Agreed” that this session helped them feel more comfortable with taking a sexual history; 74% “strongly agreed” or “agreed” that they need more practice taking a sexual history. 82% “Strongly Agreed” or “Agreed” that they would benefit from more similar patient encounters.

Conclusions: SP encounters provide students with an opportunity to practice advanced communication skills, receive valuable feedback from the SP, faculty and peers, and serve as meaningful tools to improve their confidence regarding gathering a sexual history from non-traditional patients. Despite reporting increased confidence regarding the sexual history afterward, students continued to want more opportunities to practice their skills. This emphasizes the importance of a longitudinal, integrated curriculum.

P10

Association of race/ethnicity and age at the time of diagnosis of endometrial cancer in the United States (1994-2014): An analysis of the surveillance, epidemiology, and end results (SEER) program

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Keywords: Race, Ethnicity, Age, Endometrial, Cancer

Introduction and Objectives: Endometrial cancer is the most common gynecologic malignancy in the United States, most prevalent in women between ages 45-74 years. The current literature exploring the association between race/ethnicity and age at which women are being diagnosed with endometrial cancer is lacking. The objective of this study is to examine the association between race/ethnicity and age at diagnosis of endometrial cancer in women between the ages of 18-50 years (premenopausal) and 51-74 years (postmenopausal) from 1994-2014.

Methods: Cases of American women with endometrial carcinoma ages 18-74 reported to the SEER database from years 1994-2014 were included for analysis. We utilized multivariate logistic regression modeling to examine the association between race/ethnicity (non-Hispanic white, black, Hispanic, and non-Hispanic other) and age at diagnosis of endometrial cancer while controlling for potential confounders (decade at diagnosis, marital status, stage of cancer, and grade of cancer).

Results: For all races/ethnicities (N=30,074), there was a significantly lower proportion of women aged 18-50 years diagnosed with endometrial cancer than those aged 51-74 years ($p < 0.001$). In the 51-74 yo group, the odds of being diagnosed with endometrial cancer decreased by 30% in NH blacks (OR=0.7, 95%CI=0.6-0.8), by 60% in Hispanics (OR=0.4, 95%CI=0.4-0.5), and by 70% in NH other (OR=0.3, 95%CI=0.3-0.4) as compared to NH whites. The odds of being diagnosed of endometrial cancer significantly increased during the 2004-2014 decade than those diagnosed during the 1994-2003 decade (OR=1.3, 95%CI=1.2-1.4); it decreased by 10% in unmarried versus married women (OR=0.9, 95%CI=0.8-0.9); and by 20% in those diagnosed with Stage 2 (regional) and Stage 3 (distant) as compared to Stage I (localized) (OR=0.8, 95%CI=0.8-0.9; and OR=0.8, 95%CI=0.7-0.9), respectively. As compared to those with Grade I (well-differentiated) cancer, the odds of being diagnosed with endometrial cancer increased by 1.4 times in those with Grade II (moderately-differentiated) cancer (OR=1.4, 95%CI=1.3-1.5), by 1.8 times in those with Grade III (poorly-differentiated) cancer, (OR=1.8, 95%CI=1.6-2.0), and by 2.4 times in those with Grade IV (anaplastic-histology) cancer (OR=2.4, 95% CI=1.8-3.2).

Conclusions: For all races/ethnicities, there was a higher proportion of postmenopausal women than premenopausal women diagnosed with endometrial cancer. In the postmenopausal group, as compared to NH white women, the odds of being diagnosed with endometrial cancer was significantly lower among NH blacks, Hispanics, and NH other women when compared to whites. Higher proportions of blacks are diagnosed at an earlier age and have a worse survival when compared to whites. These results imply that race does have an effect on the age at which endometrial cancer is diagnosed.

P11

Hispanic ethnicity and survival in pediatric acute lymphocytic leukemia (ALL) patients in Florida

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Keywords: Acute Lymphocytic Leukemia, Florida, Hispanic, Pediatric

Introduction and Objectives: Pediatric cancer mortality rates have drastically declined according to analyzed population-based surveillance data; however, incidences of most childhood cancers continue to rise including leukemia. Recent studies have indicated an association between ethnicity/race and cancer survival. Florida’s ethnically/racially diverse population and surging pediatric cancer incidence characterize the state as an ideal setting to study the association between ethnicity/race and pediatric cancer survival. The intention of this study is to determine whether or not an association exists between Hispanic ethnicity and cancer survival in a Floridian population of pediatric patients with Acute Lymphocytic Leukemia (ALL).

Methods: We used data from participants 18 years or younger of Florida Cancer Data System (FCDS). Cox-proportional hazard regression was used to assess independent association between Hispanic ethnicity and time to death (i.e. time interval from diagnosis of ALL to the last patient contact, as recorded in the database). Survival status (i.e. death or alive) was assessed at the date of last contact. Those who are alive at last contact were then censored.

Results: In the unadjusted model, ethnicity was not associated with risk of death (HR = 0.87, 95% CI=0.73 - 1.04). After adjustment for sex, race, age at diagnosis, insurance status, geographic area, and cancer immunophenotype, the results showed again no association between Hispanic ethnicity and survival (HR = 1.19, 95% CI=0.82 - 1.72).

Conclusions and Implications: We found no evidence for differences in survival based on ethnic status. Potential differences in racial-survival disparities in pediatric ALL within various geographic regions might depend on Hispanic ancestries or cancer type. Further research on the topic is still deemed necessary as to clarify the nature of the association between ethnicity and cancer survival.

P12

The association between gender and length of stay of acute stroke patients in Florida hospitals

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Keywords: Length of Stay, Acute Stroke, Gender, Sex, Ischemic Stroke

Introduction and Objectives: Acute stroke is a common condition in the US, with patients often experiencing a significant financial burden directly related to their length of hospital stay (LOS). The goal of this study is to determine if there is an association between gender and LOS of acute stroke patients in Florida hospitals.

Methods: We conducted a historical cohort study (n = 126,704) using the Florida Hospital Discharge Database for Stroke, a billing dataset of patients admitted to Florida hospitals between 2008 and 2012. The study included all patients admitted with acute stroke as defined by ICD-9 codes 434 and/or 436. Patients under the age of 18 and those who left against medical advice or died during admission were excluded from the study. Two main variables examined were length of stay and sex of the patient. The length of stay, defined in days, was separated into one of two groups based on the median length of stay in the data set which was 4 days. Analysis included a multi-step process consisting of chi squared test and adjusted/unadjusted multivariable binary logistic regression for potential confounders.

Results: The study population included 65,939 women and 60,765 men with admitting diagnoses of acute stroke in Florida hospitals. The percentage of patients age 85 years and older were higher among women (26.6%) than men (13.9%) ($p < 0.001$). The proportion of women (42.5%) with the main outcome (LOS > 4 days) was significantly higher than men (40.5%) ($p < 0.001$). Unadjusted analysis demonstrated that women had an 8% increased odds of prolonged LOS compared to men (Odds Ratio 1.08, 95% CI 1.06-1.11). After adjustment using multivariate analysis, the odds ratio (OR) remained statistically significant at 1.07 (95% CI 1.05-1.10). In addition, extended hospital stay was significantly more frequent among Black, Hispanic, and Medicaid patients.

Conclusions: Our study demonstrates that in acute stroke patients admitted to Florida hospitals, women have a 7% increase in odds of having a prolonged hospital LOS when compared to men. This finding adds evidence to the existence of sex disparities among acute stroke patients as previously mentioned in the literature.

P13

Racial disparities in receipt of treatment for localized prostate cancer: Results from the SEER database, 2007-2014

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Keywords: Prostate, Cancer, Disparity, Prostatectomy, Radiation

Introduction: Prostate cancer is the most common cancer among men in the United States. Black men bear an unequal burden of prostate cancer and have significantly higher rates of death due to prostate cancer. Theories explaining why these disparities include genetics, access to care, and treatment differences.

Objective: To assess the association between race and receipt of definitive treatment in men with clinically localized prostate cancer.

Methods: We performed analysis of men diagnosed with localized prostate cancer (defined as stage T3a or below) and who were included in the Surveillance, Epidemiology, and End points Results program database from 2007 to 2014. The outcome was receipt of definitive treatment (DT), which included radical prostatectomy radiation therapy, brachytherapy, or cryotherapy, as opposed to a non-definitive treatment (NDT, defined by any modality not considered definitive). The main independent variable tested was race, categorized as Whites, African American (AA), and Asian or Other races. Unadjusted and adjusted odds ratios were calculated using a multivariable logistic regression analyses.

Results: About 359,900 men with localized prostate cancer were identified between 2007 and 2014. Of those 80% were White, 15% were AA, and 5% were considered Asian/other races. About 72% of White men and 70% of AA and 70% of Asian and other races received DT ($p<0.001$). African American (AA) men had significantly higher odds of receiving NDT compared to whites (unadjusted odds ratio (UOR) of 1.06, 95% confidence interval (CI) of 1.04-1.08). After controlling for selected characteristics, AA men continued to show higher odds of receiving NDT (adjusted odds ratio (AOR): 1.07, 95% CI: 1.04-1.09). Uninsured men (AOR: 2.12, CI: 1.96-2.29), men covered by Medicaid (AOR: 1.43, CI: 1.34-1.52), and Medicare eligible men (AOR: 1.22, 1.18-1.25) all had significantly higher odds of receiving NDT compared to insured men.

Conclusions: This study suggests a potential racial disparity in treatment used in prostate cancer patients. Further research is warranted as to assess if the disparity in the receipt of definitive treatment contribute to the highest mortality reported for AA men with prostate cancer.

P14

Racial disparities in 5-year survival rates in U.S. patients with oropharyngeal cancer between 1975 and 2014

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Keywords: Oropharyngeal Neoplasms, Pharyngeal Neoplasms, Epidemiology, Healthcare Disparities, Mortality

Introduction and Objectives: In 2014 there was an estimated 346,902 individuals living with oropharyngeal cancer in the USA. Although more whites are affected by oropharyngeal cancer as compared to blacks, numerous studies show a difference in prognosis between the two groups. The main objective of this study was to determine whether there is an association between race and cause-specific mortality in patients with oropharyngeal cancer diagnosed between 1975 and 2014.

Materials and Methods: This was a retrospective cohort study using the National Cancer Institute's Surveillance, Epidemiology and End Result (SEER) database. Patients age 18 and over of White, Black or Asian/Pacific Islander (API) race diagnosed with oropharyngeal cancer from 1975-2014 were included in this study (n=13,164). The final adjusted model controlled for sex, age at diagnosis, decade of diagnosis (1975-1984, 1985-1994, 1995-2004, 2005-2014), ethnicity (Hispanic vs non-Hispanic), stage at diagnosis (localized, regional, distant or unstaged), form of treatment (surgery vs no surgery), marital status (defined as married or domestic partner) and unpartnered (single, separated, divorced or widowed). Overall survival, was analyzed utilizing Kaplan-Meier curves for each race. Unadjusted and adjusted hazard ratios were estimated utilizing Cox proportional hazard models. Additional analysis were conducted to analyze the hazard ratio per decade.

Results: Blacks had a statistically significant higher hazard ratio (HR) when compared with whites (HR 1.62; 95% confidence interval (CI) 1.50-1.74) after adjustment for covariates. API patients had a statistically significantly lower HR when compared to white patients (HR 0.72; 95 % CI 0.60- 0.85). Patients diagnosed between 1985-1994 were 2.5 times more likely to die of oropharyngeal cancer (HR 0.91; 95% CI 0.84-0.98) than those diagnosed between 2005-2014 (HR 0.38; 95% CI 0.35-0.42). After stratification according to decade of diagnosis, the HR for black patients when compared with whites was 1.50 (CI 95% 1.28-1.77) between 1975-1984 and 1.47 (95% CI 1.26-1.70) between 1985-1994. The corresponding HR for blacks during 1995-2004 and 2005-2014 were 1.68 (95% CI 1.46-1.94) and 1.78 (95% CI 1.52-2.07), respectively.

Conclusion: Our results demonstrated identifying racial disparities by physicians is crucial in the prognosis of patients.

P15

Mobile mammography screening targeting uninsured women of Miami-Dade County

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Keywords: Mobile Mammography, Breast Cancer Screening, Women's Health, Health Disparities, Mobile Health Unit

Background: The Linda Fenner 3D Mobile Mammography Center (MMC) provides screening to underserved, uninsured women at various locations throughout Miami- Dade County. This study describes the women served by the MMC since its foundation in 2014 to help improve and expand mammography screening in our community.

Methods: Chart data was analyzed of all women using the MMC since conception in 2014 to 2016. Characteristics of the sample such as age, language, history of prior mammogram at the MMC, screening results, and need of further imaging (due to BIRADS score=0), completion of follow up care, final diagnostic result, MMC site locations, and patient residential zip codes were assessed with STATA 15 software and mapped with ArcMap.

Results: The MMC visited 44 sites throughout Miami-Dade County and received 1,944 uninsured women living in 102 different zip codes. The average age of participants was 52.5 years, most spoke Spanish (61%), and were first time users of the MMC (77%). There were 230 women with inconclusive screening results requiring diagnostic testing of which 94% got additional follow up. Of the 44 women who further required biopsy, 86% were biopsied. Breast cancer diagnosis was made in 14 women (0.7% of the total screened), 9 of whom had never had a prior mammogram. All 14 women diagnosed with breast cancer were navigated to treatment.

Conclusions: The MMC serves a substantial geographical area of Miami-Dade and has helped diagnose breast cancer in uninsured women who might not otherwise have received screening and timely treatment.

P16

The deadly storm: An unfortunate combination of factors leading to fatal asthma and barotrauma

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Keywords: Thuderstorm Related Asthma, Fatal Asthma, Airway Hyperresponsiveness, Barotrauma, Autopsy

Introduction and Objectives: Asthma is characterized by airway hyperresponsiveness with airflow obstruction that can fluctuate over time. Asthma mortality has declined in the United States. However, deaths from status asthmaticus are still seen in patients with a recent history of poorly controlled asthma or prior episodes of near-fatal asthma requiring endotracheal intubation and mechanical ventilation. There is an increase in evidence that thunderstorms can trigger epidemics of allergic asthma with increasing severity. Also, asthma exacerbation has been described during pregnancy and in the postpartum period. We describe the autopsy findings of a young woman who developed status asthmaticus complicated with barotrauma at 2 months postpartum during Hurricane Irma, and provide a clinicopathological correlation.

Case Presentation: A 24 year-old nonsmoker African-American woman presented at 2 month postpartum with dyspnea and easily audible wheezing. She had never experienced episodes of severe asthma or been intubated. Respiratory symptoms started just when hurricane Irma made landfall in Florida. Upon arrival to the emergency department, she was in respiratory failure. The patient received nebulization with bronchodilators, systemic steroids, and magnesium with no improvement. She required emergent intubation. The respiratory failure progressed to severe hypercapnia and respiratory acidosis. She shortly developed cardiac arrest and deceased 48 hours after the onset of symptoms. The autopsy findings were those of asthma complicated with barotrauma. An eosinophilic inflammatory response accompanied by extensive mucus accumulation and airway â€œremodelingâ€ including goblet cell metaplasia and submucosal gland hyperplasia, basement membrane thickening, and smooth muscle hyperplasia/ hypertrophy, are distinctive of fatal allergic asthma. Hyperinflation of non-obstructed alveoli in the lingula prompted alveolar overdistention and barotrauma with dissecting air through perivascular spaces causing pneumothorax. Microbiological studies were negative in this case.

Conclusions and Implications: The mechanism of fatal asthma involves irreversible airway obstruction leading to respiratory failure. The massive mucus bronchial plugging and thickening of airway smooth muscle seen in this case may explain the failure of bronchodilators to open the airways. Additionally, the patient presented at postpartum period when the airway hyperresponsiveness and asthma control usually worsen. A massive exposure to allergens dispersed by Hurricane Irma could have contributed to the severity of this case. This combination of factors led to a rapid fatal outcome. Thunderstorm-related asthma outbreaks affect mainly patients with allergic-type asthma. Most studies have been done in overseas, therefore little is known about the effect of hurricane on asthma epidemiology in the United States.

P17

Histopathology of drug-induced liver injury with autoimmune features versus autoimmune hepatitis: A pilot study

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Keywords: Drug Induced Liver Damage (DILI), Autoimmune Hepatitis, Liver Fibrosis

Introduction and Objectives: The clinical diagnoses of idiopathic autoimmune hepatitis (AIH) and drug-induced liver injury with autoimmune features (AI-DILI) are challenging, as both conditions have heterogeneous manifestations. In AI- DILI, the liver injury resolves after drug withdrawal with no recurrence. In this study, we performed a detailed histologic evaluation of liver biopsies to identify hallmarks for differentiating both entities.

Methods: Liver biopsies stored in the tissue archives of Mount Sinai Medical Center (MSMC) Department of Pathology for the past 10 years were assessed. The cases were sorted into the AIH (n=12) or AI-DILI (n=8) groups after reviewing pertinent clinical history, follow-up notes, and laboratory tests supporting autoimmunity and ruling out viral hepatitis.

Results: Both groups showed portal lymphoplasmacytic infiltrates. The degree of necroinflammatory changes, as graded by the Scheuer score, and density of neutrophil and eosinophil infiltrates did not differ between both groups ($p > 0.05$). Neutrophil density in portal spaces and lobules showed a positive relationship with the severity of hepatocellular damage determined by ALT levels ($r=0.6$ and 0.58, $p < 0.05$). Presence of ceroid-laden macrophages and absence of histiocytic aggregates were more common in AI-DILI ($p < 0.05$). There were no significant differences in intracellular cholestasis and regenerative changes. Patients with AIH frequently present with chronic damage, as seen with higher scores of fibrosis and collagen deposition determined by color deconvolution on capture images of Masson trichrome stained slides ($p < 0.05$).

Conclusion and Implications: In clinical practice, there is no individual histologic feature conclusive for AI-DILI or AIH. Advanced stage of liver fibrosis favor AIH. A definitive diagnosis of AI-DILI is made by follow-up and demonstration of complete remission after drug withdrawal and no need for continuous immunosuppression.

P18

Hidden under the ground glass: Pulmonary tumor thrombotic microangiopathy in recurrent breast cancer

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Keywords: Pulmonary Tumor Thromboctic Microangiopathy (PTTM), Breast Cancer, Ground Glass Opacities, Pulmonary Hypertension, Pulmonary Thromboembolism

Introduction and Objectives: In Pulmonary tumor thrombotic microangiopathy (PTTM), tumor cell microemboli causes thrombosis and obliteration of small vessels resulting in pulmonary hypertension and eventual death from cor pulmonale. Antemortem diagnosis requires a high level of clinical suspicion. We discuss a case of PTTM in recurrent breast cancer, and provide the results of a systematic review of published PTTM case reports emphasizing the importance of an opportune diagnosis.

Case presentation: A 50 year-old woman with a history of multifocal metastatic invasive mammary carcinoma of no special type presented with dyspnea, hypoxemia, and ecchymoses for two weeks. Laboratory tests revealed microangiopathic hemolytic anemia and chronic disseminated intravascular coagulation. An elevated NT-pro BNP and echocardiogram showed findings consistent with pulmonary hypertension with cor pulmonale. After 1 month of hospitalization, she suddenly underwent cardiac arrest and died. The autopsy findings showed metastatic breast carcinoma to liver and bone marrow. The peripheral wedge shaped densities seen on chest CT scans correspond to evolving infarcts with microscopic tumor emboli within small pulmonary arteries, immunoreactive for AE1/AE3, CAM 5.2 and VEFG. Likewise, ground glass opacities correspond to alveolar wall thickening and tumor emboli, interstitial chronic inflammation, and obliterated small arteries with fibrointimal proliferation admixed with carcinoma cells.

Systematic Review: The analysis included PTTM case reports and series cited in MEDLINE over the last 15 years, only patients with reported duration of respiratory symptoms prior to death (43 articles, n=83). The cases were sorted according when PTTM diagnosis was done: postmortem, antemortem/non-treated, and antemortem treated groups. Opportune diagnosis of PTTM and treatment with therapies targeting pro-angiogenic pathways was associated with improve short-term survival (median survival: 240 days all cancer subtypes, 180 days excluding gastric cancer versus 13 days and 19 days in postmortem group, respectively, log-rank Mantel Cox tests, p-value < 0.0001). All patients presented with hypoxemia, pulmonary hypertension, and/or lung opacities.

Conclusion and Implications: PTTM is a poorly recognized entity that must be considered in cancer patients with unexplained hypoxemia, pulmonary hypertension and pulmonary ground glass opacities on CT scan. Tumor micro-thromboemboli with underlying intimal fibroblastic proliferation of intraparenchymal pulmonary arteries are the histopathologic hallmark of PTTM. Carcinomas, most often gastric and breast, are the main cause of PTTM. PTTM is associated with advanced cancer stage and metastatic disease elsewhere, and can be the only manifestation of tumor recurrence. Targeted therapies may improve the short-term survival of patients with PTTM.

P19

The lethal twist - A story of unspoken pain: Small intestinal volvulus, a fatal complication involving an infrequent site in a patient with cerebral palsy

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Keywords: Small Intestinal Volvulus, Bowel Ischemia and Necrosis, Cerebral Palsy

Background: Small intestinal volvulus is the abnormal twisting of bowel around the axis of its mesentery, leading to obstruction and vascular compromise, resulting in bowel ischemia and necrosis which are life threatening. Risk factors include malformations, malrotations and adhesions. This rare occurrence presents with nonspecific symptoms of abdominal pain, nausea and vomiting. Conventional radiographs fail to establish small intestinal volvulus as the cause of the obstruction. Its infrequent incidence and vague clinical presentation make it a difficult diagnosis. Delay in surgical intervention can be rapidly fatal. Studies suggest increased frequency of intestinal obstruction in cerebral palsy patients. Cases of gastric and cecal volvulus have been reported in these patients especially in conjunction with kyphoscoliosis. There are no reported cases of small intestinal obstruction in association with cerebral palsy.

Case presentation: We present a case of a 21-year-old man with severe cerebral palsy and kyphoscoliosis, who was being fed through a PEG tube for the past several years. The patient presented to the emergency room with respiratory distress and abdominal distension. A surgical abdomen was noted. Abdominal X-rays revealed gas patterns suggestive of small intestinal obstruction. The patient rapidly deteriorated and resuscitation attempts were unsuccessful. Autopsy revealed peritoneal cavity filled with extensively dilated and thin-walled loops of small intestine. Twisting of the small intestine, showing 360° rotation around the mesenteric root in a clockwise manner at two separate sites, was noted. The mesenteric veins were engorged. On bowel dissection, mucosal folds were absent and mucosa was green with patchy areas of hemorrhage consistent wth ischaemic necrosis. There was no evidence of any malformations, malrotations or adhesions. Histopathological examination of the dilated segments revealed focal transmural hemorrhage with diffuse thinning of epithelium and muscularis propria.

Conclusion: Small intestinal volvulus is a rare entity with nonspecific clinical presentation that poses a diagnostic challenge. This autopsy highlights the need to maintain a high index of suspicion for small intestinal volvulus in cases of bowel obstruction in cerebral palsy patients to expedite surgery and prevent mortality. The primary care giver, in these cases, should be educated to recognize early signs of intestinal obstruction as potential volvulus and seek emergent care preventing treatment delays.

P20

Pulmonary ciliated muconodular papillary tumor (CMPT) – A sheep in wolf's clothing

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Keywords: Ciliated Muconodular Papillary Tumor, p63 Positive Basal Cells, Primary Lung Tumors

Introduction: Ciliated muconodular papillary tumors (CMPTs) are rare peripheral lung nodules, first described in 2002, microscopically characterized by papillary and glandular growth patterns with abundant mucin production, and composed of a triad of ciliated columnar cells, mucous cells, and basal cells. The presence of mucin pools with floating tumor cells mimics mucinous adenocarcinoma, which often leads to misdiagnosis. CMPTs are indolent tumors with excellent prognosis and their recognition from aggressive mimics is essential.

Case presentation: A 78 year-old former smoker presented to Mount Sinai Medical Center, for evaluation of a 7 mm, peripheral, solitary nodule in the left lower lobe. The nodule was 4 mm on CT two years prior. A left pulmonary wedge resection and lymph node dissection was performed. Gross examination revealed an irregular, lobulated nodule measuring 0.6 cm with a gray-white, gelatinous cut surface. Microscopically, the tumor showed papillary and glandular architecture with mucin pools within the tumor and surrounding alveolar spaces. The papillary and glandular structures were lined by an alternating mixture of ciliated columnar cells and mucinous cells without atypia, and an underlying a continuous layer of basal cells highlighted by p63. The neoplastic cells were immunoreactive for TTF-1.

Conclusions: CMPTs are small, peripheral, non-endobronchial lung nodules arising predominantly in middle-aged to elderly population. Microscopically, CMPTs display glandular and papillary growth patterns, with tumor cells differentiating into three cell types - ciliated columnar cells, mucous cells and basal cells. Abundant mucin production with intratumoral and intraalveolar mucin lakes are characteristic. CMPTs typically lack nuclear atypia and mitotic activity; however, they may show features suggestive of malignancy such as distortion of alveoli and fibrosis, lepidic growth pattern with skip lesions, absence of circumscription and micropapillary architecture. Recent studies confirming frequent occurrence of BRAF and EGFR mutations in CMPTs have consolidated its neoplastic nature. CMPTs consistently follow a benign clinical course with no reports of recurrence or distant metastasis in 10 month to 10 year follow-ups. Immunohistochemistry for basal cell markers such as p63 or p40 highlights the continuous layer of basal cells underlying the tumor cells in CMPTs. These are invariably absent in invasive mucinous adenocarcinomas. Till date, only four cases of CMPTs have been reported in the western population.

P21

Pontocerebellar hypoplasia type 3 maps to chromosome 7q11.23: An autopsy case report of a novel genetic variant

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Keywords: Pontocerebellar Hypoplasia, Chromosome 7q11.23, PCLO Gene

Introduction: Pontocerebellar hypoplasia type 3(PCH3) is an autosomal recessive disorder characterized by a small cerebellar vermis, hyperreflexia and seizures. This entity has been described in middle-eastern families in association with a homozygous truncating mutation of the PCLO gene in locus 7q11.21. Herein we report the first suspected case of PCH 3 in the USA.

Case presentation: The patient is a 1 week-old girl, born at term, to a 26 year-old G4A3P0 woman. At birth, the baby was depressed and hypertonic. MRI revealed cerebellar and brainstem hypoplasia. Her parents accepted natural death. Postmortem examination revealed palmar simian crease. The cerebellum measured 2.5 cm from side to side and 1 cm rostral to caudal. The vermis was rudimentary. Sectioning revealed a flattened linear fourth ventricle, scant abortive cerebellar foliae and a markedly small cerebellum when compared with the cerebrum and with age-matched size. H&E stained sections of cerebellum revealed scant rudimentary foliae. A rudimentary unilateral embolliform nucleus was identified. The remaining cerebellar nuclei were absent. Chromosomal microarray revealed an interstitial duplication of 841KB on chromosome 7q11.23.

Implications: Heterozygous interstitial 7q11.23 duplication is associated with hypoplasia of cerebellum, corpus callosum and temporal lobes in children with cognitive impairment meeting criteria for autism spectrum disorders. This is the first reported case of 7q11.23 associated PCH3. The locus 7q11.23 contains FGL2 and GSAP genes and is 5Mb upstream of the 7q11-21

region, which suggests a possible linkage. This novel genomic finding represents a new familial variant of PCH3 and further strengthens its association with the 7q11 locus.

P22

Accessory spleen: An unusual cause of pancreatic mass

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Keywords: Intrapancreatic Mass, Accessory Spleen, Fine Needle Aspiration

Introduction: Accessory spleen is a congenital anomaly that may present as an incidental, asymptomatic mass, found on imaging studies with a reported prevalence of 10% to 30%. It is caused by a failure of fusion between a portion of the splenic tissue and the main body of the spleen during embryologic splenic development. Accessory spleen occurs mostly in the splenic hilum and the tail of the pancreas as well as in the stomach, jejunum, mesentery, ovaries, and testes. Intraprancreatic accessory spleen is rarely symptomatic; therefore it does not require surgical treatment or follow up. However, it can mimic a pancreatic solid neoplasm. Therefore it is important to accurately differentiate an accessory spleen from other pancreatic lesions that will require more aggressive treatment.

Case Presentation: A 55 year old man with history of Hodgkin Lymphoma and prior splenectomy presented with a new pancreatic tail mass suspicious for lymphoma recurrence vs other neoplasm. The mass was an incidental finding when a CT scan for elective placement of an implantable cardioverter-defibrillator was done. An MRI scan confirmed an enhancing solid mass in the tail of the pancreas. The differential diagnosis included pancreatic adenocarcinoma and neuroendocrine tumor. The patient underwent endoscopic ultrasound with findings of normal pancreas. Fine-needle aspirate was inconclusive. The patient was scheduled for a distal pancreatectomy. A portion of distal pancreas was received, which contained a well circumscribed dark red mass measuring 2.4 x 2 x 1 cm. On histologic examination the mass was composed of unremarkable white and red pulp consistent with ectopic splenic tissue.

Conclusions and Implications: Intrapancreatic accessory spleen is an asymptomatic entity which does not warrant surgical resection. However the diagnosis is typically made after surgical resection due to the difficulty in differentiating this entity from neoplasms such as neuroendocrine tumors, adenocarcinoma, metastasis, etc., that require surgery. Intrapancreatic accessory spleen should be considered in any case of an asymptomatic mass detected incidentally on an imaging study.

Endoscopic ultrasound with fine needle aspirate is increasingly used to evaluate both solid and cystic lesions in the pancreas. Adequate sampling may result in the avoidance of distal pancreatectomy. Endoscopic ultrasound with fine needle aspiration should be performed to aid the correct diagnosis and management to avoid unnecessary surgical procedures. If Endoscopic ultrasound with fine needle aspiration is not feasible, contrast-enhanced endoscopic ultrasound and elastography are useful tools.

P23

Primary pleural neurofibroma: A rare diagnosis of a localized and benign spindle cell neoplasm of the pleura

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Keywords: Primary Pleural Neurofibroma, Localized Neurofibroma, Spindle Cell Neoplasm Pleura

Introduction and Objectives: Neurofibromas are benign peripheral nerve sheath tumors characterized by a uniform pattern of spindled nuclei. The pleura hosts a variety of neoplasms. The most commonly encountered benign primary pleural tumor is a solitary fibrous tumor. Primary localized pleural neurofibromas are exceedingly rare, as only two cases have been reported in the English literature. The differential diagnoses of bland spindle cell tumors of the pleura include solitary fibrous tumor, schwannoma, and neurofibroma.

Case Presentation: We report the case of a 39-year-old woman who presented with left-sided chest pain and shortness of breath. A chest CT with contrast showed a crescent shaped pleural based mass in the left posterior lung apex. Clinical examination revealed no significant findings. Thoracoscopy divulged a soft tissue mass localized to the parietal pleura. The resected specimen consisted of an ovoid mass measuring 7 cm, with a smooth, tan-yellow and glistening cut surface. Histologically, the tumor consisted of a diffuse proliferation of cells with spindled nuclei and scant cytoplasm, in a background of loose collagenous stroma and scattered mast cells. Immunohistochemical stains revealed diffuse S-100 protein and SOX10 positivity, focal neurofilament positivity, fibrillary CD34 positivity, and BCL-2 negativity.

Conclusions and Implications: Localized pleural neurofibromas can be mistaken for solitary fibrous tumors due to similar morphology and histological appearance. Pathologists need to have a high index of suspicion to prevent misdiagnosis. The use of S-100 protein and close attention to histologic features are fundamental in distinguishing primary neurofibromas from other spindle cell neoplasms of the pleura.

P24

Survival rates and clinical characteristics of young patients with Waldenstrom macroglobulinemia

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Keywords: Waldenstrom Macroglobulinemia, Young Patients, Survival Rates, Clinical Characteristics, IgM Hyperviscosity

Introduction: Waldenström Macroglobulinemia (WM) is a rare and incurable lymphoplasmacytic lymphoma that is typically diagnosed at a median age of 69 years. Patients less than 50 years of age account for less than 10% of all WM cases (Castillo Br J Haem 2015). As such, the clinical characteristics and survival function of these young patients have not been evaluated in detail. This descriptive retrospective study elucidates the clinical features and life expectancy of young patients with WM.

Methods: A retrospective analysis of patients diagnosed with WM before the age of 45 was conducted to elucidate differences in clinical characteristics between patients aged < 40 and 40-45 years. Age, sex, hemoglobin, platelet count, serum IgM levels, beta-2-microglobulin levels, percentage of bone marrow involvement and indications to treat were used to compare both groups at initiation of treatment. Differences in clinical presentation between groups was evaluated by the Chi-square and Fisher's exact test when appropriate. Time between diagnosis and initiation of treatment were also compared. Kaplan-Meier overall survival (OS) curves were also generated for both groups and compared using the log-rank test. P-values < 0.05 were considered significant.

Results: No statistical differences were found in age, sex, hemoglobin, platelet count, beta-2-microglobulin, serum IgM level or bone marrow involvement between both age groups at initiation of first line therapy for WM. 77 (62%) were treated within one year of diagnosis and 26 (21%) were treated after one year post-diagnosis; 21 patients (17%) have not yet been treated with a median time from WM diagnosis of 13 years. 68% of patients diagnosed before age 40 were initiated on treatment within 12 months of being diagnosed compared to 75% of patients in the ≥ 40 age group. Among the 103 patients who have received WM-directed therapy, the indication for treatment included: symptomatic hyperviscosity (n=43; 41%), extramedullary disease (n=35; 33%), constitutional symptoms (n=35; 33%), anemia (n=20; 19%), and peripheral neuropathy (n=20; 19%). 48% of patients < 40 experienced symptoms of hyperviscosity compared with 38% of patients ≥ 40. No differences between patients aged <40 and 40-45 years were seen for treatment indication with regards to anemia, constitutional symptoms, neuropathy or extramedullary disease (p>0.05 for all comparisons). The median follow-up for all patients was 94 months with a 5-year OS rate of 98%, 10-year OS rate of 89% and a 20-year OS rate of 86%. In patients < 40 years, the 5-year OS rate was 96%, 10-year OS rate was 90% and the 20-year OS rate was also found to be 90%. For patients ≥ 40 years, 5-year OS rate was 99%, 10-year OS rate was 88% and the 20-year OS rate was 85%

Conclusion: It is important to note the unexpected finding that 48% of WM patients <40 years present with symptoms of hyperviscosity at initiation of first line therapy compared to 14% in older WM patients(Gustine Br J Haem).

P25

Dual checkpoint blockade with both CTLA4 and PD1 antibodies and hypofractionated radiation in patients with metastatic melanoma: Initial 3 patients

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Keywords: Dual Checkpoint Blockade, Checkpoint Inhibitor, Hypofractionated Radiation, CTLA4/PD1 antibodies, Stage 4/ Metastatic Melanoma

Introduction and Objectives: There have been numerous case reports of enhanced local and systemic effects from radiation given with single checkpoint inhibitors (CTLA4 or PD1 antibodies). Here we report out initial experience of 3 patients with dual blockade using combined CTLA4/PD1 antibodies in patients with stage 4 melanoma who subsequently received hypofractionated radiation. The objective of these cases is to highlight the importance of further research into dual checkpoint blockade therapies combined with hypofractionated radiation therapy.

Case Presentations:

Case 1: 36 year old male with diffuse visceral and subcutaneous disease who failed treatment with BRAF/MEK inhibitor and anti-PDL1 antibody started on combination of nivolumab and ipilimumabin 7/2015. Disease continued to progress and in 8/15, the patient received 24 Gy in 3 fractions on consecutive days with 6 MeV electrons to 3 bothersome large subcutaneous chest wall lesions. Irradiated lesions had an excellent response, but systemic disease progressed and patient was seen at the National Cancer Center 12/15 for T cell immunotherapy. Following apheresis, for adoptive T cell therapy, patient developed complete regression of the skin lesions and restaging scans demonstrated responding visceral disease. It was decided that he forego adoptive T cell treatment and resume nivolumab. Patient was in remission for 1 year and then ultimately developed recurrence in the small bowel.

Case 2: 80 year old male with right popliteal fossa melanoma, bone metastases, started on pembrolizumab 2/2017 but had rapid progression of in transit skin lesions. Low dose ipilumamab was added after 3 cycles 3/29/2017. An intransit lesion rapidly enlarged into an 8 cm fungating, bloody mass over the right lower extremity. He received 2550 cGy in 3 fractions of 850 cgy each with rapid regression of the lesion during the actual one week course of radiation in 6/2017. Within 2 weeks of radiation, the lesion had almost completely resolved and there was flattening and lightening of pigmentation of numerous unirradiated intransit lesions.

Case 3: 71 year old female with stage 4 melanoma presenting with 9 cm right iliac fossa mass, lung and bone, and subctaneous lesions started on ipilumamab and nivolumab in 4/2017. Over the course of the next 8 weeks, the lesion increased to 14 cm in size and patient was unable to ambulate. Patient then received 2550 cGy in 3 fractions of 850 cGy in 6/2017 with decreasing tumor

volume visible on the second and third cone beam during the one week course of radiation. Patient was ambulating within one week of completing treatment.

Conclusions and Implications: Dual checkpoint blockade with antic CTLA4 and PD1 antibodies in combination with hypofractionated radiation has promising activity in stage 4 melanoma patients, who may have progressed through prior immunotherapy. The outcomes of these patients highlights importance of further clinical trials due to success in stage 4 melanoma.

P26

Neoadjuvant chemotherapy utilization in South Florida: A single-institution report of barriers to receipt of neoadjuvant chemotherapy

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Keywords: Neoadjuvant Chemotherapy, Urology, Social Determinants, Radical Cystectomy, South Florida

Introduction and Objectives: Previous trials have shown a significant survival benefit for patients with Non-Metastatic Muscle Invasive Bladder Cancer (NM-MIBC) undergoing neoadjuvant chemotherapy (NAC). NAC utilization rates remain below 20% in multiple studies. This low utilization rate has been hypothesized to be partially driven by a combination of clinical and non-clinical patient factors. We sought to identify the factors and barriers to receiving NAC in patients with NM-MIBC.

Methods: An IRB approved retrospective review of our single institution cystectomy database from January 1st 2014 to January 1st 2017, of patients with radical cystectomy (RC) for NM-MIBC was performed. Patients were compared by baseline demographics, distance to treatment center, functional status, comorbidities and NAC status.

Results: 162 patients with RC for NM-MIBC were divided by NAC status. The clinical barriers group included patients ineligible for NAC per Urologist or Oncologist secondary to clinical factors like unresectable bulky tumor, chronic renal failure, continued hematuria, chronic nephrostomy tubes. 70.6% of patients eligible for NAC declined due to personal preference and only 29.4% of eligible patients received NAC. Hispanic Males were significantly more likely to defer NAC vs. other ethnicities (RR = 1.38, p = 0.04). Traveling > 40 miles significantly increased rates of patient NAC (RR= 1.32, p = 0.03). Hispanics living more than 40 miles from the treatment center were more likely to defer NAC than other ethnicities traveling the same distance (RR = 1.67, p < 0.001).

Conclusions: Patient deferrals remain high despite proven survival benefit. Distance to treatment site and cultural demeanor towards NAC appear to be barriers to what is now the standard of care. Moreover, a significant cohort of our patients presented with diminished GFR, bulky and symptomatic cancer and or chronic nephrostomy tubes which all precluded optimal NAC. Given high rates of patient ineligibility and deferral, further study is needed to elucidate these barriers to NAC utilization.

P27

Pelvic radiation as a risk factor for the development of ureteroanastomotic strictures in patients undergoing radical cystectomy and ileal conduit creation

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Keywords: Radiation, Strictures, Ileal Conduit, Radical Cystectomy, Risk Factors

Introduction and objectives: Ureteroanastomotic stricture (UAS) is a well-known complication following radical cystectomy with ileal conduit (RC-IC). Recent studies have estimated the prevalence of UAS in RC-IC patients to be between 1 and 40% depending on patient factors. Patient factors such as obesity and prior radiation have both been shown to be associated with a higher risk of UAS. We sought to identify risk factors that contribute to the development of a UAS in patients undergoing RC-IC.

Methods: An IRB approved retrospective review of a single institution cystectomy database from January 1st 2014 to January 1st 2017, of patients with RC-IC for NM-MIBC was performed. UAS was identified by standard biannual follow up imaging and/or the need for intervention. Both pre- or post-operative pelvic radiation for any diagnosis was included. A stratified subgroup analysis for other possible UAS risk factors such as smoking status and BMI was performed.

Results: 154 RC-IC patients with NM-MIBC were divided by presence of UAS requiring intervention. A total of 20 patients (14%) were identified as developing a UAS. A statistically increased risk for the development of post-operative strictures was found in patients with a history of pelvic (RR = 3.07, p =0.006). Former smokers were significantly more likely to develop a UAS (RR = 2.94, p = 0.04). Overweight patients were also more likely to develop a UAS (RR = 3.28, p = 0.03).

Conclusions: RC-IC continues to be a highly morbid procedure, largely due to the urinary diversion, and UAS continues to be a clinically challenging scenario. In our series, previous history of pelvic radiation showed a statistically significant increased risk of UAS development. Being overweight or a former smoker also contributes the development of UAS in this series. Further multicenter studies are needed to predict risk factors for UAS, such as previous history of radiation.

P28

Supercharged free transverse rectus abdominus myocutaneous flap: Optimizing autologous reconstruction for the thin patient

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Keywords: Breast Reconstruction, Supercharged TRAM Flap, Autologous Reconstruction, Microsurgery, Advanced Techniques

Introduction and Objectives: The free TRAM (fTRAM) flap is based on the deep inferior epigastric vessels anastomosed either to the axillary or internal mammary systems. When using the entire fTRAM flap, complications may arise due to insufficient blood supply to the distal portions of the flap. In this report, we present a method of augmenting the vascular territory of the fTRAM flap with an additional “supercharged” venous microsurgical anastomosis.

Case Presentation: A 47-year-old female with a history of left breast cancer and total mastectomy followed by neo-adjuvant radiation in 2009, presented to the USC Plastic & Reconstructive Surgery clinic in December 2014 to discuss options for breast reconstruction. The patient was taken to the operating room in June 2015.

With goals to recreate a full C-cup sized breast in a patient with a very thin body habitus, we performed a supercharged muscle-sparing fTRAM flap to utilize all four zones of the abdominal flap. Employing a two-team approach, the recipient site of the left chest was entered from her previous mastectomy incision, along with resection of the surrounding radiated fibrotic skin. A laterally based pectoralis flap was utilized to dissect up to the second rib, which was then partially resected to expose the left internal mammary artery and two veins. Simultaneously, the transversely oriented abdominal flap was elevated by the second surgeon, being particularly careful to preserve both the superior and inferior epigastric vessels on both hemi-abdominal flaps. After favorable right-sided lateral row perforators were identified, the fascia was incised and the rectus muscle exposed.

Once the flap was dissected, de-epithelized and transposed to the left chest, it was folded in half and the vessels of the flap were microsurgically anastamosed to those of the left internal mammary system. Subsequent additional contouring was performed on the flap and sutured to the inframammary fold of the left chest wall for reinforcement. Lastly, the abdominal donor site was closed primarily without mesh reinforcement.

Three months after initial reconstruction, the patient underwent a symmetrizing augmentation of the right breast with a sub-pectoral silicone implant, and revision of the left breast for improved superior medial fullness and reconstruction of the nipple using a V-Y flap.

Conclusions and Implications: This case report exemplifies how augmentation of the traditional fTRAM flap with an additional blood supply can reduce the likelihood of flap necrosis when the entire fTRAM flap is used, which is often warranted in cases of thin patients presenting with large soft tissue defects. Further comparative studies are, however, necessary to optimize selecting the best reconstructive option for each individual patient.

P29

Anesthetic management of patients undergoing tongue reduction surgery: A single center experience

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Keywords: Macroglossia, Beckwith-Wiedemann Syndrome (BWS), Intubation/Extubation, Tongue Reduction, Peri-operative Management

Introduction and Objectives: Beckwith Wiedemann Syndrome (BWS) is a rare pediatric condition characterized by overgrowth, abdominal wall defects, and macroglossia. Reduction glossectomy is a corrective procedure for macroglossia that can restore the functionality and aesthetic appearance of the enlarged tongue. Limited information exists on the postoperative management of patients undergoing glossectomy for congenital macroglossia. The primary objective of this study is to describe the peri-operative management of patients undergoing reduction glossectomy at our center.

Methods: We present data on twenty-seven patients who received reduction glossectomy via the W technique by the same surgeon within the last five years. Patients were identified and medical records were retrospectively reviewed. Case characteristics such as anesthesia time, difficulty of intubation, estimated blood loss, days spent in the intensive care unit, days spent in the hospital, intraoperative complications, postoperative complications, and post-operative extubation rate within the operating room were recorded.

Results: Of the twenty-seven patients, twenty-seven were able to be extubated immediately post-operatively with no need for reintubation in the recovery period. None of the patients prompted difficult intubation. Average time under anesthesia was 118 minutes. Average estimated blood loss was 34 mL. Patients spent an average of one day in the PICU post-operatively and approximately three and a half days in the hospital in total, from admission to discharge. There were no significant intraoperative or post-operative complications recorded.

Conclusions and Implications: The techniques employed by the surgeon and anesthesia team at our institution allowed for an immediate post-operative extubation of 100% of the patients who received a reduction glossectomy with little difficulty and no complications. Prolonged post-operative intubation for airway protection is not without its own complications and this data shows that it typically is not necessary following tongue reduction. In

addition, tongue reduction has been shown to be a safe procedure with a limited complication profile and should be considered in the management of patients with BWS.

P30

Diabetes and obesity as risk factors for laparoscopic abdominal surgery in Medicare age patients

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Keywords: Diabetes Mellitus, Obesity, Surgical Wound Infection, Laparoscopic Surgery, Geriatrics

Introduction and Objectives: Diabetes Mellitus (DM), obesity, and surgical site infections (SSI) are significant burdens on the healthcare system in terms of cost, resources, and management. The goal of this study was to determine if DM modifies the association between increasing body mass index (BMI) and SSI in patients who have undergone laparoscopic abdominal surgery.

Methods: In this retrospective cohort study (n=54,064), data was extrapolated from the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP). Information on the outcome variable, SSI, was obtained from clinical records. BMI was calculated using patients' recorded height and weight. Obesity (BMI>30) was defined according to World Health Organization's guidelines. Information on DM was obtained from clinical patient records. Records of patients with missing key variables or patients <45y/o were excluded. Unadjusted and adjusted logistic regression were used to assess the association between obesity, DM, and SSI.

Results: There was no evidence of an effect modification of the association between BMI and SSI by DM (p-value=0.572). There was no statistically significant increased risk for SSI in obese patients with DM (odds ratio (OR) = 1.34; 95% confidence interval (CI) 0.95-1.89) compared with normal weight DM patients. However, in patients without diabetes, obesity increased the risk of SSI 1.26-times (95% CI 1.08-1.49). Our multivariate logistic regression model demonstrated that obesity (OR=1.29; CI 1.12-1.49) and DM (OR=1.24; CI 1.08-1.41) were independent risk factors for SSI in laparoscopic abdominal surgery. Medicare age was found to be an insignificant risk factor (OR=1.17; CI 0.99-1.28) for SSI unless other comorbidities were present such as history of smoking, CHF, HTN, COPD, or Diabetes Mellitus.

Conclusions: We recommend surgeons not to use BMI as a predictor for SSI, but only when patients are clinically obese BMI > 30 or other comorbidities are present. As DM is an independent risk factor of SSI, these patients may need special attention after laparoscopic surgery.

P31

Association between race and severity of appendicitis: A retrospective cohort study

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Keywords: Appendectomy, Appendiceal Perforation, Ethnicity, Disparities, Adults

Introduction: Appendicitis continues to be a common condition affecting the US population. While disparities according to race are generally known to exist, few studies have evaluated their effect on the presentation of acute appendicitis.

Objective: The objective of this study was to determine whether an association exists between race and severity of appendiceal pathology in adults undergoing appendectomy for acute appendicitis.

Methods: This nonconcurrent cohort study analyzed data from 2011 to 2016 by the American College of Surgeons National Surgical Quality Improvement Program (NSQIP), a database of proportional random sample of adult, 18 years or older patients that have undergone a surgical procedure at a participating hospital in the U.S. The study sample composed of 30,460 patients who had undergone an appendectomy and did not meet the exclusion criteria (lack of data on race/ethnicity or postoperative diagnosis). Severity of presenting disease was determined by the ICD-10 codes for appendicitis. Odds ratios, both crude and adjusted for confounders (logistic regression) between race and the severity of appendicitis were estimated. Because of the high proportion of missing data, a sensitivity analysis was conducted. All equations were controlled for patient demographics and comorbidities.

Results: The point estimates of the odds of having complicated appendicitis relative to the control, Non-Hispanic (NH) Whites, are lower in the NH Black group [adjusted OR = 0.91 (95%CI 0.82-1.01)] and Hispanic group [adjusted OR= 0.94 (95%CI 0.88-1.01)], although not statistically significant. A sensitivity analysis showed that when we assume the missing data is NH White, the odds of having complicated appendicitis relative to the control remain lower in the NH Black group but when we assume the missing data is NH Black, the NH Black group has a 12% higher odds of having complicated appendicitis in the NH Black.

Conclusions: Our study did not find evidence of an association between race/ethnicity and severity of appendicitis in adult patients. Due to missing data on patient race/ethnicity, these results cannot rule out an association with appendicitis outcome. Further studies should address these limitations as well as control for other socioeconomic factors.

P32

Association between race and use of PSA-based screening for the early detection of prostate cancer

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Keywords: Race, Prostate Cancer, PSA Screening, USPSTF, BRFSS

Introduction and Objectives: In 2012, the USPSTF redacted their recommendation for routine prostate cancer screening with PSA. Considering recent data demonstrating earlier onset and higher mortality from prostate cancer within African Americans, we seek to analyze the association between race and PSA screening frequency in men ages 40 through 69 years old in 2016 using a period after the changes in screening were redacted.

Methods: We analyzed 2016 data from the Centers for Disease Control and Prevention Behavioral and Risk Factor Surveillance System (BRFSS). The independent variable is race and the dependent variable is prior PSA-based prostate cancer screening. We performed a descriptive analysis of the sample and used binomial logistic regression to calculate unadjusted and adjusted odds ratios to explore confounding. We calculated the corresponding 95% confidence intervals for the resulting ORs. The analysis was done with STATA version 14 software.

Results: The sample contained 93305 subjects where 55% reported having ever had a PSA screening test. When broken down by race, 51% of blacks and 48% of whites affirmed prior PSA testing. Of note, only 9% of the sample size was African American. When unadjusted for potential confounders, blacks had a greater odds of ever having had a PSA screening test compared to whites (Odds ratio (OR) = 1.11; 95% Confidence interval (CI) 1.01-1.20; p-value =0.02). Adjusting for potential confounders strengthened this association (OR= 1.57; 95% CI= 1.41-1.74; p-value < 0.001).

Conclusion: After the changes in screening recommendations implemented in 2012, Blacks had significantly higher odds of having reported PSA screening compared to whites.

P33

High-dose intracavernosal phenylephrine for priapism: Is it safe?

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Keywords: Acute Priapism, Phenylephrine, Emergency, Hemodynamic Stability

Introduction and Objectives: Acute ischemic priapism is considered a medical emergency, and prompt intervention is indicated to prevent potentially permanent erectile dysfunction (ED) and corporal fibrosis. Guidelines recommend using a stepwise approach to manage acute ischemic priapism, which includes corporal aspiration, irrigation, and intracavernous injection of sympathomimetic agents. At our institution, we treat a large number of patients for acute priapism. We sought to evaluate if large doses of phenylephrine (PE) resulted in any significant changes in vital signs or impacted outcomes.

Methods: After IRB approval, we retrospectively reviewed the charts of patients presenting to our emergency department between May 1, 2014 and August 15, 2016 using ICD9 and ICD10 diagnosis codes for priapism. Baseline variables were explored with categorical data analysis (Chi-Squared and T-tests). Where feasible, linear regression was used to evaluate outcomes.

Results: We identified 74 different patient encounters of acute priapism. 58 patients received PE during the course of their management. Of this group, the median age was 36.5 years (IQR = 27-47) and the median time to presentation was 5.4 hours (IQR = 4.0-9.6). 31 patients had previously experienced priapism. The median dose of PE given was 1,000 mcg (IQR 500-2,000). Univariate regression found no association between PE dose and change in patient heart rate or blood pressure. Even when considering patients who received a higher dose (greater than the median of 1,000 mcg), phenylephrine did not have a statistically significant effect on patient vital signs (see Figure). 53 of 58 (91%) patients receiving PE experienced detumescence, 2 required shunting in operating room, and 2 refused treatment and left against medical advice.

Conclusions and Implications: We frequently treat patients with high doses of PE and seldom notice adverse effects, typically resulting in resolution of priapism without any additional procedures. Careful administration of high-dose intracavernosal PE in patients presenting with priapism does not appear to affect hemodynamic stability and may help avoid ischemic damage and achieve detumescence effectively and efficiently.

P34

Association between screen time and depression in U.S. adolescents: A secondary analysis of the 2016 national survey of children's health

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Keywords: Screen Time, Major Depressive Disorder, Technology, Mental Illness, Teenagers

Introduction and Objectives: In 2016, 12.8% of U.S, adolescents had a major depressive episode. Numerous studies have suggested an association between depression and time spent using computers, television, and video games. This study aims to determine whether there is an association between screen time and depression among adolescents and if the association is modified by sex.

Methods: This is a cross-sectional study using secondary data from the 2016 National Survey of Children's Health which contains parent-reported data about children ages 12-17. The exposure of interest was average daily screen time, divided into categories of ≤ 2 hours, 2.01-3.99 hours, and ≥ 4 hours. The outcome of interest was depression previously diagnosed by a physician. We collected data from 15,368 participants and adjusted for several potential confounders, including family mental illness. Multivariable adjusted ORs were estimated by logistic regression to evaluate the association. A three term logistic regression model using an interaction term was used to assess effect modification by sex.

Results: In our study population the prevalence of depression was 7.9%. With screen time of ≤ 2 hours as the reference, the OR for ≥ 4 hours was 1.74 (95% CI 1.13 - 2.67). After adjustment for potential confounders, the OR became statistically non-significant (1.24; 95% CI 0.80 - 1.96). The crude and adjusted OR for 2.01 - 3.99 hours/day were not statistically significant (1.10; 95% CI 0.69 to 1.77 vs. 1.18; 95% CI 0.74 to 1.89). Sex as an effect modifier yielded statistically insignificant results.

Conclusions and Implications: Average daily screen time was not associated with depression. The effect of sex on the association was not statistically significant. The association between screen time and depression in adolescents seen in previous studies could be due to confounding, as prior studies did not adjust for as many household risk factors. Further research is warranted to look at the effect of a more detailed categorization of screen time, as a large portion of adolescents had more than 4 hours of screen time daily.

P35

Impact of electronic device use on childhood flourishing

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Keywords: Electronic Devise Use, Child Development, Positive Health Indicator, Flourishing Composite Score

Introduction and Objectives: Modern advances in accessibility of electronic devices have dramatically changed how people interact with each other and with the environment. There is much interest in how this increasingly larger influence of electronic devices affects the development of children. Our study aimed to examine the potential association between electronic device use and the well-being of children ages 6-17 years in the US using the flourishing composite score, a positive health indicator developed in the National Survey of Children's Health (NSCH).

Methods: This was a population-based cross-sectional study using the February 2011 – June 2012 NSCH. A variety of child health indicators were assessed through telephone interviews with parents and caregivers of children and youth. The independent variable was the use of electronic devices (computers, cell phones, television and handheld video games) for activities other than school work, categorized in three levels (<1 h/day, 1-4 h/day, >4 h/day). The dependent variable was the flourishing composite score, based on the assessment of the child's interest and curiosity in learning new things, staying calm and in control when faced with a challenge, and whether the child finishes tasks and follows through with plans. Scores were categorized as low (0-1 points) or adequate (2-3 points). Bivariate and multivariate analyses were conducted to assess the association of interest while addressing potential covariates (gender, age, poverty level, household education, and comorbidities – ADHD, anxiety and depression).

Results: The survey included 56,776 children. Higher hours of electronic device use were associated with an increased odds of having lower flourishing scores even when accounting for covariates (1-4 h/day: aOR 1.5, 95% CI: 1.4-1.7, p<0.001; >4 h/day: aOR 1.8, 95% CI: 1.6-2.1, p<0.001). Lower levels of socioeconomic status, household education at or below a high school level, and having comorbidities were also independently associated with increased odds of having low flourishing composite scores.

Conclusions and Implications: Based on the findings within our study, increased electronic device use is associated with negative developmental indicators. It is important to recognize that the flourishing composite score is a new metric used as an indicator of positive development in areas such as relationships, school work, helping others, environmental conscientiousness, and personal development. Future research may further explain the impact of electronic device use on child development.

P36

The association between obesity and short-term in-hospital mortality after stroke in Florida

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Keywords: Obesity, Paradox, Stroke, Mortality

Introduction: Obesity, or a body mass index (BMI) of ≥30 kg/m^2 due to excessive adipose tissue, is an epidemic in the United States where it is estimated that nearly 70% of adults are overweight or obese. Obese patients have increased rates of type II diabetes mellitus, cardiovascular disease and stroke. This increased risk of stroke has been extensively studied, however, the effect that obesity has on the short-term in-hospital mortality after stroke is less widely understood. In the past, obesity has been described as protective to obese stroke patients, however this "obesity paradox" has not been previously studied in patients hospitalized in Florida.

Objectives: To examine the association between obesity and short-term in-hospital mortality in Florida stroke patients.

Methods: Patients aged 18 and over who were hospitalized in Florida hospitals between 2008-2012 with a diagnosis of first-time stroke as reported by the Agency for Health Care Administration (AHCA). The main independent variable was obesity, defined by body mass index of ≥30 kg/m^2, and the main dependent variable was in-hospital mortality. Patients were stratified by age into three groups: 18-44, 45-64, and 65+. Logistic regression modeling was utilized to examine the association between obesity and short-term in-hospital mortality, while controlling for several potential confounders.

Results: Of the 333,367 patients included in the database, 138,495 (41.5%) patients met the inclusion criteria. The mean age in obese was 63.1 (SD 13.3) and 72.0 (SD 14.4) in non-obese patients. After adjusting for age, gender, ethnicity and other possible confounders, analysis showed that obese patients were 17% less likely to die during their short-term hospitalization following incidental stroke (OR 0.83, CI=0.76-0.92).

Conclusions: Obese patients in Florida hospitalized with first-time stroke were significantly less likely to expire during hospitalization than non-obese patients with the same diagnosis. The "obesity paradox" may be applicable to our study population. Our database did not include information on deaths prior to arrival to the hospital, which could potentially limit the accuracy of the results if deaths were disproportionally in one group or the other. Further study into the cause of the paradox should be undergone to utilize the results clinically.

P37

Older adults' perspectives on caregiving and quality of medical care: A qualitative study

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Keywords: Caregiving, Geriatrics, Qualitative Research, Quality of Care, End of Life Care

Introduction and Objectives: The number of older adults receiving care from informal caregivers continues to increase with the aging US population. Little research has evaluated the quality of medical care from the caregiver's perspective. Embedded in a study assessing older adults' perspectives on quality of care, especially palliative care, this study explored caregivers' perspective on quality of care.

Methods: A qualitative research study was conducted at an academic outpatient clinic. Twenty patients aged ≥ 60 years who were members of the clinic's advance care planning quality improvement initiative participated in semi-structured interviews. Questions explored patients' experiences with the medical system regarding planning for future illness and interactions with caregivers. Interviews were transcribed and coded with MAXQDA 12 using a thematic analysis and constant comparative method to refine emergent themes into a finalized coding scheme.

Results: From patient interviews, four emergent themes were identified: 1) access to care, 2) communication and coordination of care, 3) patient and family centeredness, and 4) planning for end-of-life care. First, patients had issues finding a primary care physician, getting close appointments, and accessing medication when their loved ones needed care. Having medical insurance did not guarantee patients access to specialty providers. Second, most patients emphasized the importance of provider communication and coordination of care among providers and across different disciplines and settings. Third, sharing care preferences and being involved in treatment decisions was crucial for patients as they adopted the role of caregiving. Finally, as caregivers, they had to advocate for patients' end-of-life preferences and were trusted to make or carry those end-of-life decisions for their loved ones.

Conclusions and Implications: Key themes of older adults' perspectives on caregiving and quality of medical care included access to care, communication and coordination of care, patient and family centeredness, and planning for end-of-life care. The results of this study should be considered for future quality improvement efforts to include the important perspective of the caregiver for older adults.

P38

Type II diabetes risk factors: Is being single a risk factor for previously undetected abnormal glucose tolerance?

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Keywords: Impaired Fasting Glucose, Impaired Glucose Tolerance, Hyperglycemia, Glucose Metabolism Disorder, Marital Status

Introduction and Objectives: Type II diabetes represents a chronic disease with costly consequences. Because multifactorial risk factors influence the development of this disease, it is important to identify all such factors to allow patients the opportunity to counter its progression. The aim of this study was

to evaluate the association between marital status and previously undiagnosed abnormal glucose tolerance (AGT) in a northern Colombian population.

Methods: A secondary data analysis was conducted on a cross-sectional study collected on a northern Colombian adult population ages 18-74 using health-care insurance company information in 2014/2015. The primary exposure of interest was marital status, categorized as married and single. The primary outcome was abnormal glucose tolerance, defined as a fasting plasma glucose level greater than or equal to 100 mg/dL and/or 2-hour plasma glucose level greater than or equal to 140 mg/dL. Statistical analysis included a descriptive analysis of the variables in the database. To assess for any association between marital status and the covariates, chi-square analysis of categorical covariates and a t-test of continuous covariates were performed. Co-linearity diagnostics tested for any association amongst covariates. Finally, unadjusted and adjusted linear regression models were used to evaluate the association between marital status and AGT.

Results: Single individuals had a 20% decreased odds of having AGT compared to married individuals (odds ratio (OR) 0.80, 95% confidence interval (CI) 0.7 - 1.0), but this association disappeared after adjusting for covariates (OR 1.0, 95% CI 0.7 - 1.2). Age increased the odds of AGT by 4% with each additional year. Furthermore, there was a 40% increased odds of AGT in women compared to men (OR 1.40, 95% CI 1.1 - 1.8). Hypertension increased the risk of AGT by about 60% (OR 1.60, 95% CI 1.2 - 2.1), while obesity was associated with an 80% increased odds of developing AGT (OR 1.80, 95% CI 1.3 - 2.4).

Conclusion: Our study suggests that it may not be necessary to screen for abnormal glucose tolerance in specific marital status groups.

P39

Association of delay-time and in-hospital mortality in patients with acute myocardial infarction in Puerto Rico: A retrospective cohort study

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Keywords: Myocardial Infarction, Mortality, STEMI, NSTEMI, Hispanic

Introduction and Objectives: Decreased durations of time prior to hospitalization and treatment of acute myocardial infarction is associated with decreased morbidity and mortality both in theory and in established literature. However, this association has not been studied in Hispanic populations. The purpose of this study was to examine the association between increased pre-hospital delay-time and in-hospital mortality in Puerto Rican patients experiencing an acute myocardial infarction.

Methods: A retrospective cohort study was performed using the Puerto Rican Cardiovascular Surveillance Study, consisting of adults (age > 18) living in Puerto Rico in all municipalities who presented to any of the twenty-one enrolled hospitals during 2007, 2009, and 2011, were hospitalized with acute myocardial infarction by ICD-9-CM code 410 criteria, did not receive inter-hospital transfer during care, were not in asystole or ventricular fibrillation on arrival, and had a duration-of-symptoms prior to arrival recorded. Delay time is measured as time between onset of symptoms and arrival at hospital, and was analyzed in groups of less than three hours or three hours and greater. The primary outcome variable was in-hospital mortality.

Results: A total of 648 participants were included in the analysis, which included 4% (n=26) in-hospital mortality. The overall mean age was 65.7±13.4 years and 61% (n=397) were men. Pre-hospital delay of three hours or greater was associated with a three-fold increase in-hospital mortality (Odds Ratio (OR); Confidence Interval (CI) 1.1-7.8). After adjusting for peripheral vascular disease, renal disease, and marital status, the association remained statistically significant (OR 3.6; 95% CI 1.04-12.7). Other factors that increased the odds of in-hospital mortality were arrival by car/walking rather than EMS/ambulance (OR 6.4; 95% CI 1.5-27.3), STEMI instead of NSTEMI (OR 3.1; 95% CI 1.4-7.1), prior CABG (OR 2.8, 95% CI 1.1-7.1), and advanced age annually (OR 1.05; 95% CI 1.01-1.09).

Conclusions and Implications: The association observed between increased delay and mortality indicates these patients may benefit from interventions to decrease pre-hospital delay. Future research regarding the association between delay time and mortality in acute MI, including differences in time dependence among types of acute myocardial infarction and analysis of independent risk factors for mortality, is warranted.

P40

A comparison of mortality in hospitalized adult patients most-MI based upon HIV/AIDs status

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Keywords: Myocardial Infarction, HIV, AIDS, Mortality

Introduction and Objectives: In 2012, the CDC estimated that 1.2 million people were living with HIV and AIDS in the United States. These patients use anti-retroviral therapies and have increased systemic inflammation which often leads to acute coronary syndromes including myocardial infarction (MI). The objective of this study is to determine if there is an independent association between a diagnosis of HIV and/or AIDS and mortality post-MI in hospitalized men and women in Florida above the age of 18.

Methods: This is a non-concurrent prospective study conducted through the secondary analysis of the Florida Myocardial Infarction Hospital Discharge Database. The sample of this study consists of 241,543 adult patients who were hospitalized with myocardial infarction in Florida from 2010-2015. The main independent variable was HIV diagnosis and dependent variable was an adverse outcome post hospitalization from acute MI. A descriptive analysis determined whether the two groups were similar with respect to potential confounders including age, gender, race, county of residency, insurance status, atherosclerosis, obesity, diabetes, hyperlipidemia, congestive heart failure, hypertension, and alcohol/drug/smoking status. A bivariate analysis was utilized to determine if there is an association between primary diagnosis of HIV/AIDs and an adverse outcome post MI. Multivariate analysis was used to adjust for potential confounders including age, gender, race, and comorbidities. The alpha level was set at p <0.05 to be considered statistically significant.

Results: Patients with HIV had 1.27 times the odds of mortality post-MI when compared to patients without HIV after adjusting for gender, race and ethnicity, age, insurance status, County of residence and pre-existing medical conditions that would predispose patients to MI (OR 1.27; CI 0.98-1.66, p=0.07). Of interest, after adjustment, atherosclerosis (OR 0.65; CI 0.62-0.67, p<0.001), obesity (OR 0.88; CI 0.82-0.94, p<0.001), smoking (OR 0.81; CI 0.78-0.85, p<0.001), hyperlipidemia (OR 0.58; CI 0.56-0.61, p<0.001), and hypertension (OR 0.62; CI 0.59-0.64, p<0.01) showed lower odds of mortality post MI.

Conclusions and Implications: The unadjusted calculations showed that individuals with HIV were less likely to die while hospitalized post-MI, but the adjusted calculations showed that individuals with HIV were more likely to die while hospitalized. The paradoxical effect of several pre-existing medical conditions may be explained by the fact that only survivors who made it to the hospital were included for analysis, and because many of those patients were on appropriate treatment, i.e., hypertension with Beta-blockers prior to the presentation of the MI.

P41

The trial to assess chelation therapy and its implications

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Keywords: Chelation Therapy, Myocardial Infarction, Diabetes, Edetate Disodium, Preventive Medicine

Introduction and Objectives: The shift from an agrarian to an industrialized society has both given us the conveniences of modern life and exposed us to countless environmental pollutants and pathogens. Prior research indicates an association between environmental toxic heavy metal exposure and adverse cardiovascular events. Chelation therapy with Edetate Disodium (EDTA), first used to treat lead intoxication in the 1940's, was first used for the treatment of cardiovascular disease in the 1950's but remains controversial in the modern era. The Trial to Assess Chelation Therapy (TACT) sought to study the effectiveness of intravenous chelation therapy in a post myocardial infarction population in reducing the 5 year incidence of adverse cardiovascular outcomes post infarct.

Methods: TACT was the first large scale multi-site randomized controlled trial to study the efficacy of intravenous chelation therapy for the treatment of cardiovascular disease. Participants were at least 50 years of age, had a history of myocardial infarction at least six weeks prior and had serum creatinine levels less than or equal to 2.0 mg/dL. Exclusion criteria included women of childbearing potential, prior intravenous chelation therapy and recent or active smokers. Patient were randomized to 4 different groups: active chelation and active oral vitamins, active chelation and placebo vitamins, placebo infusions and active vitamins and placebo infusions and placebo vitamins. Patients received 40 weekly infusions and were followed for up to 5 years after the final infusion. Study endpoints included all-cause mortality, repeat myocardial infarction, stroke, coronary revascularization or hospitalization for angina.

Results: 1708 patients participated in the TACT trial (839 randomized to chelation and 869 randomized to placebo). Patients in the active treatment group demonstrated an 18% relative risk reduction in clinical endpoints (.82 HR, .69-.99 95% CI, p=0.035) with a number needed to treat of 18 over a 5 year period. In the pre-specified subgroup of patients with diabetes (n=633) there was a relative reduction of 41% (.59 HR, .44-.79 95% CI, p<0.001) and a 5 year NNT of 6.5 patients.

Discussion: The data indicate that while there was a modest decrease in adverse cardiovascular events in patients that received chelation therapy, in patients with diabetes the observed protective effect of intravenous chelation was significant. One possible mechanistic explanation includes a decrease in advanced glycation end-products that may play a role in decreasing the genesis of atherosclerotic plaques. Ultimately, additional basic and clinical research is needed to establish the utility of intravenous chelation therapy in diabetic patients with cardiovascular disease. The Trial To Assess Chelation Therapy 2 is currently underway, and this sequel to the TACT trial is studying the incidence of adverse cardiovascular events in diabetic post myocardial infarction patients.

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A comparison of medications in 38 pediatric EMS protocols to those listed on the Broselow length-based tape

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Keywords: Emergency, Medicine, Length-Based, Broselow, Tape

Background: Pediatric Advanced Life Support guidelines set forth by the American Heart Association recommend use of a length-based resuscitation tape (LBT) by healthcare providers. Pediatric medication errors in the pre-hospital setting have been studied by numerous investigators, occur frequently and are potentially fatal. This study seeks to compare pediatric drug dosages from large

and small EMS agencies to those listed on the Broselow LBT and determine discordance rates.

Methods: We first sought to determine the percentage of medications on the Broselow LBT found at incongruent dosages compared to the EMS protocols. We then determined the total number of medications from each EMS protocol that were not present on the Broselow LBT. For each EMS agency, the sum of incongruent medications and missing medications was divided by the total number of medications to determine the overall discordance rate for each EMS agency. Finally, we calculated the frequency of each of the medications in each EMS protocol that were missing from the Broselow LBT, as well as those that were listed at incongruent doses.

Results: Thirty-eight EMS protocols were reviewed. Of medications listed in both the Broselow LBT and EMS protocol, 10% were listed at a dose at least 30% greater than that recommended by the EMS protocol. On average, 38% of EMS protocol medications were not listed on the Broselow LBT. This calculated to a total average medication discordance rate of 49% (Range 32-63%,SD 8%). Further analysis revealed that five medications represented 62% of the missing medications: Epinephrine 1:1000 IM, Ondansetron, Diphenhydramine, Morphine, and Albuterol. Three medications accounted for 84% of the incongruent dosages: Midazolam, Fentanyl, and Diazepam.

Conclusion: A significant discrepancy exists between the pediatric drug dosages found in 38 EMS protocols and those listed on the Broselow Length-Based Tape

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Designing an implantable carbon dioxide sensor for complete respiratory control

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Keywords: Engineering, Carbon Dioxide, Sensor, Respiration, Diaphragm Pacing

Introduction and Objectives: With the introduction of diaphragm pacing or mechanical ventilation, respiratory function can be partially restored to those who suffer from neuromuscular disorders. Completing the artificial respiratory system requires a continuous feedback mechanism to dynamically adjust ventilation under changing cardiovascular conditions. Partial pressure of carbon dioxide (pCO2) in the blood and cerebrospinal fluid is a strong indicator of respiratory health, and thus we target interstitial pCO2 for designing our continuous feedback system. Our aim is to design an implantable sensor that can continuously monitor interstitial carbon dioxide (pCO2) in vivo, providing a novel metric for diagnosis and completing the artificial ventilator control loop. The objective of this research is to demonstrate our opto-chemical sensing concept is able to detect changes in pCO2 in real time.

Methods: We fabricated a prototype sensor for a proof-of-concept to demonstrate sensitivity to carbon dioxide. The opto-chemical transduction mechanism is a pH-sensitive dye solution, comprised of 8-Hydroxypyrene-1,3,6-trisulfonic acid trisodium salt (HPTS) and deionized water which reacts with carbon dioxide to form carbonic acid. This dye solution is encapsulated by a non-toxic, gas permeable, polydimethylsiloxane (PDMS) membrane. The sensor was placed in an optically clear, pressure chamber where a pCO2 step function was generated and optical transmission, as well as pressure, was recorded over time. The optical transmission was normalized to reference beam and pressure was measured at physiologically relevant levels of mmHg. A t-test was used to determine significant changes in optical signal before and after the pCO2 step function.

Results: The opto-chemical sensor demonstrated sensitivity to carbon dioxide, showing a significant change ($p<0.05$) from baseline after our pCO2 step function was generated. Unfortunately, recovery was not directly observed within the recording time frame ($p>0.05$) which may be explained in the future by the full diffusion-kinetics computational model.

Conclusions and Implications: Development of this sensor will not only be able to provide feedback for artificial ventilator systems but also a new metric: continuous interstitial pCO2. Our results are promising; based on a single experiment we were able to detect a 1 mmHg change in pCO2 with our prototype sensor concept. While unable to demonstrate recovery, we are looking at solutions involving optimization of the chemical-sensing dye solution and PDMS fabrication. Future in vitro experiments will be testing the sensor in extreme pH environments and against potentially confounding, physiologically relevant gases.