Vertigo With Typical Peripheral Characteristics In Cerebellar Stroke

Background: Vertigo is a common yet challenging complaint in the emergency department (ED). Direction-fixed horizontal nystagmus that follows Alexander’s law with abnormal head impulse test, spontaneously resolved vertigo, and vertigo that worsens with head movement are considered typical for “peripheral” vertigo. We present a case with above characteristics that was caused by an acute ischemic stroke (AIS).

Case Presentation: 89-years-old man complained of acute vertigo that started a day before presentation to ED. Vertigo worsened with movement, and associated with vomiting and a few minutes of oscillopsia. Upon arrival to ED, vertigo resolved. He had benign prostate hyperplasia. He does not smoke, drink alcohol or use illicit drugs. Blood pressure was 138/54 mmHg. He had direction-fixed horizontal nystagmus to the right, aggravated by rightward gaze. Head impulse test was abnormal, and there was no skewed eye deviation. Dix-Hallpike test to the right side triggered geotropic torsional nystagmus. He had no appendicular ataxia but gait was wide-based. Other neurological examination was normal. NIH stroke scale was 0. Next day, nystagmus resolved. MRI of the brain showed AIS in the antero-medial portion of the right superior cerebellar hemisphere.

Discussion: There are two bedside tools used for the initial evaluation of vertigo — Head Impulse, Nystagmus, Test of Skew (HINTS) exam to predict cerebrovascular disease (96.5% sensitivity 84.4% specificity, when nystagmus is present) and Dix-Hallpike test to predict benign paroxysmal positional vertigo (79% sensitivity, 75% specificity). This patient had AIS despite negative HINTS exam and positive Dix-Hallpike test.

Conclusion: AIS can mimic peripheral vertigo and should be considered in patients with cerebrovascular disease risk factors. Developing an AIS risk predictive tool for patients presenting with vertigo would be useful.

Delayed Hypersensitivity To Millepora Species Fire Coral In Two Sisters

Two sisters in their 20s were exposed to a Millepora species of fire coral on a descent rope while SCUBA diving in Key Largo, Florida. An acute mild allergic reaction on their hands was followed 3 â€“ 4 weeks later by a delayed hypersensitivity reaction that resolved after 3 â€“ 4 days of steroid treatment. About one week later both sisters developed small red papules in the web between the thumb and index finger that resolved spontaneously over 3 days. A delayed hypersensitivity reaction to fire coral toxin has not previously been reported. Furthermore, this case is especially interesting because the two sisters developed near-identical reactions along a similar time course. This may indicate a genetic susceptibility for delayed hypersensitivity to fire coral species. Millepora species are common in tropical Atlantic, Pacific and Indian waters. Divers should be aware that fire coral may grow and proliferate on common rope material, and should take appropriate precautions.
Depressive Symptoms, Leptin, Adipokines And Obesity In Women With And Without HIV Infection

The Jolly Fat hypothesis stated that there is a positive relationship between substantial obesity and depression. Since then there have been many controversial publications on this association. BMI is an indicator of the amount of adipose tissue in the body, which functions as the largest endocrine organ. Adipokines such as leptin and adiponectin affect processes in the nervous system and may be dysregulated in individuals with HIV infection, perhaps due to lipodystrophy syndromes. The association of obesity and depressive symptoms onset and the role of adipokines on the nervous system beget the question of whether there is an association between adipokines and depressive symptoms and whether they can be used as biomarkers for depression onset.

In the present study, we explore the association of depressive symptoms and plasma levels of the adipokines, leptin, total adiponectin and HMW adiponectin; and the anthropometric measures body mass index, waist circumference, and waist to hip ratio in adult women with and without HIV infection who are participants at the WIHS (Women’s Interagency HIV Study). A total of 357 participants in the Brooklyn WIHS were evaluated for plasma levels of leptin and adiponectin. Participants completed self-reported depression questionnaires known as CES-D (Center for Epidemiological Studies Depression scale). We performed cross-sectional analyses of plasma leptin and adiponectin levels and CES-D scores using Spearman correlations, T-tests, logistic regression analyses, and Receiver Operating Characteristic test.

We report that women participating in Brooklyn WIHS have leptin and adiponectin levels that are not associated with depressive symptoms. Across the BMI spectrum, there is no association between leptin or adiponectin and depressive symptoms. This epidemiological study is the first to investigate some of the endocrine and anthropometric measures that may have an impact on the mental health of women coping with HIV infection.

Rat Model Of Adjunctive Intra-Arterial Infusion After Large Vessel Ischemic Stroke Revascularization

Ischemic stroke caused by emergent large vessel occlusion (ELVO) is associated with significant morbidity and mortality. Despite the recent validation and increasing use of mechanical thrombectomy (MT) studies have shown over 50% of patients who undergo MT still remain significantly impaired. There is significant opportunity for adjunctive therapies used in conjunction with MT. Sprague-Dawley rats (250-300gm) are anesthetized using ketamine/xylazine. Neck dissection is performed to visualize the common carotid (CCA) bifurcation. A endoluminal suture is inserted to the internal carotid artery (ICA) bifurcation to occlude the middle cerebral artery (MCA). Occlusion is maintained for 2hrs. After occlusion time is completed the neck is re-opened. After removal of the suture and prior to re-establishing flow, normal saline is administered through an arterial infusion catheter (polyurethane 2.3F rounded tip). After flow is reestablished the catheter is maintained in the ICA and externalized through the neck and connected to a continuous infusion system. To measure distal microvascular perfusion, a Laser Doppler Flowmetry (LDF) probe is glued on the skull in the center of the ipsilateral MCA field. Scanned images of 2,3,5-triphenyltetrazolium chloride (TTC) stained sections of rat forebrain are compared between left and normal right hemisphere to determine amount of cerebral edema and ischemic injury. The procedure successfully establishes continuous selective intra-arterial catheter access in the rat ICA. The microcatheter does not change distal microvascular perfusion when compared to normal LDF values. Pre-reperfusion infusion is successfully demonstrated by LDF. At 6 and 12hrs post-catheterization, TTC staining reveals no significant cerebral injury. Continuous selective intra-arterial catheterization of the rat ICA using the described method is safe, does not compromise distal microvascular perfusion, and does not cause significant cerebral injury.
**Demyelination, Cognition And Imaging In A Translational Model Of Rat Vascular Cognitive Impairment (VCI)**

VCI is a heterogeneous group of diseases that can involve stroke, large vessel stenosis and small vessel disease resulting in parenchymal inflammation, a progressive deep white matter demyelination and axonal degeneration/loss.

**Goal:** To better understand brain pathology and potential markers in this non-stroke/infarct VCI experimental model.

**Hypothesis:** In this model relevant to human VCI, deficits in complex cognitive functioning involves diffuse fiber tract changes that can be quantified and validated histologically.

**Methodology:** In hypertensive rat (SHR) (N=5-7/grp; ~250g) cervical bilateral carotid artery stenosis is done using two ties of 3-0 silk; 2mm apart against a 30Ga tube that was immediately slid out (No stenosis in Sham). Cognition Assays; executive functioning (T-maze delay based decision making); complex cognition/navigation (Active Place Avoidance; APA). MRI Brain; Arterial Spin Labelling (ASL); Diffusion Tensor Imaging (Fractional Anisotropy FA; Axial Diffusivity AD; Radial Diffusivity RD). Histology was used to measure neuronal changes/cell loss.

**Results:** In the T-Maze ‘delay-based’ decision making task, stenosis surgery decreased correct decisions (N=4-5/grp; p<0.05). In APA, stenosis produced progressive learning impairment while Sham learning progressively improved (N=5-7/grp; p<0.05). ASL indicates stenosis persistently reduced forebrain perfusion in corpus callosum and cortex. DTI indicates changed Corpus Callosum (low FA, high RD); changed External Capsule (low FA, high AD, high RD); (N=5-6/grp; p<0.05). Histology: No differences in the number of forebrain neurons. (N=6/grp)

**Conclusions:** Carotid stenosis in hypertensive rats creates forebrain hypoperfusion and cognitive deficits as in man. MRI measurements suggest opportunities to localize forebrain white matter parameters as markers to monitoring VCI fiber tract pathology and VCI intervention; histological cross-validation of MRI to cellular and protein changes is necessary.

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**Primum Non Nocere: First, Do No Harm.**

Levetiracetam (LEV) has proven efficacy for the control of generalized tonic-clonic (GTC) seizures associated with idiopathic generalized epilepsy (IGE). Seizure aggravation triggered by antiepileptic drugs (AEDs), known as paradoxical effect, is a well-documented phenomenon, and it has been described with many different AEDs. However GTC aggravation by LEV in IGE in pediatric age group has rarely been reported. We present a 12-year-old patient with idiopathic generalized epilepsy, who experienced paradoxical aggravation of GTC seizures following treatment with LEV. The patient had significant improvement of the electro-clinical picture after LEV was discontinued. This report highlights that exacerbation of frequency of GTC seizure in IGE can be associated with LEV use and clinicians should be alert about the possibility of a paradoxical effect.

**Keywords:** Epilepsy, Levetiracetam, Paradoxical effect, Antiepileptic, IGE, GTC
Measures To Improve Epilepsy Quality Of Care In Neurology And Epilepsy Clinics

Introduction: There are considerable gaps in the quality of care delivered to patients with epilepsy. Measuring the quality of care delivered is the first step to its improvement. The first epilepsy quality measures were approved in 2009. Eight measures were published, covering diagnosis, evaluation, counseling, and referral (Neurology 2011). AAN has updated a review of these measures in January 2014. A 2015 study from Boston, MA showed that adherence to quality measures is important as it does improve patient outcomes and seizure control.

Objective: To compare epilepsy care quality measures between patients seen in KCHC neurology and epilepsy clinics.

Methods: A retrospective chart review was done on 90 adult patients with diagnosis of epilepsy between July to December 2015. 17 of the 90 patients were later followed in the recently set up epilepsy clinic. Adherence to the ten quality measures were compared between the two clinics. Significance of results was established using McNemar's Chi-square test.

Results: Epilepsy clinic was significantly better in counseling the patients about seizure related safety measures, finding out the seizure frequency since prior visit, reviewing or ordering EEG's and documenting etiology for epilepsy. Regarding counseling women of childbearing age, bone health and behavioral health both clinics did not do well.

Conclusion: Recent setup of the epilepsy clinic at KCHC along with utilization of template for documentation could be the reason for better adherence to epilepsy care quality measures. Emphasizing usage of a similar template in the general neurology clinic should likely improve the adherence to quality measures.

Non-Invasive Measurement Of The Thickness Of The Fovea In Humans: A Focus On The Photoreceptor Layer

Introduction: Lower vertebrate cone photoreceptors contract with dopaminergic stimuli and from darkness to light,1 which may be regulated by the circadian rhythm.2 Retinal thickness changes throughout the day,3 can be measured using optical coherence tomography (OCT).4 We describe a measurement method of the photoreceptor layer thickness in the foveola, which is comprised of cone photoreceptors.5

Methods: The retinal map scan OCT protocol, covering an area of 5 mm x 5 mm in the foveally centered grid, was utilized. For manual measuring, a line is drawn from the Inner Segment/Outer Segment (IS/OS) junction's peak at the foveola to the Retinal Pigment Epithelium (RPE), perpendicular to the RPE. This distance includes photoreceptors (Fig. 1). For semi-automated measuring, the line separating the inner and outer retinal layers for automatic equipment calculation can be drawn at the level of the IS/OS junction to provide a new reference value. After recalculation, measurements reported as "outer retinal" will be the distance of interest. Using the grid pattern, measurements can be made in 250 μm increments from the foveola (Fig. 2).

Measuring from the foveola to the RPE yield total retinal thickness in either method.

Results: There was a match between manual and semi-automated measurement methods (Fig. 3). With each adjustment and recalculation the foveola marked by the OCT equipment shifts. This adjustment is automatically performed by the equipment and can be ignored as part of the normal process. However the location of the intersection representing the true foveola calculated before shift adjustments needs to be marked in order to assist in navigating.

Discussion: Indirect measurement and quantification of human cone photoreceptor layer thickness in vivo is feasible. The method carries the promise to serve as an ocular biomarker of Parkinson's disease, in which dopamine depletion impacts vision and circadian rhythm,4, 6 and possibly cone cell length.
Ilana Lasner

**Neurocysticercosis: An Important Cause Of Epilepsy Worldwide**

Neurocysticercosis is due to infection with the larval cysts of the parasite Taenia solium. It is a leading cause of epilepsy worldwide, but rarely seen in developed countries. Neurocysticercosis is considered a neglected parasitic infection by the CDC with an estimated 1000 new cases in the United States every year. A 34-year-old Haitian man presented to the ED with worsening headaches and blurred vision for 3 weeks. He was recently hospitalized in Haiti for seizures and encephalopathy of unknown etiology but recovered with persistent headaches and blurry vision. The headaches were diffuse and exacerbated by coitus. Initial neurologic exam demonstrated normal mental status and left homonymous hemianopsia. CT of the head showed innumerable cystic lesions throughout the brain of variable sizes with central dot calcification and no rim enhancement characteristic of the vesicular stage (viable parasite) of neurocysticercosis. MRI of the brain and orbits performed one day later revealed multiple cystic lesions in both cerebral hemispheres, in the lateral ventricles, and the left orbital apex. HIV test was negative. The patient was started empirically on albendazole, dexamethasone, and levetiracetam for seizure prophylaxis. Subsequent neuroimaging two months and one year later showed interval decrease in size of lesions with post-contrast enhancement consistent with the granular nodular stage (nonviable cysts) and successful treatment. Patient’s seizures remitted, and he was successfully tapered off antiepileptics. This case illustrates the classic presentation of neurocysticercosis—an unusual cause of epilepsy in the developed world. The radiographic features of various stages of neurocysticercosis before and after successful antiparasitic treatment are demonstrated. Neurologists should be aware of clinical and radiographic features of neurocysticercosis, especially in regions with patients from endemic regions, as it is a treatable cause of epilepsy.

David Mao and Kevin Kyle

**Unusual Presentation Of Hemichorea Due To Nonketotic Hyperglycemia**

Rationale for the research: To discuss a rare cause of hemichorea

Methods: Case report

Results: 83 year old Afro-Caribbean woman with hypertension, poorly controlled diabetes, and prior right basal ganglia lacunar infarct presented with new acute onset left sided uncontrollable limb movements. Patient awoke one morning with left arm jerking movements that were large amplitude and non-rhythmic. Later her symptoms progressed to also involve the left leg. These movements resolved once she was able to fall asleep. Neurologic exam was significant for residual left upper motor neuron facial weakness and left hemiparesis from prior stroke.

On initial presentation, her blood glucose was 86. Her A1c was later found to be 12.1. Laboratory workup for TSH, Iron panel, ACE, ceruloplasmin, and HIV were unremarkable. EEG did not show electrographic seizures during these events. MRI demonstrated right lentiform nucleus T1 hyperintensity. No additional findings were noted on diffusion weighted imaging or T2 sequences.

Discussion: Hemichorea secondary to nonketotic hyperglycemia with classic imaging findings is a recognized clinical syndrome. Review of the cases in literature show that it tends to affect elderly and female patients. Its prevalence is higher in Asian countries, which suggest possible genetic link or regional variations. Resolution of symptoms can take days to months. Despite aggressive control of her blood glucose levels and initiation of haloperidol, the patient's symptoms persisted for several months. Pathophysiology of this syndrome has been hypothesized to be related to hypoperfusion and gabaergic dysfunction secondary to metabolic changes. We postulate that history basal ganglia stroke may be a risk factor, and is associated with longer recovery time.
A Classic Case Of Pernicious Anemia Causing Subacute Combined Degeneration Of The Spinal Cord

35M presenting with tingling sensations in body. It first started two months ago in his right thumb, which then spread to the rest of his hand, and then a few weeks later spread to his left hand. Soon after the process started in both of his feet spreading proximally. Recently he noticed his gait changed due to what felt like "tightness" in his hips. He noticed that he was dropping things with his hands, but denied overt weakness. He noticed some new difficulty with urination. He had significant family history for autoimmune disorders including Lupus in his aunt and Raynaud's in his mom and grandfather. His neurological exam was significant for mild action tremor in his right hand, proximal weakness in his hips bilaterally, decreased reflexes symmetrically throughout, and stocking and glove sensory loss to pin prick, temperature and vibration/joint position. He was found to have serum B12 levels of 138, elevated homocysteine & methylmalonic acid, macrocytosis with hypersegmented WBCs. MRI was classic for subacute combined degeneration of the spinal cord. Further antibody studies were positive for both intrinsic factor blocking antibody and parietal cell antibodies. This gentleman responded to replacement of B12 IM supplementation. This patient exemplifies the classic teaching point of peripheral neuropathy. B12 is commonly tested for in both hospitals and in clinics for several neurological conditions as it is important in myelin synthesis. A deficiency can lead to neuropathy to dementia. There are several etiologies of Vitamin B12 deficiency ranging from malnutrition, Gastric/Intestinal diseases, to medications. Pernicious anemia is a result of auto antibodies towards IF or Parietal Cells which prevent B12 from being absorbed in the body. Its prevalence is between 50-4000/100,000 persons. It is associated with other autoimmune disorders such as thyroid disease, vitiligo, and diabetes. This patient was unique in that he had antibodies to both IF and Parietal Cells.

Characterization Of Striatocapsular Hemorrhage In A Community Hospital Cohort Of African-Carribean Patients

Clinical and neuroimaging information in 45 patients of African-Caribbean descent with striatocapsular hemorrhage seen at Kings County Hospital Center between 2011 and 2016 were reviewed retrospectively. Characteristics like sex, ethnicity, blood pressure on initial evaluation, presence of neglect, language deficits, dysarthria, unilateral weakness and ataxia were examined. Additional factors like NIHSS, mRS, ICH score, and involvement of neurosurgery were also evaluated. Striatocapsular hemorrhages were divided into anterior, middle, posteromedial, posterolateral, lateral and massive types. Survival in middle and posteromedial types were significantly higher than in massive type hemorrhages. The presence of intraventricular hemorrhage in large hemorrhages was less likely to occur than in massive type hemorrhages. A comparison of each type of hemorrhage and various characteristics examined in the study sample were assessed for statistic significance. This study demonstrates a unique and close look at striatocapsular hemorrhage and its characteristics in Caribbean stroke patients. Further studies will be helpful in better improving stroke care that will help optimize and improve morbidity in this population.
A Dural Arteriovenous Fistula (Davf) Secondary To Cerebral Venous Thrombosis

Introduction: The incidence of intracranial Dural Arteriovenous Fistulas (DAVFs) is approximately 10-15% of all intracranial vascular abnormalities. DAVF in adults represents an acquired disease with venous sinusuous thrombosis being a common predisposing factor. Here we present a case of DAVF secondary to venous sinusuous thrombosis successfully treated with coiling.

Case Description: 63 y/o man with history of recurrent DVTs and PE on anticoagulation presented with right sided weakness and altered mental status. Functional decline reported over the preceding month associated with multiple episodes of vomiting 2 days prior. At initial evaluation patient was found to have global aphasia and right side hemiparesis. Non-contrast CT head showed a left thalamic hemorrhage with intra-ventricular extension. MRI of the brain with contrast showed bilateral thalamic enhancement indicative of venous engorgement and a stable hemorrhage. CTA/CTV of the intracranial vessels revealed a straight sinus thrombus with an adjacent DAVF being fed by the posterior cerebral artery. The DAVF was confirmed on catheter angiography and the patient underwent successful super-selective embolization of the fistula. Patient developed recurrent lower extremities DVTs despite being on appropriate anticoagulation.

Extensive coagulopathy workup was unremarkable. After a prolonged hospitalization the patient was discharged to an acute rehab facility.

Discussion: Clinical presentations of DAVF vary, symptoms can range from mild tinnitus to fatal hemorrhages. Diagnosis of DAVF can be made based on imaging modalities CTA and MRA/MRV. Catheter angiography remains the gold standard.

Treatment options for DAVF depend on severity of symptoms and vary from conservative management in asymptomatic patients to endovascular embolization, coiling and radiation therapy in the most severe cases. Early recognition and treatment are key in preventing devastating outcomes.

Upper And Lower Motor Neuron Findings In A Patient With B12 Deficiency And Leprosy

Leprosy affects 4 million people worldwide and is one of the most common causes of neuropathy. Approximately 175 new cases are found in the United States yearly. Mycobacterium leprae damages the peripheral sensory and motor neurons, causing numbness, weakness and paralysis.

A 57-year-old man visiting from Guyana had progressive numbness and left foot drop over a 6-month period. Over about two years he lost sensation in multiple fingers followed by spontaneous amputation. He also had ascending numbness up to his calves. He works as a cook and is a vegetarian.

Examination revealed multiple round hypopigmented lesions on his back, ulcerated wounds on his right fingers and palm, amputations of fingers 2nd, 3rd, 4th on the right hand and 3rd on left. His calves were atrophic. The greater auricular and ulnar nerves were palpable bilaterally. He had peroneal palsy worse on left than right, decreased pinprick, thermic and vibration sensations in stockingâ€“glove distribution, diffuse hyperreflexia and right upgoing plantar reflex. Electrophysiologic testing showed diffuse sensorimotor axonal neuropathy with demyelinating features (left ulnar and peroneal partial motor conduction block, bilateral tibial CMAP temporal dispersion). Skin biopsy shows paucibacillary leprosy with focal epithelioid granulomas. The vitamin B12 level was low. He refused all treatment and was lost to follow up.

This case is noteworthy for hyperreflexia associated with polyneuropathy, a misleading finding resulting from concomitant vitamin B12 deficiency.

Due to modern transportation, leprosy is occasionally seen in the developed countries where physicians are less familiar with its manifestations. A good epidemiological history, clinical and neurological examination are needed for a prompt recognition to avoid complications.
Clotilde Balucani  
Advisor(s): Steven Levine

**Fatal Intracranial Hemorrhage Following IV TPA In A Patient With Acute Ischemic Stroke Induced By A Cardiac Myxoma**

Introduction: Primary cardiac tumors are uncommon (autopsy frequency 0.001%-0.28%; 75% are benign, 50-75% are myxomas). Common neurological manifestations of a cardiac myxoma include TIAs and ischemic strokes. Although intravenous tissue plasminogen activator (IV tPA) represents the gold standard for acute ischemic stroke (AIS) treatment, its safety and effectiveness in stroke patients with myxoma is not well defined. Previously published literature suggested that IV tPA may be a safe treatment in these patients. Accordingly guidelines consider reasonable treatment with tPA in these cases (Class IIb, Level of Evidence C).

We report a case of fatal intracranial hemorrhage (ICH) following IV tPA in a patient with AIS caused by a cardiac myxoma.

Case: 50 y/o man without prior medical history presented to the ED with 2 hours of left hand weakness and clumsiness. NIH Stroke Scale=3. Vitals Signs: BP 161/109, HR: 134, RR: 20, glucose: 104. EKG: possible widened P waves and sinus tachycardia. No contraindications to tPA were identified. He was treated with tPA and gradually improved in the initial hour post tPA. During infusion, BP was maintained <180/105mmHg.

Patient's mental status suddenly and rapidly declined with Glasgow Coma Scale (GCS) of 3. Head CT showed a right frontal ICH with mass effect and midline shift and early hydrocephalus. Patient was intubated and tPA was reversed No surgical evacuation of the ICH was indicated.

He had elevated troponins (1.72 at baseline to 18). Bedside echocardiogram showed a large left interatrial mass suggesting myxoma. Patient expired 3 days later. Autopsy confirmed a myxoma.

Discussion: Per published literature there are 23 cases of AIS associated cardiac myxoma treated with thrombolytic therapy. In these cases bleeding resulted in limited and small hemorrhages without clinical deterioration.

Our patient suffered a fatal ICH shortly following IV tPA treatment raising the possibility of increased risk in this population.

Fernando Cuascut  
Advisor(s): Susan Law

**The Effect Of Patient Characteristics On Recognition By Emergency Medical Service (EMS) Providers At Kings County Hospital Center**

Purpose/Background/Objectives: Faster door-to-needle time has long been a key metric for acute stroke intervention. Early intervention with intravenous tPA and intra-arterial tPA administration have been associated with improved stroke outcomes. One of the important modalities of the door-to-needle paradigm is the role of EMS. Timely stroke recognition by EMS is the first step to increase chances of intervention, hence recovery. However, accurate stroke diagnostic can be challenging especially with a wide variety of stroke symptoms and complaints. The goal of our study is to identify patient characteristics that impacting pre-hospital identification of stroke en route to Kings County Hospital Center (KCHC).

Design/Methods: A retrospective study using a cohort of suspected stroke patients based on dispatch from January 2015 through December 2015, we evaluated and analyzed stroke detection by EMS. Patient who were transported by EMS within 6 hours of symptoms onset and with stroke like symptoms were included in the study. Strokes cases were evaluated at KCHC as per the AHA Get with The Guidelines (GWTG) national registry.

Results: 76 cases were identified: 76% ischemic strokes, 17% intracranial hemorrhage, 7% had a final alternative diagnosis. The sensitivity of EMS provider stroke detection is 38% (25-52%, 95% CI) and a positive predictive value of 85% (68-93%, 95% CI). Compared to correctly identified cases, missed stroke by EMS tend to lack weakness as a chief complain. Of interest, patients with confirmed intracranial hemorrhage diagnosis (n=13) were less likely to be identified as a stroke, EMS sensitivity 15% (2%-45%, 95% CI). These patients tend to have altered mental status (AMS), dizziness or headache with vomiting as their main complaint. Furthermore, dispatcher call type of stroke, AMS and weakness were found to be more likely to have a true stroke diagnosis.

Conclusions/Implications for Practice: Unfortunately, EMS providers failed to recog
The Role Of Mutations In Connexin47 (Cx47) In Myelinating Cells Of The Central Nervous System (CNS)

Connexin47 (Cx47) forms homotypic gap junction communication channels between oligodendrocytes (OLs), the myelinating cells of the CNS and forms heterotypic channels with Cx43 in astrocytes. Pelizaeus-Merzbacher-like disease 1 (PMLD1) arises in patients with mutations in GJC2 -encoding Cx47- causing nystagmus, cerebral ataxia, and spasticity within the first 6 years of life. One mutation (p.Ile33Met) has been associated with a much milder phenotype, hereditary spastic paraplegia type 44 (SPG44). In cell lines, Cx47P87S causes defective protein trafficking, endoplasmic reticulum (ER) retention and loss-of-function. These studies have not been conducted in OLs, where ER retention of Cx47P87S could lead to cell type-specific cellular stress, activation of unfolded protein response (UPR) pathways and apoptosis. We hypothesize that mutations in Cx47 associated with severe phenotype (Cx47P87S) cause toxic gain of function compared to the milder Cx47I33M mutation. We have optimized the isolation and culture of primary OLs from neonatal Cx47 knockout mice pups using immunomagnetic beads. OLs were lentivirally transduced to express Cx47WT and mutants. Using immunofluorescence (IF) studies we show that Cx47P87S exhibited a diffuse cytoplasmic staining and colocalizes with the staining of the ER resident chaperone Grp94 compared to the puncta staining of Cx47WT and Cx47I33M. Also, IF staining for C/EBP homologous protein (CHOP) -a component of the UPR mediated apoptosis pathway- and ZsGreen -a reporter of lentiviral transduction- showed an increased CHOP activation in OLs expressing Cx47P87S compared to Cx47WT and Cx47I33M as well as an increased activation of Caspase-3. These results indicate that in primary OLs severe mutations in Cx47 protein, but not Cx47I33M, lead to ER protein retention, activation of the UPR pathway and apoptosis. Ongoing studies will determine the effect of Cx47P87S and other mutations in OL morphology and function.

Catatonia As A Rare Manifestation Of HIV-Associated Psychosis In Adolescents.

Objective: We report an adolescent patient with HIV associated psychosis presenting with catatonia. Background: New onset psychosis occurs in 0.23-15% of HIV-positive patients as its neuropsychiatric complication with no evidence of other attributable causes. Catatonia has been reported as a rare manifestation of HIV-associated psychosis. In English literature worldwide, there have been six reported cases of HIV-associated psychosis presenting with catatonia. Of those six cases, most of them presented in the third to fourth decades of life, and only one patient was in the adolescent age group. Design/Method: In this presentation we describe a case of an adolescent who presented with acute onset of psychosis accompanied by catatonia, who then was discovered to have HIV infection, without evidence of other causes. Result: This is a 19-year-old right-handed African American young man with no significant past medical and psychiatric history, who presented with 10-day history of paranoid and bizarre behavior. On admission, patient was noted to be catatonic. He was stuporous with mutism, negativism and agitation without external stimuli. Neurological exam was remarkable for catalepsy with waxy flexibility. He was then found to be positive for HIV-1. CSF studies were negative for evidence of CNS infections. Autoimmune encephalitis antibody panel including NMDA-R antibody was also negative. CT of the head and MRI of the brain showed diffuse mild atrophy. Treatment was initiated with triple antiretroviral therapy, antipsychotics and lorazepam as needed. His neuropsychiatric symptoms improved gradually over the following months. At 6 months follow-up, he regained most of his functions, although there was some concern with his memory. Conclusion: We described the second reported case of HIV-associated psychosis presenting with catatonia in adolescent age group. Although rare, HIV should be considered in the evaluation of new-onset catatonia, even in adolescent population.
**The Effect Of BMI On The Mean Size Of Nailfold Capillaries In Diabetic And Hypertensive African Americans In Brooklyn**

Background: Nailfold capillaroscopy is a non-invasive technique used to view the morphology of the capillaries embedded beneath the nail folds. This technique can be used to determine the risk of development of future complications in patients with diabetes and hypertension.

Objective: Investigate the effect of BMI on the Mean Size of Nailfold Capillaries in Diabetic and Hypertensive African Americans in Brooklyn

Methods: Sample size consisted of 20 participants over 18 years with an average BMI of 28.54 ± 4.85 kg/m². Spearman Rho test was used to determine the correlation between mean capillary size and BMI. An independent sample t-test was conducted to determine if there was a difference between mean capillary size in healthy and unhealthy participants. Unhealthy patients were defined as those with hypertension and/or diabetes.

Major Results: Results indicate that there was not a statistically significant correlation between: BMI and mean capillary size \((r=0.32, p=0.17)\), between healthy (\(\bar{X}_{\text{healthy}}=0.02380, \sigma_{\text{healthy}}=0.001153\)), and unhealthy participants (\(\bar{X}_{\text{unhealthy}}=0.02890, \sigma_{\text{unhealthy}}=0.002510\)) \((t=-1.847, p=0.081)\).

Conclusion: Mean capillary size was not correlated to BMI, nor was there any distinction between healthy and unhealthy patients. All the patients had the same mean capillary size of 0.026 mm ± 0.007 mm. Recommendations for future studies include recruiting more participants from other racial groups.

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**The Relationship Between Predialysis NaCl Intake And Albumin Levels In African-American/Afro-Caribbean Dialysis Patients**

Background: Hemodialysis patients adhere to dietary and fluid restrictions to limit IDW gain and prevent malnutrition. However, patients don’t always follow restrictions which results in fluid retention and consequently hypertension.

Objective: Improve the quality of care through the investigation of the relationship between predialysis NaCl and albumin levels in female and male hemodialysis patients.

Methods: The sample size was 129 patients (66 female; 63 male). Patients were 18+ years and of African-American/Afro-Caribbean descent. Information was gathered on gender, age, NaCl, HGB, K+, albumin, CO2 and Cl-. Data was analyzed through SPSS, linear regression, Pearson correlation and Independent sample T-tests.

Major Results: Correlation between NaCl and albumin levels showed \(p=0.058; r =0.167\). Predictive ability of NaCl on albumin had \(p=0.029; f=3.653\). Difference in mean NaCl intake between men and women (\(\delta \alpha \hat{=} \text{female}=2576.77\pm 1156.89, \delta \alpha \hat{=} \text{male}=3463.25\pm 1512.08\)) had \(p<0.001, t=3.727\).

Conclusion: No relationship between NaCl and albumin found. Higher NaCl intake in men compared to women. Women follow diets more frequently and are more concerned with weight control. This suggests that the quality of care for hemodialysis patients would improve if men have stricter salt restrictions than women.
Barbershop Talks With Brothers Project As A HIV Intervention On Condom Use In Heterosexual African American Men

Background: There are disproportionately high rates of HIV in Central Brooklyn for heterosexual Black men which the BTWB project is addressing through health education.

Objective: The Barbershop Talks With Brothers (BTWB) project is an HIV prevention program for heterosexual Black men in central Brooklyn. BTWB’s objective is to educate these men about HIV and motivate them to practice safe sex.

Methods: Participants are screened at local barbershops, to be eligible they have to be: HIV negative, >18 years old, and have engaged in sex within three months. They take an Audio Computer Assisted Self Interview Baseline Survey (ACASI) before and after the educational intervention. We were interested in researching the change in condom use among participants. McNemar tests were used to analyze the data in SPSS.

Major Results: There was no significant change in behavior in men that did not use a condom, despite making an excuse to use one, when their partners did not want to, (p=0.791). However, there was a statistically significant change in participant responses before and after the intervention regarding overall refraining from condom use (p=0.01).

Conclusion: The overall decrease in sex without a condom could be due to the knowledge they received during the intervention. While effective in this regard, future interventions similar to BTWB should strengthen their focus on having inclusive conversations with their partners.

Bathing Habits And Pruritus In The Afro-Caribbean Community Of Central Brooklyn

Background: Pruritus, more commonly known as an itch, is mainly a result of dry skin. Dry skin maybe a result of bathing habits, including temperature and/or duration of baths/showers.

Objective: There is a lack of literature addressing the presence of pruritus in the Afro-Caribbean Community and its possible relation to bathing habits. We expect to see that the frequency of bathing and the temperature of the water to be contributing factors to pruritus within this community.

Methods: Surveys, measuring respondents’ bathing habits and scale of skin irritation were administered to patients at the Asthma and Allergy Clinic. The questions include: duration and frequency of baths, as well as a 5-D Pruritus Scale that measures the effect of pruritus on patients.

Major Results: Of the 15 respondents, length of time bathing: 55%, 5-10 minutes, 45%, 10-20 minutes. Water temperature: 9% lukewarm, 73% warm, and 18% bathed in hot water. Pruritus, hours per day: 67% itched <6 hours; 11% itched 6-12 hours; and 22% itched all day. Of the people that recorded that they itch: 44% mild, 11% moderate, and 11% was severe. This was a descriptive study and there were no significant findings.

Conclusion: One of the major limitations of this study was sample size, process of collecting data, and coding the information. Further research needs to be conducted in order to draw stronger connections between pruritus and bathing habits in the Afro-Caribbean community.
Total Hip Arthroplasty For Gun Shot Injury Induced Secondary Arthritis Of The Hip: What Are The Outcomes?

Introduction: Although most reports focus on acute management of gunshot wounds (GSW) around the hip, the literature is meager on detailing the management and outcomes of patients with primary total hip arthroplasty (THA) for posttraumatic arthritis after a GSW.

Methods: We retrospectively analyzed our prospectively collected total joint arthroplasty database from 2011 to 2015 to identify patients who had undergone a primary THA with a history of prior GSW to the same hip by a single fellowship trained adult reconstructive surgeon. Medical records and discharge summaries were reviewed to collect patient demographics, clinical, radiographic, and patient-reported outcomes. A Student's t-test was utilized to determine any the significance of the changes.

Results: Nine male patients underwent THA with a prior history of GSW. Mean age of 59 years (range 44 to 77 years) and a mean BMI of 30 kg/m² (range 24 to 42 kg/m²). The mean follow-up time was 24 months (range 8-60 months). Mean HHS score significantly increased from 43 (range, 9 to 73) and to 83 (range, 67 to 940), p = 0.0001. Mean VAS significantly decreased from 8 (range, 7 to 10) to 2 (range, 1 to 5), p < 0.0001. Mean UCLA significantly improved from 3 points (range, 2 to 5) to 7 (range, 5 to 9); p < 0.0001. Mean SF-36 physical component significantly improved from 27 (range, 15.2 to 42.5) pre-operatively to a mean of 49 (range of 43 to 58.4); p < 0.0001. Finally, Mean SF-38 mental component score significantly improved from 51 (range of 40 to 61), to a mean of 57 (range of 54 to 61); p = 0.019.

Conclusion: Significant improvement was shown in hip function, activity, and pain levels in patients undergoing THA with a history of GSW. Although they can be technically demanding, a THA seems to be a safe and effective procedure to reduce pain and improve function for GSW induced hip arthritis.

Septic Arthritis Of The Native Knee After Intra-Articular Injection Of Corticosteroids: A Systematic Review

Introduction: Intraarticular corticosteroid injections have been used in the conservative treatment of osteoarthritis and rheumatoid arthritis for the past several decades. While most patients obtain relief from these injections, it is not without known risks. The most damaging and possibly life threatening complications being septic arthritis. To our knowledge, this is the largest systematic review looking at septic arthritis in the native knee following to the use of intra-articular steroid injections. Methods: In December of 2016, a systematic review of the literature was performed on the Medline (PubMed), Ovid, and Embase databases. Studied analyzing septic arthritis attributed to the prior use of intra-articular steroid injections to the knee were included. The patient's demographics, past medical history, and clinical course were analyzed. Results: A total of 9 studies, published between 1976 and 2012, were found reporting on 35 cases of septic arthritis after corticosteroid injection of a native knee. The mean age was 61 (range 44-87 years), with 25 females, and 10 male patients. Past medical histories included, diabetes, tuberculosis, acute myelogenous leukemia, breast cancer, end stage renal disease, rheumatoid arthritis, hypertension, and coronary artery disease. The most common cultured organisms were Staphylococcus aureus (11), Mycobacterium massiliense (9), methicillin-resistant Staphylococcus aureus (2), and various other organisms. Treatments included 19 patients who had a total of 26 arthroscopic and 22 open washouts and debridement, 4 arthrodesis, 2 total knee replacements. One patient underwent an above knee amputation and eventually died due to a septic shock. Conclusion: Septic arthritis in the native knee is a rare but under reported complication of intraarticular injections. It is important to take into consideration the past medical history, and use proper sterile technique to prevent costly and possibly life threatening complications.
Publication Rates And Changes In Authorship At The Aaos And Aahks Annual Meetings; 2013 To 2015

Introduction: In adult reconstruction surgery, the American Academy of Orthopaedic Surgeons (AAOS), and the American Association of Hip and Knee Surgeons (AAHKS) annual meetings provide the most up-to-date knowledge through podium and poster presentations. For presentations between 2013 and 2015, there is paucity of information on the publication rate, change in authorship, time to publication and impact factor (IF) of the journals where these presentations were published.

Methods: This is a comprehensive search of all posters and podiums that were presented at AAHKS, and adult reconstruction sections of the AAOS annual meetings 2013-2015. Published presentations were identified by computerized search on the Medline (PubMed) and Ovid databases using the key words. The publication rates for each annual meeting was calculated, and compared using Fischer's exact test. The mean changes in authorship, and journal IF were compared using a Student's t-test.

Results: AAHKS had higher publication rate for 2013 (The overall publication rate for the three years was comparable between AAOS and AAHKS (56% vs. 55%, p=0.676). For podiums only, AAHKS had significantly higher publication rate (73% vs. 61%, p=0.004). However, both had comparable rates for posters (48% vs. 49%, p=0.815). Similarly, IF and mean authors were similar (2.82 vs. 2.83 P=0.915) and (5.2 vs 5.3 P=0.572), respectively. The mean authors added and removed when the abstract went to publication was (0.8 vs. 0.7 P=0.203) and (0.7 vs. 0.6 P=0.722) respectively.

Discussion: The AAOS the AAHKS annual meetings present a similar overall rate of publication, changes in authorship and impact factor in regards to Adult Reconstruction. AAHKS Podium presentations had highest publication rate with almost 3 out of 4 podiums being PubMed indexed by minimum of 2 years.

Is Orthopaedic Department Teaching Status Associated With Adverse Outcomes Of Primary Total Hip Arthroplasty?

Purpose: The purpose of this study is to compare outcomes of patients undergoing total hip arthroplasty (THA) between teaching vs. non-teaching in regard to complications and 90-day readmission. Methods: A total of 60,894 patients underwent primary THA (2009 â€“ 2012) in the New York Statewide Planning and Research Cooperative System. Perioperative medical and surgical complication categories were created using ICD-9-CM diagnosis codes. Costs were calculated using cost-to-charge ratios. Mixed-effects regression models accounted for hospital clustering and year of surgery and were controlled for age, gender, race, insurance, major complication or comorbidity status, and Deyo comorbidity score. Results: Mean length of stay was longer at teaching compared to non-teaching hospitals (3.77 vs. 3.71 days; p=0.002), (beta: 5.2%, p=0.007). Perioperative medical complications were less common at teaching hospitals (3.7% vs. 4.7%; p&lt;0.001) (OR=0.88, p=0.122). Perioperative surgical complications were similar at teaching hospitals (0.8% vs. 0.9%, p=0.130), (OR=0.99, p=0.948). Mean costs were higher at teaching hospitals (21,568 vs. 19,579 USD; p&lt;0.001) (beta: 15.3%, p&lt;0.001). Disposition to inpatient rehabilitation was more common at teaching hospitals (20.4% vs. 14.2%, p&lt;0.001), (OR=2.40, p&lt;0.001). The rate of unplanned 90-day readmission was less common with patients undergoing THA at teaching compared to non-teaching hospitals (6.1% vs. 7.2%, p&lt;0.001), (OR=0.95, p=0.249). Conclusion: Primary THA at teaching hospitals is associated with higher costs, increased length of stay and increased utilization of inpatient rehabilitation facilities. Teaching hospitals did not significantly differ from non-teaching hospitals in terms of inpatient complications or unplanned 90-day readmission.
Is Orthopaedic Department Teaching Status Associated With Adverse Outcomes Of Primary Total Knee Arthroplasty?

Purpose: The purpose of this study is to compare outcomes of patients undergoing total knee arthroplasty (TKA) between teaching vs. non-teaching in regard to complications and 90-day readmission. Methods: A total of 98,669 patients underwent primary (2009-2012) in the New York Statewide Planning and Research Cooperative System. Perioperative medical and surgical complication categories were created using ICD-9-CM codes. Costs were calculated using cost-to-charge ratios. Mixed-effects regression models accounted for hospital clustering and year of surgery and were controlled for age, gender, race, insurance, major complication or comorbidity status, and Deyo comorbidity score. Results: Mean length of stay was longer at teaching compared to non-teaching hospitals (3.85 vs. 3.69 days; p<0.001), (beta: 4.6%, p=0.014). Perioperative medical complications were similar at teaching compared to non-teaching hospitals (4.9% vs. 4.7%; p=0.144) (OR=1.09, p=0.200). Perioperative surgical complications were less common at teaching hospitals (0.5% vs. 0.8%, p&lt;0.001), (OR=0.78, p=0.047). Mean costs were higher at teaching compared to non-teaching hospitals (20,875 vs. 18,500 USD; p&lt;0.001), (beta: 12.8%, p&lt;0.001).Disposition to inpatient rehabilitation was more common at teaching compared to non-teaching hospitals (28.2% vs. 16.0%, p&lt;0.001), (OR=2.57, p&lt;0.001). The rate of unplanned 90-day readmission for patients undergoing TKA at a teaching compared to non-teaching hospital was similar (7.1% vs. 7.4%, p=0.135), (OR=1.01, p=0.835). Conclusion: Primary TKA at teaching hospitals is associated with higher costs, increased length of stay and increased utilization of inpatient rehabilitation facilities but borderline decreased surgical complication rates and no differences in 90-day unplanned readmission rates when compared to non-teaching hospitals.

Is Procalcitonin An Accurate Marker Of Postoperative Orthopaedic Infections? A Systematic Review And Meta-Analysis

Background: Procalcitonin (PCT) is a serologic marker that increases following inflammatory stimuli, especially those of bacterial origin. Postoperative orthopaedic periprosthetic infections (PIs) are common and difficult to diagnose. There are no guidelines on how best to incorporate PCT levels into the diagnosis and management of such infections, whether during the acute or chronic phase. This study aims to systematically review the literature to evaluate the statistical measures of performance of PCT as a marker of orthopaedic PI.

Methods: Following PRISMA guidelines, 762 studies were evaluated. After screening, 11 studies were included in the systematic review and 6 in the meta-analysis. The negative likelihood ratio (NLR), positive likelihood ratio (PLR), and diagnostic odds ratio (DOR) for pooled studies were determined. Additionally, pooled sensitivity and specificity were calculated for included studies. NLRs, PLRs, and DORs were calculated for PCT. Statistical heterogeneity across studies was tested using I2.

Results: The weighted random effect pooled sensitivity for PCT was 67.3% (35.0-88.7; p&lt;0.001) whereas pooled specificity was 69.4% (37.6-89.5; p&lt;0.001). Patients with infections were found to have a significantly increased likelihood of having an elevated PCT test while those with no infection had low PCT levels (PLR=1.778 (1.184-2.670), p=0.005, NLR=0.423 (0.267-0.671, p&lt;0.001). The pooled unweighted diagnostic odds ratio for PCT was 5.770 (2.512-13.251), p&lt;0.001.

Conclusions: This study is the first meta-analysis investigating the ability of PCT to detect PIs in orthopaedic surgery patients. PCT was found to be significantly elevated in infected patients as compared to non-infected patients. Additionally, this study has shown that overall utility of PCT is superior to that of many other serologic markers used in current practice. Additional and higher level studies should be performed to create guidelines for accurate serologic diagnosis of PIs.
George Beyer

Adult Spinal Surgery In Patients With Previous Tha: Should We Do The Spine First?

Introduction: Patients with Spine-Hip syndrome could require both THA and spinal fusions. There is conflicting literature examining the outcomes of these patients when spinal fusion occurs after THA. Methods: A retrospective review of NY State Department of Health database (SPARCS) was performed. ICD-9 codes identified adult patients who underwent elective THA (2009-2011). Patients with subsequent spinal fusion (Short: 2-3 levels or Long: ≥4 levels; AIS or DDD) were identified. Univariate analysis and multivariate binary logistic regression models were used. Results: 50,300 THA patients were included (No fusion: n=49,579, short: n=484, long: n=237). Groups had comparable age, gender, and Deyo score. At 2 year FU, THA complication rate (3.4, 6.6, 11.8%), dislocation rate (1.7, 3.5, 7.2%), and hip enthesopathy/bursitis (1.0, 2.7, 2.5%) progressively increased between groups, p<0.05. The THA revision rates also increased (3.7, 7.3, 11.6%, p<0.05). Subsequent THA rate was significantly higher in Long fusion only (12.6%, 11.4%, 17.7%, p<0.05). Regression models revealed that short and long increased the risk of dislocation by OR: 2.2 (1.4-3.6), OR: 4.4 (2.7-7.3), increased the risk of any THA complications by OR: 2.1 (1.4-3), OR: 3.9 (2.6-5.8), and THA revision for any reason by OR: 2.0(1.4-2.8), OR: 3.2(2.1-4.8). Only long fusion increased the rate of subsequent THA by OR: 1.5 (1.1-2.2). All OR p<0.05. Conclusion: ASD surgery increases the risk of complications and revisions in patients with THA. Long spinal fusion pts had 4.4 greater odds of dislocating their hip, 3.2 and 1.5 greater odds of revising the same hip, or experiencing subsequent THA.

Steven Burekhovich

Adolescent Idiopathic Scoliosis Care In An Underserved Inner-City Population: Screening, Bracing, Patients' And Parents' Reported Outcomes

Introduction: Underserved populations are a momentous challenge in the modern health-care system. Our objective was to investigate the quality of previous care received by underserved AIS patients. Methods: Pts who visited a single surgeon clinic for primary AIS from June 2016-January 2017 were included. Patients had 36-inch full spine x-rays and completed a survey on demographics, health-care (screening for scoliosis, bracing, referral etc.), socioeconomic parameters and patient-reported outcomes: SRS-30, Body Image Disturbance Questionnaire (BIDQ). Parametric and non-parametric analysis was used appropriately. Results: 47 pts (15 ± 3 y/o, 82.7% F, BMI: 20.3 ± 3.3, 67.3% Black, 17.3% Hispanic) were included. 25.5% reported a family history of scoliosis, while 42.6% never heard about scoliosis. Based on SRS recommendation, 15 pts required observation, 22 pts were brace eligible, 10 pts were surgical candidates. 25% of pts were never screened for scoliosis, and 50% of those had a main curve >20°. Mean age at first screening was 14.1 ± 3.3 y/o. 65.6% were screened by a primary care physician, 6.3% by a specialist, 6.3% by schools. 70% of surgical candidates reported never wearing a brace. 59.3% of previously screened pts eligible for bracing (Curve >20°), were not braced at time of presentation. All pts who were unbraced when eligible had worse BIDQ scores (1.7 vs. 1.4, p<0.05). Conclusion: 1/4 children in our population were never screened for scoliosis, and nearly 3/5 did not receive optimal care. These results question the quality and authenticity of the healthcare services provided to underserved inner-city populations.
Disseminated Intravascular Coagulopathy In Pediatric Scoliosis Surgery: A Systematic Review

Introduction: Disseminated intravascular coagulation (DIC) is an extremely rare comorbidity of scoliosis surgery. Limited literary reports create a need for data on causality and prevention.

Methods: A comprehensive search of Medline (PubMed), EMBASE, and Ovid databases was performed. Pediatric patients who experienced DIC with corrective scoliosis surgery were included. Patients were characterized based on demographics, past medical history, surgery performed, clinical course, probable causes of DIC, and outcomes. Results: 11 studies met the inclusion criteria and 13 patients (mean age 15.5±4.4 years, 72% F) were identified, from 1974-2012. They included 7 neuromuscular (54%), 2 congenital (15%), 2 idiopathic (15%), 2 tumor-induced (15%) scoliosis patients. There were no histories of a prior bleeding disorder. Procedures included 7 posterior segmental fusions (54%), 4 Harrington rods (31%), 1 Cotrel-Dubousset (8%), and 1 unit rods (8%). 8 patients experienced DIC during the intraoperative period, 5 patients during the post-operative period. DIC was associated with coagulopathy after re-infusion of intra-operatively retrieved blood, infection from transfusion, rhabdomyolysis, and application of hemostatic matrix, heparin use, and hypovolemic shock. The most common complications were increased intraoperative blood loss (8 cases) and hypotension (7 cases). The mortality rate was 7.69%; one reported fatality in the acute post-operative period. Conclusion: 13 cases of DIC associated with scoliosis surgery were reported in the literature. Despite the lack of prior bleeding disorders in the patients’ past medical histories, associative variables between DIC and corrective scoliosis surgery were identified in pediatric patients. Further studies are needed to determine predictive factors for DIC events.

Impact Of Preoperative Spinopelvic Alignment On Outcomes Of Total Hip Arthroplasty (Tha)

Introduction: In patients undergoing THA, postoperative component alignment may be affected by un-assessed spino-pelvic mal-alignment. Methods: This is a single center retrospective review of patients that underwent THA (2013 - 2016) for degenerative joint disease. Office notes were used to collect demographics, pre-op examination, and post-op complications or symptoms. Pre-op lateral lumbar xrays measured to assess apino-pelvic alignment (PT, SS, PI-LL). Degree of spondylolisthesis and degenerative changes were assessed. Pre-op acetabular anteversion, area of the acetabulum, femoral offset, Theta angle, and Neck Shaft Angle were measured. Patients were grouped based on spino-pelvic alignment thresholds (SRS-Schwab classification). Results: 48 patients with a mean age of 62.8 Â± 8.8. Average post-op AP pelvis x-ray was 4 months. Mean spino-pelvic parameters: PI-LL 8.3 Â± 17, SS 41 Â± 9.9, PT 18.2 Â± 12.9, PI 59.2 Â±15.9). Patients with PI-LL &gt; 10 had significantly higher acetabular anteversion after THA (25.2 vs. 20.6Â°, P=0.044), and greater acetabular abduction (Theta: 43.7 vs. 38.4Â°, P=0.049). Patient with PT more than 20 had also increase Theta angle post operatively (43.8 vs. 38.4). Patients with SS &lt; 40 had increased area of the cup on AP pelvis. PI-LL was significantly correlated with anteversion R=0.300, P=0.043. Patients stratified into those with severe degenerative lumbar degeneration or spondylolisthesis revealed no difference in their acetabular anteversion or abduction. Conclusion: Patients with PI-LL &gt; 10 or PT &gt; 20 had greater acetabular anteversion and abduction after THA. Spinopelvic alignment should be assessed preoperatively in each patient undergoing THA and for surgical planning.
**Comorbid Psychiatric Diagnoses Are Associated With Poor Outcomes Of Adult Spinal Deformity Surgery At 2 Year Follow Up**

Introduction: Recent research revealed that 1 in 3 patients (pts) admitted to the hospital to undergo surgical treatment for Adult Spinal Deformity (ASD) are psychologically impaired. However, previous data was limited to the hospital course only. Methods: A retrospective review of NY State Department of Health database (SPARCS) was performed. ICD-9 codes identified ASD pts admitted from 2009-2011 who underwent ≥4 levels of thoracolumbar fusion, minimum 2yr follow-up. At admission, pts who had a clinical psychiatric diagnosis based on DSM IV were grouped (Psych). Univariate analysis compared demographics, complications, revisions and readmissions. Multivariate binary logistic regression models identified independent predictors of outcomes. Age, gender and Deyo score were covariates. Results: 4,691 pts (Psych, n=817, 17.4% vs. NoPsych, n=3874, 82.6%) were included. Age (59.51 years) and gender (58.4%) were similar between groups. Within Psych, frequencies were 57.4% Depressive Disorder, 33.4% Sleep Disorder, 33.2% Anxiety Disorder, and 6.2% Stress Disorder. At minimum 2yr follow-up, Psych had significantly higher complication rates (47.1 vs. 32.5%), specifically device related complications (19.3 vs. 10.8%), sepsis (4.3 vs. 0.9%), infection (8.3 vs. 3.8%), hematoma (4.0 vs.1.4%), and DVT (4.5 vs. 2.0%). Psych had higher readmission rates (85.6 vs. 49.6%) and higher revision rates (34.5 vs. 16.0%), (p<0.001). Regressions revealed that Psych had increased risk of any complication: [OR: 1.59 (1.36-1.86)], revision surgery [OR: 2.54 (2.14-3.03)], and any readmission [OR: 4.32 (3.48-5.36)], all (p<0.001). Conclusion: Despite similar demographics, ASD pts with psychiatric diagnoses were more likely to experience surgical complications and revision. Psychological screening/support may benefit ASD treatment.

**Relationship Between Spinal Curvature, Physical State, And Mental Status In An Underserved Population With Adolescent Idiopathic Scoliosis**

Introduction: Differences in functional outcomes exist between ethnicities in AIS patients. This study assesses the correlations between spinal curvature, physical and mental state in an underserved population. Methods: Patients (10-25 y/o) who visited a single surgeon clinic for evaluation of primary AIS in 2016-2017 were included. Patients had complete full radiograph series and patient reported outcomes (PRO) [Scoliosis Research Society (SRS)-30, Spinal Appearance Questionnaire (SAQ) and Body Image Disturbance Questionnaire (BIDQ)]. Pearson/Spearman correlation investigated the relationship between radiographic parameters and PRO. Controlled regression models identified predictors of PRO. Results: 47 patients (66% Black, 19.1% Hispanic) were included. Average Main Cobb angle was 31.3°±17.3 with locations of: 34.6% MT, 34.6% L, and 21.2% TL. BIDQ score reported the highest significant correlations with main and secondary curve magnitudes (r=0.559, r=0.612), and offset between CSVL and secondary Cobb apex (r= 0.537), all p<0.05. SAQ Child reported better correlations with curve magnitude comparing to SAQ parent of any category. Regressions revealed C7PL offset from main Cobb apex was significant predictor of worse SAQ Parent appearance (R2= 0.223, B Coeff. 0.473). Younger age and male gender were significant predictors of better SRS30 Pain Score (B Coeffs: -0.395, and 0.357, respectively, R2= 0.387). Younger age ((&lt;15 y/o) was the only predictor of better Mental Score (R2= 0.140, B Coeff. 0.374). Conclusion: Curve magnitude correlates with worse body image disturbance, mental state, and self-image. Children appear to have better deformity perception than parents. Females and those older than 15 y/o exhibit worse mental state with coronal deformity.
The Scoliosis Research Society Annual Meeting Over The Last Decade: A Review Of Trends And Authorship

Introduction: Podium and poster presentations at SRS annual meetings (AM) go on to publication, and influence evidence based medicine. Investigation of authors and institutions who presented their studies over the last decade allows us to better understand the diversity, expertise, and affiliations of those researchers.

Methods: Using the available programs from 2008-2016, a database was created for all the podiums and posters (traditional and E-Posters). The title, authors, and country of origin were extracted. A search was performed on physician databases, the PubMed database, and the Google search engine to determine the gender and the institutional affiliation of each first author in the year/month of presentation. Statistical analysis using loop and selective aggregation was performed to identify top authors, affiliations, and track trends in the annual meetings over time.

Results: In 8 years, 1,916 presentations (1106 podiums and 810 posters) from 46 countries were presented by 3,678 authors at SRS AM. Female first authors increased from 5.4% in 2008 to 11.2% in 2016, and international first authors increased from 25.8% to 42.6%, p<0.05. Of all authors, 56.1% had MD, 14.9% had PhD, 7.9% BS and 6.9% MS degrees. The top 3 authors over the last 8 years were: Lawrence G. Lenke (11% of all presentations), Keith Bridwell (7.25%), and Frank J. Schwab (7.2%). Wash U was the top institution (n=105), followed by NYU Hospital for Joint Diseases (n=65) and Johns Hopkins (n=63). Female first authors increased from 5.4% in 2008 to 11.2% in 2016, p=0.03, and international first authors increased from 25.8% to 42.6%, p<0.001. The #1 Study Group was International Spine Study Group (n=106), followed by Harms (53) and Growing Spine (33).

Conclusion: Top 10 authors and institutions were presented in this 8 year systematic review of the scientific programs of the SRS AM. Female and international first authorship has also increased significantly.

Hepatitis C: Does It Increase The Risk Of Complications After Cervical Radiculopathy Or Myelopathy Surgery?

Introduction: Hep C is a world-wide epidemic. This study investigates Hep C as a risk factor for surgical complications in cervical radiculopathy (CR) and myelopathy (CM) patients. Methods: This study is a retrospective review of the Nationwide Inpatient Sample from 2005-2013. ICD-9 codes identified patients (&gt;25 yrs) with/without Hep C who underwent anterior or posterior cervical spine surgery for CR or CM. Descriptive and Chi-Square analysis compared complication rates and mortality of patients with and without Hep C. Binary logistic regression models identified independent predictors of complications, length of stay (LOS), and hospital charges. Results: 227,310 patients were identified (Hep C: 2,546, 0.11%). Hep C patients were younger (52.8 vs 53.6 y/o), had higher Deyo score (0.788 vs 0.461), more likely male (60.8% vs 47.8%), black or Hispanic, and less likely to have private health insurance (35.9% vs. 55.5%), (all p &lt;0.001). They had significantly(p&lt;0.01) longer hospital stays (4.1 vs 2.3 days) with greater charges ($76,335 vs $54,615). CR patients with Hep C had increased overall complication rates (9.4% vs 6.5%, p&lt;0.001), specifically, device related, hematoma and sepsis. The same holds true for CM patients with Hep C (14.8% vs 11.5%, p&lt;0.001). Regressions showed CR+CM patients with Hep C had increased chances of any complication (CR: OR 1.23, CM: OR 1.19), longer LOS (CR: OR 1.74, CM: 1.86), and greater hospital charges (CR: OR 1.52, CM: OR 1.73). Conclusion: Hep C is a risk factor for increased overall complication rates, greater LOS, and greater charges among CR and CM patients.
**Vertebral Osteomyelitis: A Comparison Of Outcomes In Patients With Early Versus Delayed Surgical Treatment**

Introduction: The recommended timing of surgical intervention for vertebral osteomyelitis (VO) is controversial. This study investigates in-hospital outcomes of VO patients who underwent surgery on the day of admission (&lt;24hrs), vs. delayed (>24hrs) treatment. Methods: A retrospective review of the National Inpatient Sample was performed. ICD-9 codes identified operative VO patients from 1998-2013. Patients were divided into 6 groups (G1-G6) based on incremental delay of surgery. A neurologic index (NI) was created using the American Spinal Injury Association impairment scale (NI 0: no neurologic deficit, NI 1: incomplete neurologic deficit, NI 2: complete neurologic deficit). Univariate analysis compared demographics, complications, mortality, and NI. Multivariate logistic regression models calculated independent predictors of any complication, mortality, and NI. Group 1 (&lt;24hrs) was the reference. Results: 34,485 patients were identified. Delayed surgical groups were older (G1: 53.5 vs. G5: 61.1 y/o), had increased Deyo score (G1: 0.4901 vs. G6: 1.66), length of stay (G1: 4.2 vs. G6: 34.04 days), all p&lt;0.001. Delayed surgical groups had higher combined anterior/posterior approach rates (G1: 9.1% vs. G6: 31.5%), and lower anterior surgical approach rates (G1: 42.4% vs. G6: 24.2%). Regressions revealed all delayed surgical groups (G2-G6) as the strongest independent indicators. G6 was the greatest predictor of any complications (OR 3.384), mortality (OR 10.658), and NI &gt; 0 (OR 4.823), all p&lt;0.001. Conclusion: Patients with delayed surgery had a significantly increased risk of developing any complication, mortality, and discharging with neurologic deficits. Our data shows it&rsquo;s favorable to operate within 24 hours of admission for VO patients.

**Should Decision Making For Lower Instrumented Vertebra Go Beyond Traditional AIS Classification? A Dynamic 3D Gait Assessment Of Adolescent Idiopathic Scoliosis**

Introduction: AIS surgeons determine lower instrumented vertebra (LIV) based on static xrays. This study investigates whether this decision affects postoperative walking patterns. Methods: Patients underwent gait assessment and full spine radiographs. Gait analysis was performed in a 6-DOF motion analysis laboratory, sampling frequency was 100 Hz. 34 reflective markers were placed on each patient, who underwent straight-line walking trials. Pts were grouped based on lower instrumented vertebra (LIV) into: Cephalad (LIV: T12, L1 or L2) and Caudal (LIV: L3 or L4). BL and 1yr FU demographics, radiographic and gait parameters were compared between LIV groups. Logistic regression models identified independent characteristics of LIV groups. Results: 37 patients were included (Cephalad (n=15, 15.2 y/o, 87.5% F) vs. LIV (n=21, 15.1 y/o, 71.4% F), p&gt;0.05. Average UT, TH, or LL curves were similar between the groups (~26, 53 and 28°, p&gt;0.05). Thoracolumbar curve was smaller in Cephalad (33.1 vs. 55.2°, p&lt;0.01). Groups at 1 yr FU had similar correction, with Caudal having a larger TL curve (19.9 vs. 12.5°, p=0.025). Pts with Caudal LIV had smaller range of motion (ROM) of the pelvis in the horizontal plane (7 vs. 10.6°, p=0.017), less knee flex/ex ROM during the entire gait cycle (46.6 vs. 56.9°, p=0.043) and less plantar flexion in stance phase (-23 vs. -30.9°, p=0.006), affecting their walking speed (1.1 vs. 1.2 m/s p=0.045). These patients spent significantly more time with knee extension in stance (39.5 vs. 33.1 ms, p=0.016), to increase stability of the extended limb while transferring the contralateral limb. Increased plantar flexion [OR: 1.7 (1.1-2.7)] and decrease hip horizontal range of motion [0.65 (0.43-0.96)] remained significant characteristics of Caudal LIV patients, R2=0.670, p=0.004). Conclusion: Walking patterns for AIS patients were significantly affected after surgery. Our data shows that determining LIV should take into account the dynamic consequences.
Comorbid Psychiatric Diagnoses Are Associated With Poor Outcomes Of Adult Cervical Spine Surgery At 2 Year Follow Up

Introduction: Psychological burden of cervical radiculopathy (CR) and myelopathy (CM) is established. The impact of this burden on long term outcomes after surgery is poorly understood. Methods: A retrospective review of NY State Department of Health database (SPARCS) was performed. ICD-9 codes identified CR or CM patients (pts) admitted from 2009-2011 who underwent anterior or posterior cervical surgery, minimum 2 year follow-up.Pts who had a clinical psychiatric diagnosis based on DSM IV were grouped (Psych). Univariate analysis compared demographics, complications, revisions and readmissions. Multivariate binary logistic regression models identified independent predictors of outcomes. Age, gender and Deyo score were covariates. Results: 20,342 pts (Psych, n=4,819, 23.7% vs. NoPsych, n=15523, 76.3%) were included. Age (52.4 years) was similar, Psych had more females (58.6 vs 47.8% p<0.001). Psych Disorders were Depressive (57.8%), Anxiety (28.1%), Sleep (25.2%), and Stress Disorder (2.9%). Percentages of anterior, posterior, primary and/or revision surgeries were similar between groups. With minimum 2yr FU, Psych had significantly higher complication rates (13.9 vs 10.3%, p<0.001), specifically device related (5.6% vs 3.7%, p<0.001), and infection (2.0 vs 1.3%, p<0.001). Psych patients had higher revision surgeries (11.9 vs 9.4%) and re-admittance rates (47.1 vs 39.0%), all P < 0.001. Regressions revealed that Psych had increased risk of any complication [OR: 1.39 (1.26-1.54)], revision surgery [OR: 1.25 (1.13-1.39)], and any readmission [OR: 1.36 (1.27-1.46)]. Conclusion: Nearly 1 in 4 CM/CR surgical candidates were psychologically impaired, and more likely to have surgical complications, readmission or revision after surgery. Psychological screening/support may benefit CM/CR treatment.

Global Sagittal Angle (GSA) Defines The Fan Of Full Body Alignment

Introduction: Predicting full body sagittal alignment following adult spinal surgery is a challenge for surgeons. Defining the relationship between surgically modifiable parameters and established full standing parameters such as Global Sagittal Angle (GSA) might be of benefit. Methods: Inclusion: Patients(pts)≥18 yrs with full body stereographic x-rays with various spinal pathologies. Exclusion: Pts with radicular complaints, fractures, tumor and congenital diseases. Pts were stratified based on published normative reference of GSA (Knee-S1 vs. Knee-C7) into: G1: GSA < -3, G2: GSA (-3 – 3), G3: GSA > +3 and G4: GSA> +6°. Surgically modifiable angles that donâ€™t change based on patientsâ€™ positioning were compared between groups. ANOVA and Bonefferoni analysis were used, p<0.05 significance threshold. Results: 3,606 patients were included. Groups significantly differed in Age (G1: 37.5, G2: 51.2, G3: 62.4, G4: 66.6), BMI (23.5, 25.8, 28.3, 28.9) and gender (86, 65, 61, 69%). Groups significantly differed in GSA (-4.2, 0.2, 4.5, 7.3°), T1PA, T4PA, T9PA and L4PA progressively increased; T1PA: (0.3, 11, 20, 25.8), T4PA: (-2.5, 7.5, 16.1, 21.5), T9PA: (-4.3, 4.2, 11.5, 15.8), L4PA: (6.5, 9.7, 12.6, 13.4°), all p< 0.05. Apex of cervical lordosis, thoracic kyphosis and lumbar lordosis was similar among groups p>0.05. Cervical spine groups had greater C0-C2 (13.8, 14.9, 15.9, 16.6°), C2-C7 lordosis (4.2, 3.4, 8.3, 11.5°), and C2-C7 SVA (20.3, 21.3, 24.0, 26.7 mm), all p<0.05. Groups below the GSA start point had greater ankle dorsiflexion: (3.3, 4.9, 6.9, 8.0°), p< 0.05. Conclusion: Predicting how a patient stands postoperatively is a challenge for surgeons. This study proposes thresholds of surgically modifiable parameters that correlate with GSA measured full body sagittal postural alignment.
Continuing The Paradigm Shift For The Management Of Extra-Articular Distal Humerus Fractures

Introduction: The purpose of this study is to describe the surgical technique for single column, dual plate fixation using a lateral paratricipital approach for comminuted EADHF, identify fractures that require this technique, and retrospectively look at approach and fixation strategies completed over a 10 year period. Methods: All patients with AO/OTA 12 and 13-A2/3 fractures treated with a posterior approach were included. Group A was a retrospectively analyzed multi-surgeon cohort from 2006-2016. Group B was a prospectively collected single surgeon cohort from 2015-2016 using only a lateral paratricipital approach and single column fixation. Results: Group A had 28 patients using various surgical approaches. The majority of constructs were dual column, dual plate (16). Only nine had single column, single plate fixation. Group B had 15 patients only using a lateral paratricipital approach. The majority of constructs were single column, single plate (11). Four patients required single column, dual plate fixation. All single column, single plate fixation constructs (Group A+B) were posterior/posterolateral. Group A dual column, dual plate fixation were all posterior/posterolateral + medial. Dual plating was done at surgeon discretion (no specific criteria). Group B single column, dual plate fixation was employed only if the medial column could not be anatomically reduced. In both groups there were no plate failures. All fractures united without complication. Conclusion: EADHF can be treated with single column plate fixation via a lateral paratricipital approach. Single column, dual plate fixation can be employed for comminuted fractures that have traditionally advocated for dual column fixation.

Rotational Deformity Of The First Ray Precludes Accurate Distal Metatarsal Articular Angle Measurement In Hallux Valgus

Introduction: The distal metatarsal articular angle (DMAA) is used to assess correction of hallux valgus postoperatively. No studies have examined if the DMAA accurately assesses the rotational component of hallux valgus correction. Methods: The diaphysis of the 1st metatarsus and the 1st metatarsophalangeal joint of 8 cadavers were fixed with a cylindrical bolt passed transversely through the talus. The bolt was perpendicular to the long axis of the metatarsus and parallel to the plane of simulated foot weight bearing. AP X-rays were taken at 15° caudad. The foot was then dorsiflexed 90° with a longitudinal X-ray taken to verify initial rotation. A transverse, diaphyseal first metatarsal osteotomy was performed. The distal fragment was internally rotated 15° and an AP image was taken. Specimen was dorsiflexed 90°, with a longitudinal X-ray taken for axial rotation measurement. This was repeated for 30, 45, and 60° distal fragment internal rotation. Results: Pearson correlation (0.97) was positive between the pre-set and measured angle (p<0.001), confirming the accuracy of the pre-set angles. IMA remained stable for each AP image despite distal segment rotation (Í≤&lt;0.05). Rotation occurring in the first metatarsal osteotomy contributed no additional angulation to metatarsal alignment. The DMAA differed significantly (Í≤&lt;0.05) as distal segment rotation increased. There was no significant trend of variance. Conclusion: DMAA measurement varies significantly with rotation of the distal first metatarsus. Caution is advised using the DMAA to assess first MP joint congruency, as it may inaccurately estimate the 3-dimensional deformity often encountered in pathologic hallux valgus.
Harleen Kaur

A Radiographic Analysis Of Closed Reduced Distal Radius Fractures At The Time Of Union

Purpose: The purpose of this study is to quantify the efficacy of closed reduction and casting as a form of definitive treatment, using radiographic parameters of Distal Radius Fractures in the coronal and sagittal planes at time of union and during the post-reduction period.

Methods: A retrospective radiographic analysis was conducted on 42 patients who had undergone closed reduction and casting as definitive treatment, employing the same radiographic software. Four radiographic parameters (coronal plane: radial height, radial inclination; sagittal plane: volar tilt and teardrop angle) were measured on initial injury and post-reduction films. Another set of measurements was taken on films at time of fracture union, with mean follow-up of 6.4 months (range: 2-51). These measurements were compared for each patient. Differences between groups were compared using a paired student’s t test.

Results: The radiographic measurements revealed a mean pre-reduction height of 7.5mm (range: 3.9 to 16.2), an inclination of 14.4° (range: -8 to 28.8), a tilt of -9.9° (range: -35.0 to 15), and a teardrop of 34.1° (range: 0 to 60). At the time of union, height, inclination, tilt, and teardrop were significantly different from post-reduction measurements (9.1 vs. 10.4, p=0.002; 17.3 vs. 19.4, p=0.003; 1.1 vs. 7.9; p<0.001; 44.5 vs. 49.9, p=0.002).

Conclusion: Although closed reduction allows for significant improvement in coronal and sagittal alignment on post-reduction radiographs, there was regression of all parameters toward initial injury measurements at the time of union. Future studies with correlation of radiographic parameters and clinical outcomes are warranted.

Kwaku Opare-Sem

Non-Contact Sports Participation In Adolescent Idiopathic Scoliosis: Effects On Parent And Patient Reported Outcomes

Introduction: The benefits vs risks of AIS patients participating in sports is controversial. This studies objective was to determine if sports participation has a significant impact on pain, function, mental status and self-perception in AIS patients and their parents.

Methods: Patients (10-25 y/o) who visited a single surgeon for evaluation of primary AIS in 2016-2017 were included. Patients had full radiograph series and completed patient reported outcomes (PRO) surveys [Scoliosis Research Society (SRS)-30, Spinal Appearance Questionnaire (SAQ) and Body Image Disturbance Questionnaire (BIDQ)]. Patients were grouped into those participating in non-competitive sports (Sports) vs those that did not (Non-Sports). Parametric and non-parametric tests were used appropriately, comparing demographics, radiographic parameters and PRO. Linear regression models identified significant predictors of PRO. Results: 52 patients were included (Sports n=32, Non-Sports n=20). Groups had comparable age, gender, BMI, bracing status, and hx of physical therapy; all p>0.05. Sports and Non-Sports had similar coronal deformity: Major Cobb (31.1° vs 31.5°). All sagittal alignment profiles were similar between groups (p>0.05). Sports had better SRS-30 (Function, Self-Image, and Total) scores, better SAQ-Child Expectations, and SAQ-Parent Total Scores (Table; p<0.05). Regressions revealed that Major Cobb (B Coeff. -0.300) and Sport Participation (B Coeff. 0.415) were significant predictors of SRS-30 Function score, R=-0.431, p<0.05. Conclusion: Our data shows that for the same coronal and sagittal deformity, patients participating in sports exhibited better functionality, self-image, lower expectations, and better parental perception of deformity. AIS patients should be encouraged to participate in safe sports, maintaining appropriate levels of physical activity.
Improvement In Sleep Quality After Carpal Tunnel Release

Carpal tunnel syndrome (CTS) has multiple implications on patient quality of life. In particular, CTS may impact quality of sleep, causing sleep deprivation in extreme cases. Carpal tunnel release (CTR) surgery may aid in resolving these disturbances. The purpose of our study was (1) to determine whether patients who have undergone CTR have improved sleep quality and (2) the timeline for such improvement. Twenty-one patients were prospectively enrolled and followed-up for two years. They were asked to complete a Pittsburgh Sleep Quality Index (PSQI), a pain visual analogue scale (VAS), a sleep perception VAS, and both components (Symptom Severity and Functional Status Scale) from the Levine questionnaire. Patients had overall improvement in their postoperative outcome measures; however, the improvement in PSQI became significant at the 12-24 month follow-up while both of the VAS scores significantly improved at an earlier 6 month follow-up. Both components of the Levine questionnaire significantly improved in the immediate postoperative period. Our findings allow surgeons to counsel their patients on realistic expectations following carpal tunnel release and its impact on sleep quality.

Anaphylaxis: Impact Of A Targeted Educational Intervention On The Knowledge And Practices Of Pediatric Residents

Introduction: Anaphylaxis is a life-threatening systemic hypersensitivity reaction. Food allergy is the most common cause for anaphylaxis in children. Over the last decade, food allergies have increased by 50% and hospital admissions for severe allergic reactions by seven fold. Prevention of anaphylaxis mortality depends on correct diagnosis and early epinephrine injection. Studies show that current pediatric training does not include adequate education regarding anaphylaxis recognition and management. Methods: An anonymous survey was distributed to pediatric residents. Survey tool consisted of 13 multiple choice knowledge questions and 4 demographic questions. A teaching intervention was performed which consisted of a lecture with demonstration on how to use Epi-Pen. World Allergy Organization (WAO) guidelines posters were distributed in pediatric resident continuity clinic, inpatient ward and pediatric emergency department. Post-intervention survey was re-distributed 1 week after intervention. Results: 42 residents responded to the pre-intervention survey. 35 responded to post-intervention survey. 50% respondents were PGY1, 26% PGY2 and 10% were PGY3 or above. 62% had seen a case with anaphylaxis and 76% had a prior Allergy and Immunology(A&I) rotation. The mean composite knowledge score was 66% pre-intervention and 82% post-intervention, p< .001. There was no significant difference in knowledge scores between residents who had prior anaphylaxis case exposure, emergency room or A&I rotation. Conclusions: Pediatric residents have poor knowledge of anaphylaxis in the clinical setting, requiring improved educational interventions, with the ultimate goal of improving patient outcomes. Posters depicting anaphylaxis guidelines with hands on training in the use of epinephrine autoinjectors made a significant difference in residents knowledge in identifying and preventing life threatening anaphylaxis. Next step is to determine whether this knowledge is retained over time.
Role Of Social Factors In Glycemic Control Among Minority Children And Adolescents With Type 1 Diabetes

Objectives: With the rising incidence of Type 1 diabetes (T1DM), it is important to recognize deficiencies in care to provide better resources for T1DM patients. The objective of the study was to recognize self reported social factors and compliance barriers affecting A1c level in minority children and adolescents with T1DM.

Methods: Study questionnaires were distributed to patients with T1DM during pediatric endocrine clinic visits at our institution. Knowledge score (KS) was calculated based on 14 questions. Patients' charts were reviewed retrospectively. T-tests, one-way ANOVA and Spearman correlation were used for analysis.

Results: Eighty four T1DM patients, ages 3 to 21 years, 52% males, 87% African American participated in the study. Mean A1c was 10.4% and mean KS was 10.1 out of 14. There was no significant correlation (r=0.12, p=0.26) between A1c and patients’ KS. Patients with more frequent blood sugar (BS) checks (3-4 x/day) had 2 points lower A1c (9.6 vs 11.6 %, 95% CI 0.2-3.7, p=0.03) than those with 2 or less x/day. There was no significant difference in A1c between 3-4x/day vs >4x/day BS checks. Some patients reported ""forgetfulness"" (20%) followed by ""time consuming"" (17.8%) and ""discomfort checking around friends!"" (14%) as important barriers to BS checks. Most patients (85%) reported friends were aware of the diagnosis. There was no significant difference in A1c between pen or pump users (10.5 vs 10.2 %, p=0.55). Frequencies of home supervision are: always (21%), most times (30%), sometimes (25%) and never (24%). Surprisingly, those with home supervision had higher A1c than those without (10.7 vs 9.4 %, p=0.04) while there was no significant difference between those with or without nurse supervision at school (10.5 vs 9.9 %, p=0.33). Those with happy mood interestingly had higher A1c than those with sad/depressed mood (10.7 vs 9.4 %, p=0.04). On multiple linear regression analysis, frequency of BS checks, home supervision and mood were the most sign

Improving Pediatric Residents' Knowledge And Perspectives Regarding The Insulin Pump Using A Novel Educational Workshop

Objectives: As a pilot study, we assessed the knowledge and perceptions of categorical pediatric residents (RES) at our institution and its change following a targeted workshop regarding the insulin pump. An insulin pump (IP) use in patients with diabetes including children in US is increasing as it has proven to be safe and effective in carefully selected pediatric patients.

Methods: All RES at our institution in attendance at a routine noon conference voluntary participated in a workshop, completing an anonymous survey before and right after the workshop to evaluate knowledge, attitudes and self-reported comfort regarding the IP. The workshop consisted of a didactic lecture followed by insulin pump device demonstration of three commonly available IP. Knowledge score (KS) was based on the total correct responses. Attitudes were assessed via 5-point Likert scale. Frequencies, T-test and McNemar tests were used to analyze data.

Results: Thirty-four completed surveys were analyzed out of 49 RES (69.3%) who attended the workshop (19 PGY1, 8 PGY2 and 7 PGY3). Following the workshop, KS increased significantly (p&lt;0.001) with progression in residentsâ€™ attitudes. More residents reported being comfortable with handling the IP including looking and changing the settings after the intervention (p&lt;0.001).

Conclusion: Our study assessed pediatric residents’ awareness regarding the IP in view of the increasing incidence of pediatric diabetes and IP use. Following the targeted interventional workshop, the residents’ knowledge, attitudes and practices improved significantly. With the continued interest and rising use of the IP in pediatric diabetic patients, in our opinion, the health care team including the residents should have basic knowledge of an IP. Educational intervention like ours are needed to familiarize our future physicians with the IP. This will allow hospitals to provide systematic and safe inpatient use of IP.
Management Of Transient Neonatal Diabetes With An Insulin Pump

Neonatal Diabetes Mellitus (NDM) is a rare disorder that poses several challenges in the diagnosis and management as there is no consensus on the optimal insulin delivery system in neonates. We report our experience of a case of transient neonatal diabetes. Full term baby girl born at 38 weeks with IUGR (2125 grams, 3rd percentile) developed intermittent self-resolving hyperglycemia since DOL 2. She was treated empirically with antibiotics for presumed sepsis. She had severe failure to thrive and only regained her birth weight by 1 month of life. On DOL 29, prior to anticipated discharge, NDM was suspected when routine blood glucose (BG) was elevated. Her significant findings were macroglossia, umbilical hernia, low subcutaneous fat, low-normal c-peptide and insulin levels during hyperglycemia, negative pancreatic antibodies, and a visualized pancreas on sonogram. Genetic testing revealed paternal uniparental isodisomy of chromosome 6 in the 6q23-24 region. She was managed with an IV insulin drip (started at 0.01 units/kg/hr) and transitioned to continuous subcutaneous insulin infusion (CSII) via Medtronic 630G pump using the Sure T-infusion set and weaned off the pump on DOL 55. A basal rate only (0.0025-0.025 u/hr) with diluted 1:10 lispro was used to maintain euglycemia with no episodes of hypoglycemia and less frequent BG checks. She had rapid catch up growth thereafter. Upon follow-up, she has had no recurrence of hyperglycemia. In conclusion, IV insulin drip and CSII for the management of NDM has been described in literature. Using basal only regimen via the newest commercially available Medtronic infusion pump, she was managed successfully without hypoglycemia or need for boluses. By using the Sure-T infusion set the risk of kinking was reduced with only post-infusion induration noted which self-resolved. There are no specific recommendations on weaning protocol for resolving transient NDM and we report our unique experience of weaning off the insulin pump.

Screening For Autoimmune Thyroiditis And Celiac Disease In Minority Children With Type 1 Diabetes

Background: Autoimmune thyroiditis (AIT) occurred in 20% and celiac disease (CD) in 6% of participants in the Type 1 Diabetes Exchange Clinic Registry. The ADA and ISPAD guidelines similarly recommend testing for thyroid function (TFT), thyroid antibodies and TTG IgA (tissue transglutaminase antibody) soon after diagnosis of T1DM. Repeat TFT should be done every 1-2 years or sooner if symptomatic and TTG IgA repeated in 2-5 years. We hypothesize that screening should be revised to reflect the lower prevalence of AIT and CD in our minority children with T1DM.

Methods: An IRB approved retrospective chart review was conducted on children with T1DM in the past 10 years. Age, sex, race, A1C, TFT, thyroid and celiac antibodies were obtained. Statistical analysis with t-tests, Wilcoxon-Mann-Whitney and stepwise regression were performed.

Results: Of 225 children with T1DM with mean age 15.8 ± 5.53 years, mean A1c 11.1 ± 1.9% who were followed for 6.1 Å± 4.0 years, 53% were female and 86% were Black. Three were diagnosed with GravesÂ€™ disease (1.3%), 3 with HashimotoÂ€™s thyroiditis (1.3%), and 97% were euthyroid. Screening for TFT occurred on average every 1.3 years and for thyroid antibodies every 2.5 years. Positive thyroid antibodies were found in 11%, negative in 57% and unknown in 32%. The positive antibody group had significantly higher mean A1C (11.8 vs. 10.9%, p=0.03) and TSH (6.7 vs. 1.6 mIU/L, p=0.02) compared to the negative antibody group. Stepwise regression analysis found free T4 (β=2.33) and positive thyroid antibody status (β=1) predicted higher A1C. No biopsy confirmed cases of CD were found when screened on average every 2.3 years. Only 1 had positive TTG IgA and a normal biopsy.

Conclusion: There is lower risk for AIT and CD in our minority population than previously reported in children with T1DM so screening may be considered with less frequency than previously suggested, unless symptomatic.
Educating Pediatric Residents About Inflammatory Bowel Disease Scoring And Its Application

Background: Pediatric residents take care of IBD (Inflammatory Bowel Disease) patients in various settings. Yet, not many residents are aware of the IBD scoring and its clinical use. IBD scoring provides objective data to assess patients' severity of symptoms.

Design: We prepared 14 questions based on the scoring systems, of which 3 questions involved calculating the IBD score. Eighty (80) residents in the SUNY Downstate Pediatric Residency program participated in the study; 100% took the pretest and 92% of them completed the post-test. One month after the pre-test, a monograph describing the scoring systems was emailed to all participating residents. Over one month (six weeks following the pre-test), post-test responses were collected, which included the same 14 questions. We introduced IBD scoring app and online calculators to calculate the scores for the 3 questions which required computing the scores, in the post test.

Outcomes: The data was interpreted by using paired t-test to compare pre-test and post test scores. There was a significant increase in the mean number of correct answers in the post test, both among the entire cohort and within each post graduate level. P-value was statically significant (p < 0.0001) for each individual cohort and total cohort. Use of the app and on-line calculator improved the ability of residents to correctly determine disease severity and recognize the need for therapeutic intervention (p <0.0001). Taking care of IBD patients had a positive impact (p =0.0025) and having completed a gastroenterology rotation during residency had no significant impact on test scores (p=0.17).

Discussion: There are no studies in the literature about resident education and IBD scoring as well as the use of tools such as an IBD app or on-line calculator. Our project demonstrated that a combination of didactic and online self-directed learning techniques improves the knowledge and applied skills of residents caring for children and adolescents with IBD.

Eliminating Perinatal HIV Transmission Via Quality Improvement

Background: Elimination of mother-to-child HIV transmission (MTCT) is defined as <1% among exposed infants and <1 case in 100,000 live births. Near elimination of MTCT is a public health success story. With current guidelines, perinatal infection decreased to approximately 2% in the US and Europe. New York state has eliminated MTCT. However, higher rates are reported in low socioeconomic settings and among African Americans. As such, we expected our hospitals to experience a high rate of HIV.

Objective: This study audited potential targets for quality/performance improvement. The hypothesis was that we would find MTCT rates up to 6% (as other studies demonstrated) and that we could identify targets for intervention which would focus on meeting standards of care more effectively.

Design/Methods: We conducted retrospective chart review of MTCT at Kings County Hospital Center and University Hospital Brooklyn, in infants born between 1/1/04 and 12/31/13. During this time, there were ~40,000 births at the two centers, including ~ 500 infants born to HIV positive mothers. Information was collected on risk factors for MTCT.

Results: Four cases of perinatal transmission were identified, giving an estimated transmission rate of 0.8% among exposed infants and 1 in 100,000 live births. Each case had unique characteristics. Two were related to maternal factors; in one, the mother refused to engage in care at all and in the other, the mother was nonadherent despite several interactions with medical care. Two cases were errors relating to reporting of positive HIV test: one was a reporting error, in which a new test was reported in a way that obscured the result. In the second, the mother tested negative initially but later was positive.

Conclusion(s): MTCT is highly unlikely to be completely eradicated, especially when secondary to maternal noncompliance. Of note, our last case of perinatal HIV was in 2012. No single point of failure to intervene was identified.
Chlamydia Pneumoniae (Cpn) Induces Ifn-γ Responses In Peripheral Blood Mononuclear Cells (Pbmc) From Pediatric Asthma Patients: Effect Of Inhaled Corticosteroids.

Background: C. pneumoniae (Cpn), which causes 10â€“17% of community-acquired pneumonia, is unique in its ability to cause chronic infections without overt disease, and may have a role in triggering asthma exacerbations and subsequent asthma development. This may occur via cytokine imbalance caused by a Th2 response, which induces IgE switching, initiating and perpetuating a chronic inflammatory process. Studies have demonstrated that developing Th1 mediated immunity and producing IFN-γ are critical for clearing chlamydial infections. Persistent or recent infection by Cpn can be identified in vitro by detecting the T-helper cytokine IFN-γ produced by peripheral blood mononuclear cells (PBMC) containing antigen-specific memory T-cells stimulated by Cpn elementary bodies (EBs). Inhaled corticosteroids may have an inhibitory systemic effect on production of IFN-γ.

Objective: To determine the effect of inhaled corticosteroids on the IFN-γ inflammatory response to Cpn in PBMC from pediatric patients with moderate persistent or severe asthma.

Methods: PBMC (1.5x10^6) obtained from patients with moderate persistent or severe asthma were stimulated with Cpn EBs (MOI=0.1) in vitro for 48 hrs. IFN-γ levels in culture supernatants were determined by ELISA. IFN-γ levels were compared between patients receiving inhaled corticosteroids and not. Nasopharyngeal swabs were tested for Cpn using Real-Time PCR.

Results: 13 subjects (mean age 12.2; range 8-20y; 8M, 5F) with asthma were enrolled, 8 received steroids (budesonide & fluticasone, dosage range 176-1000mcg). None were positive for Cpn by PCR. IFN-γ levels were higher in the 5 patients who did not receive inhaled corticosteroids compared with the 8 patients who did receive corticosteroids (848±956 pg/ml v.32±36 pg/mL; P=0.002) (Mann-Whitney U Test).

Conclusions: Cpn-induced IFN-γ levels were higher in PBMC obtained from pediatric patients with asthma who did not receive inhaled corticosteroids. These findings may have clinical impl...
Mathavan Sivarajah  
Advisor(s): Gratias Mundakel

**Readmission For Jaundice In Newborns 35 Or More Weeks Of Gestation At An Inner-City Hospital: Causes And Risk Factors**

Background: Hyperbilirubinemia is the most common reason for hospital readmission for newborns. 
Objectives: To identify the causes and risk factors for rehospitalization for jaundice in newborn infants 35 or more weeks of gestation.  
Design: Case-control study. 
Methods: Charts for infants born at Kings County Hospital, during 2010-2016 were reviewed. Cases were newborns ≥ 35 wks who were readmitted with jaundice within 10 days of life. Controls were newborns ≥ 35 weeks who were followed up in our clinics, but not readmitted for jaundice. For each case, two controls born on the same day were selected. Pertinent data were recorded for cases and controls. 
Results: Of the 14,966 newborns ≥ 35wks born during the study period, 177 were readmitted for jaundice (1.18%). 353 controls were selected. All cases were treated with phototherapy and none required exchange transfusion. The main causes for readmission for jaundice were: exclusive breastfeeding (62%), prematurity (19%), G6PD deficiency (18%), and ABO hemolytic disease (15%). We confirmed that as reported in other studies, the following factors were associated with an increased risk for readmission: vaginal delivery, male gender, gestational age <39 weeks, high predischarge bilirubin, early discharge and exclusive breastfeeding. Term and post-term newborns, as well as infants delivered via meconium stained amniotic fluid had significantly lower risk of readmission. However, some risk factors for readmission for jaundice previously reported in the literature, such as maternal age ≥ 25 years, primiparity, and lower maternal education were not associated with an increased risk for readmission in our study. 
Conclusion: Our study results suggest that some risk factors for readmission for jaundice in inner-city newborns may be different from those described in the literature for US newborns. Prospective studies to prevent hospital readmission for jaundice in this population needs to be explored.

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**G6Pd Deficiency In Newborns Readmitted For Jaundice**

Background: G6PD deficiency is an important cause of jaundice in the newborn especially among African Americans. Affected infants are at risk of brain damage/kernicterus unless jaundice is identified and treated early. 
Objectives: For newborns rehospitalized for jaundice within the first ten days of life, we aimed to determine differences in the clinical presentation and outcomes between newborns who were G6PD deficient and those who were not. 
Design: Case-control retrospective study 
Methods: We reviewed the records of newborns ≥ 35 weeks of gestation readmitted for jaundice at Kings County Hospital Center, Brooklyn, NY for the years 2010-2016. Cases were newborns who tested G6PD deficient, and controls were those with normal G6PD levels. Pertinent demographic and clinical data were collected. 
Results: During 2010-2016, 177 newborns with gestational age 35 weeks or more were readmitted for hyperbilirubinemia. Of these, 97 newborns were tested for G6PD deficiency of whom 33 tested positive and 64 tested normal. No statistically significant differences between the two groups were found for maternal age, birth weight, age at discharge from the hospital, bilirubin levels before discharge, age at readmission, or bilirubin, hematocrit and reticulocyte levels at readmission. On subset analysis G6PD deficient newborns were more likely to have a serum bilirubin level of ≥ 20 mg/dL at the time of readmission. All newborns readmitted for jaundice, including those who tested G6PD positive, responded well to phototherapy and no infant required exchange transfusion or developed kernicterus. 
Conclusions: 1. Among newborns readmitted for jaundice, G6PD deficient newborns are clinically indistinguishable from G6PD normal newborns. 2. Hemolysis does not play a significant role in contributing to jaundice seen in G6PD deficient newborns and 3. With appropriate follow-up, most G6PD-deficient, jaundiced newborns can be detected and treated in time to prevent kernicterus.
Seroprevalence Of Chlamydia Trachomatis In Inner-City Children And Adolescents' Implications For Vaccine Development

Background: Prevention of C. trachomatis infection is an ideal application for a vaccine program, which should optimally be administered before sexual debut. However, there are limited epidemiologic studies of C. trachomatis infection in an unselected pediatric population since universal screening and treatment of pregnant women was implemented in the USA in 1993.

Methods: Anonymized serum samples were obtained from children &lt;21 years of age in 2 medical centers in Brooklyn, New York from 2013 – 2015. Anti-C. trachomatis IgG antibody was determined by a validated enzyme immunoassay. Infants &lt;1 year of age were excluded from the final analysis due to interference of maternal antibody.

Results: 1002 sera were included in the final analysis. 57% were females. No antibody was detected &lt;11 years of age. Anti-C. trachomatis IgG antibody was detected in 9.1% (73/806) of subjects ≥11 years of age and seropositivity increased with age. There was no significant difference in the distribution of age at infection (AaI) between the centers (P = .432), but a difference was detected between genders (P = .012) with a higher percentage of female subjects testing positive.

Conclusions: Antibody was first detected at 11 years of age, likely coinciding with sexual debut. The prevalence of antibody was higher and appeared earlier in females, mirroring national surveillance trends based on nucleic acid amplification testing. The delay in male antibody detection may be due to biological or behavioral differences between the genders. These data are critical in informing potential C. trachomatis vaccine strategies. A compartmental heterosexual transmission model developed by the CDC concluded that a hypothetical chlamydia vaccine given at age 14 †“ 15 years could potentially eliminate chlamydia infection and is cost-effective. However, initiation of vaccination at age 14 may be too late for our population and may not be applicable globally.

Early Onset Gbs Sepsis In Newborns- Effect Of Perinatal Prevention Guidelines

Background: Incidence of neonatal Group B Streptococcus (GBS) disease has decreased to 0.3/1000 live births after universal screening for GBS and increased use of Intrapartum antibiotic prophylaxis (IAP) therapy. However challenges remain as interval conversion of maternal colonization, low sensitivity of the standard cultures, suboptimal collection techniques and low levels of colonization.

Objective: To determine the local incidence of GBS EOS for term and late preterm newborns, the significance of clinical, laboratory and maternal risk factors in assessing GBS risk.

Methods: The study was conducted at Kings County Hospital as a retrospective electronic chart review of all term and late preterm babies born between Jan 2010 and Dec 2014, who were evaluated for EOS. Fisher exact test was used to compare these babies in terms of 10 potential risk factors.

Results: Our hospital had 12,268 deliveries over the study period of 5 years, 3659 newborns were admitted to NICU. 771(21%) of admitted newborns were evaluated for EOS. 667/ 766 (87%) mothers were screened for GBS .189 / 667 (28%) mothers were screened positive. Of these 154 (81%) received adequate prophylaxis. None of the babies born to these mothers had GBS infection. 19 newborns had positive blood cultures, 5 of them were considered contaminant, 14 (1.9 % of evaluated newborns) were true positives. GBS was the most common organism 7/14 (50%). Incidence of GBS sepsis was 0.57/ 1000 live births. All the mothers of GBS positive infants were negative for GBS colonization except one was unknown. None of these mothers received intrapartum antibiotic prophylaxis.

Conclusion: Our study confirmed that the current perinatal screening guidelines for prevention of GBS sepsis still leaves an important number of newborns at risk for early onset GBS sepsis. Easy availability of rapid molecular testing is warranted in order to improve accuracy of standard perinatal screening technique and to detect late colonization.
**Differences In Safe Sleeping Practices Between Mothers Of Neonates Discharged From Nicu Versus The Well Baby Nursery**

Background: The AAP recently reiterated guidelines pertaining to safe sleeping environments in infants in October 2016. An important recommendation is that Neonatal Intensive Care Unit (NICU) healthcare providers should both endorse and model SIDS risk-reduction recommendations from birth. Currently there is sparse recent data regarding differences in emphasis of safe sleeping guidelines by providers in the NICU versus the well baby nursery (WBN).

Additionally, reported literature shows variable levels of staff knowledge and discharge teaching of supine positioning in the NICU setting.

Objective: The objective of our study was to determine the incidence of supine positioning and safe sleeping surface of newborns and to compare results between infants discharged from NICU versus the Well Baby Nursery.

Design/Methods: Subjects were parents of newborns discharged from an academic tertiary care inner-city perinatal center. 175 mothers completed an anonymous questionnaire querying their newborn’s sleep position and sleep surface at their first newborn clinic visit after hospital discharge. 74 responses were obtained from mothers whose infants were discharged from NICU and 101 from WBN. The primary outcome measures were the differences in percent of correct survey practice responses in the 2 groups.

Results: The overall incidence of supine positioning was 96%. 91.8% of NICU mothers reported supine positioning versus 99% of WBN mothers (P=0.0172). The most common non-supine sleep position reported by NICU mothers was side-positioning.

The overall incidence of use of safe sleeping surface reported was 96.5%. No significant difference (P=0.67) existed between NICU mothers (97.2%) and WBN mothers (96%) in use of safe sleeping surface.

Conclusion(s): We found a significant difference between the incidence of supine positioning during sleep amongst infants discharged from the NICU versus the WBN. We theorize that this may be due to practice of non-supine positioning in NICU.

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**Procedural Skill Competence And Confidence Among Pediatric Senior Residents**

Background: Clinical exposure is the primary vehicle to develop technical skills in pediatric residency yet the majority of senior residents do not feel prepared in several ACGME required procedures. While many studies have characterized poor procedural confidence among pediatric residents; few have objectively evaluated procedural skill competence and associated confidence levels.

Objective(s): To assess pediatric senior resident competence in peripheral IV placement (PIV), lumbar puncture (LP) and neonatal intubation (NI), and to determine if skill competence is associated with self-reported procedural confidence.

Design: Senior pediatric residents from a large academic program were enrolled. Skill confidence was rated with a pre-assessment survey. Skill assessment checklists were scored by faculty observing the resident perform all three procedures on infant patient simulators. A post-workshop confidence survey was distributed.

Results: 44 residents participated; PGY2 (n=21) and PGY3 (n=23). Overall mean competency scores were: PIV (80%), LP (76%) and NI (64%). PGY3s had higher means compared to PGY2s: LP (79% vs 71%, p<0.05) and NI (71% vs 56%, p<0.05). There were no significant differences in skill competency means when compared with confidence levels, across all three skills. Post session confidence improved by 11% (p<0.05), 16%(p<0.0001) and 9% (p<0.05) in PIV, LP and NI, respectively. 95% of residents found the workshops to be beneficial.

Conclusion(s): Senior pediatric residents did not demonstrate skill mastery defined by a competency score of 80% or higher, in NI and LP. Mastery was achieved in PIV. Overall, self-perceived skill confidence was not associated with skill performance proficiency; demonstrating confidence is unlikely to be a valid predictor of competence; however, confidence improved post simulation in all three procedures. Residents who participated, felt simulation workshops were beneficial, and would improve their procedural skills.
Comparative Effects Of Probiotics, Prebiotics, And Synbiotics For Restoration Of Paneth Cell Activity In The Terminal Ileum Of Rats Exposed To Intermittent Hypoxia

Necrotizing enterocolitis (NEC) is a devastating disease that occurs in preterm infants. While its pathogenesis is multifactorial, chronic intermittent hypoxia (IH) have led to inflammatory responses consistent with NEC in animal models. Alpha-defensins (β-5-D, β-6-D), produced by Paneth cells are bactericidal against noncommensal gut bacteria. Probiotics have been shown to preserve intestinal homeostasis and reduce the incidence of NEC. Our objective is to test the hypotheses that: 1) IH adversely affects Paneth cell production of β-5-D, β-6-D; and 2) Supplementation with probiotics, prebiotics, or synbiotics will improve Paneth cell production of β-5-D, β-6-D and reduce inflammatory biomarkers for NEC. Design/Methods: At birth (P0), neonatal rat pups (n=18 pups/group) were exposed to IH (50% O2 with brief 1-minute episodes of 12% O2), or room air (RA) during which they were either: 1) maternally-fed (MF); 2) hand-fed with unsupplemented formula (FF); or 3) hand-fed with formula supplemented with probiotics (PRO), prebiotics (PRE), or synbiotics (SYN) from P0 to P3. Terminal ileum (TI) was examined for histopathology using H&E. Levels of β-5-D, β-6-D, IL-8 and IL-17A in TI tissue homogenates were assessed using ELISA.

Consistent with the findings by Grootjans et al. (Gastroenterology 2011), which showed Paneth cell preservation despite exposure to ischemia, our data showed that production of β-defensins was conserved during acute IH exposure and supplementation with PRE, PRO, and/or SYN did not significantly influence β-defensin production. Elevation of IL-8, a known biomarker for inflammation and NEC, in formula-fed rats exposed to IH was correlated with the severity of damage seen pathologically. Supplementation with PRE, PRO and/or SYN led to lower IL-8 levels and restoration of normal villi architecture consistent with MF rats. Therefore, we conclude that supplementation with PRE, PRO and/or SYN appears to be protective and requires further investigation.

Association Between Obstructive Sleep Apnea And Allergen Sensitization In Pediatric Asthmatic Patients

Rationale: Whether obstructive sleep apnea (OSA) is associated with presence of allergic disease is not fully known. Research has shown that allergic rhinitis is a risk factor for snoring in children and allergic rhinitis might worsen OSA in adults. However there have been no studies on the association between OSA and allergen sensitization in the pediatric age group.

Methods: This is a retrospective case-control study (2010-2013) of pediatric asthma patients (1-21 years) treated in a university based pediatric asthma clinic. OSA was diagnosed in 48 out of 78 patients who were referred for a sleep study with apnea hypopnea index (AHI) ≥1.5. Specific IgE for aeroallergen sensitization (ImmunoCAP®) was measured. Data were analyzed using t-tests and Chi-square tests.

Results: 75% of children had a positive ImmunoCAP® test indicating sensitivity to allergens in our cohort. Patients with positive ImmunoCAP® tests had significantly higher hypopnea index (p=0.03) but not AHI. There were no significant differences in allergen sensitization, total IgE, absolute eosinophil count, eosinophil percentage, asthma severity or BMI in OSA group compared to non-OSA group. The most common sensitized allergens were dust mite and cockroaches in the OSA group and dust mite and mouse in non-OSA patients. There was higher prevalence in perennial allergen sensitization (dust mites and animal dander) in the non-OSA group compared to OSA group (60.7% vs 35.4% respectively, P=0.15).

Conclusions: Allergen sensitization complicates sleep disordered breathing with hypopneas but is not a significant risk factor for OSA in our cohort. A higher prevalence in perennial allergen sensitization was noted in non-OSA patients.
Relationship Between Diuresis Rate And The Urge To Void

Objective: To explore the relationship between diuresis rate and urge perception grade.

Methods: Ninety-two bladder diaries were analyzed from men who presented to the Brooklyn VA with lower urinary tract symptoms (LUTS) from 2014-2016. Each diary was recorded over 24 hours and included the subject's bedtime and waking time, the time and volume of each void, and the urge perception grade (UPG) associated with each void. The UPG had five possible responses (0-4), with the lowest score indicating a void without urge and the highest score indicating a void with desperate urge. The diuresis rate (DR) associated with each void was calculated, defined as the volume of urine produced per unit time. The relationship between DR and UPG was analyzed using Spearman's correlation coefficient.

Results: In total, 1118 micturitions were evaluated. The mean (±SD) DR and UPG were 1.59±1.80 ml/min and 2.4±1.0, respectively. The mean intra-subject Spearman’s rho was 0.048±0.34 with considerable variation in individual correlations. Among patients, 21 (32%) showed a negative correlation (r < -0.1), 16 (25%) showed no correlation (-0.1 < r < 0.1), 12 (18%) showed a weak correlation (0.1 < r < 0.3), 9 (14%) showed a moderate correlation (0.3 < r < 0.5), and 7 (11%) showed a strong correlation (r > 0.5).

Discussion: This study suggests that the relationship between DR and intensity of the urge to void is not straightforward. No correlation was found between DR and UPG across the entire cohort, but a moderate to strong correlation was found for a subset of patients. The variability between subjects supports the notion that urgency is multifactorial, with DR being one determinant for select individuals. Distinguishing between individuals is an important consideration in selecting appropriate treatments for patients with LUTS. For patients with a strong correlation between DR and UPG, behavioral therapies that successfully lower the DR may lead to symptomatic improvement.

The Addition Of Ceftriaxone To Standard Fluoroquinolone Prophylaxis Before Transrectal Ultrasound Prostate Biopsy Decreases The Incidence Of Post-Biopsy Sepsis: A Single Institution Analysis

Introduction: Prostate biopsy via transrectal ultrasound (TRUS) remains the gold-standard for the diagnosis of prostate cancer (PCa). According to current AUA Guidelines, a fluoroquinolone (FQ) or cephalosporin are first-line options for infection prophylaxis; which remains important with infection rates reported as high as 5.0%. At Kings County Hospital Center (KCHC), patients are given dual therapy with a 3-day course of a FQ and a 1g dose of IM ceftriaxone before the biopsy. We assess the efficacy of our prophylactic dual antimicrobial regimen in preventing the development of post-biopsy sepsis.

Methods: Demographic data from 622 patients who underwent prostate biopsy between 2010-2014 including age, PSA, DRE, and use of medications were collected from the EMR. Patients not receiving dual therapy prophylaxis were excluded. Risk factors for infection such as prior prostate biopsies, foley catheter, other procedures performed within 30 days of biopsy and positive pre-biopsy urine cultures (with species and resistance) were also collected. Data regarding emergency department (ED) visits within 30 days of prostate biopsy were analyzed for urological complaints, infection, and markers for SIRS or sepsis.

Results: Of the 622 patients undergoing TRUS prostate biopsy, 580 (93%) received ceftriaxone and a FQ. The median age was 62 yrs (range 41-93 yrs). There were 24 (4.14%) patients that visited the ED within 30 days of biopsy with urological complaints. Of these patients, 3 (0.52%) met SIRS criteria; 0 (0%) had a positive urine culture. Interestingly, 26 (4.48%) patients were found to be pre-colonized, 7 (1.21%) of which were FQ-resistant, but none of these patients presented to the ED.

Conclusions: Dual antimicrobial prophylaxis using ceftriaxone and a FQ is effective in preventing post-prostate biopsy infection and secondary sepsis. This regimen was shown to be effective in preventing infection in patients that were pre-colonized, even in the setting of FQ resistance.
Ajibola Adedayo

Relation Between Microvascular Function And Large Artery Stiffness In African-American Patients With Type-2 Diabetes Mellitus

Rationale: Diabetes is prevalent among African Americans and poses high risk for vascular complications in this population. Socioeconomic factors are known to influence outcomes, true biologic differences in risk factor vulnerability have been suggested. Vascular complications have been viewed as either macrovascular (myocardial infarction and stroke) or microvascular (retinopathy, nephropathy, neuropathy). Better glycemic control improves microvascular but not macrovascular complications. There is growing appreciation that microvascular dysfunction may promote large artery disease and vice versa. Given this notion of vascular “cross-talk” and since subclinical dysfunction is known to precede target organ damage, we sort to determine whether subclinical microvascular dysfunction is related to large artery stiffness.

Methods: 94 patients with diabetes were recruited from outpatient clinics at our institution over a 6-month period. Information was obtained via patient interview and medical record review. Microvascular function was assessed by vascular reactivity index (VRI), which assess changes in digital temperature before and after release of arterial cuff occlusion. Large artery stiffness was assessed by carotid-femoral pulse wave velocity (PWV) using applanation tonometry.

Results: Mean age was 60±0.8 years and 62% were female. 83.8% had hypertension and 84% had dyslipidemia. 16% had estimated glomerular filtration rate < 60ml/min. For the entire group, VRI was significantly correlated with PWV (r=-.31, p<.01). The correlation between VRI and PWV was stronger in subjects with Hemoglobin A1c levels>8% (n=35) (r=-.52, p<0.01) than in those with A1c levels<8% (r=-.2, p=0.1).

Conclusions: Among African Americans with diabetes, subclinical microvascular dysfunction is significantly correlated to large artery stiffness. This relation is stronger in patients with poorer glycemic control. Further study is needed to clarify mediating factors of these relationships.

Ayobami Eluwolé

Relation Between Glycemic Control And Microvascular Function In Patients With Type-2 Diabetes Mellitus

Rationale: Diabetes mellitus is a well-known risk factor for cardiovascular and cerebrovascular disease. Diabetes has been shown to impair vascular function long before the onset of target organ damage. Diabetes is often accompanied by the presence of other cardiovascular risk factors and co-morbid conditions that contribute to vascular disease and confound assessment. While better glycemic control is known to prevent microvascular but not macrovascular complications, the effects of glycemic control on subclinical vascular dysfunction are less well understood. The objective of this study was to determine whether poorer glycemic control was related to subclinical small and large vessel dysfunction.

Methods: 94 patients with diabetes from our outpatient clinics (diabetes, cardiac, and nephrology) were studied. Medical information was obtained via patient interview and medical record review including laboratory results. HbA1C was determined for all patients. Large artery stiffness was assessed by carotid-femoral pulse wave velocity (PWV) using applanation tonometry. Microvascular function was assessed by the vascular reactivity index (VRI), which assess changes in digital temperature before and after release of arterial cuff occlusion.

Results: Mean patient age was 60±0.8 years and 62% were female. 83.6% had hypertension and 83.9% had dyslipidemia. 16% had estimated glomerular filtration rate < 60ml/min. Mean HbA1c levels were 7.9±2%. Among subjects with HbA1c < 8 there was significant correlation between HbA1c and VRI (r=-.28, p=0.04) but not with PWV (r=-0.24, p=0.09). No correlation was found between HbA1c and PWV or VRI in subjects with HbA1c≥8.

Conclusions: Microvascular dysfunction appears to manifest even in ranges of HbA1c values that indicate acceptable glycemic control. The role of glycemic control in the progression of subclinical small vessel dysfunction and factors linking large artery stiffness to macrovascular complications merit further study.
Contrast-Induced Thyrotoxic Periodic Paralysis With Normokalemia

We report a case of a 73 y/o Haitian woman with h/o hyperthyroidism secondary to Grave’s disease and non-compliance with medications who was admitted for thyrotoxicosis with a storm score of 30. On admission, she was in AFib with RVR. Additionally, she had hyperfebrile, weight loss, proptosis, large goiter and TFTs significant for TSH <0.008 and total T4 >30. Methimazole, Steroids and Propranolol improved her symptoms; however, her course was complicated by acute onset flaccid paralysis after inadvertently receiving a CT scan with IV iodinated non-ionic radiocontrast (Omnipaque 300 90mL). She had quadriplegia and areflexia with intact sensations. MRI brain and C-spine showed encephalomalacia; acute stroke and transverse myelitis were ruled out. A diagnosis of thyrotoxic periodic paralysis (TPP) was made, which is known to be associated with hypokalemia. However, our patient's potassium was normal.

TPP is an acute onset episode of generalized weakness in the setting of hyperthyroidism. The duration of paralysis can last from hours to days. Thyroid hormone is presumed to upregulate sodium-potassium ATPase activity that drives potassium into the cell, resulting in hypokalemia and hyperpolarization of muscle membranes, which causes inexcitability of skeletal muscles. Restoring euthyroidism generally reverses the paralysis as in our case. TPP is known to be precipitated by many factors including strenuous physical activity, stress, high carbohydrate meal, infections, cold exposure, alcohol intake, menses, pulse corticosteroid therapy and albuterol use. The pathogenesis of iodinated non-ionic radio-contrast in precipitating TPP, especially in the setting of normokalemia is unknown. Three cases of iodine-induced TPP with hypokalemia and several cases of TPP with normokalemia have been previously reported, but contrast-induced normokalemic TPP is being reported for the first time to our knowledge.

Serial Sonographic Assessment Of Pulmonary Edema In Patients With Hypertensive Acute Heart Failure

Objective: The aim of this study was to determine whether repeated lung ultrasound could semi-quantitatively capture changes in pulmonary edema (B-lines) in patients with hypertensive AHF early in the course of treatment.

Methods: We conducted a feasibility study in a cohort of adults with acute onset of dyspnea, severe hypertension in the field or at triage (systolic blood pressure ≥ 180 mm Hg), and a presumptive diagnosis of AHF. Subjects underwent repeated dyspnea and lung ultrasound assessments using a 10-cm visual analog scale (VAS) and an 8-zone scanning protocol. Lung ultrasound assessments were performed at the time of triage, initial VAS improvement, and disposition from the emergency department. Sonographic pulmonary edema (SPE) was independently scored offline in randomized and blinded fashion using a scoring method that accounted for both the sum of discrete B-lines and degree of B-line fusion.

Results: SPE scores from initial to final ultrasound assessments decreased in each of the 20 subject encounters included in the analysis ($I^2 = 31.6$, p<0.001). The median decrease in SPE scores between initial and final measurements was 81% (IQR 55%, 99%). SPE scores correlated with VAS scores ($I = 0.64$, p<0.001), but the magnitude of change in these scores did not correlate with each other ($I = -0.04$, p=0.89).

Conclusion: Changes in SPE can be semi-quantitatively measured by serial 8-zone lung ultrasound using a scoring method that accounts for B-line fusion. SPE improves in patients with hypertensive AHF during the initial hours of treatment.