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Use of sodium bicarbonate to alkalinize the urine in pediatric patients treated with Topiramate (pilot study)

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Background: Topiramate is an antiepileptic frequently used in pediatrics with multiple mechanisms of action. This includes carbonic anhydrase inhibition, which has unclear relevance to its antiepileptic effect. Metabolic acidosis, hypocitraturia and nephrolithiasis are known side-effects of carbonic anhydrase inhibition and can limit therapeutic effect. Alkali therapy may normalize acidosis, increase urinary citrate, and reduce nephrolithiasis risk. We hypothesize that provision of sodium bicarbonate supplementation to patients with topiramate-induced acidosis will mitigate these side-effects without worsening seizure frequency or severity. **Methods:** Pediatric patients on antiepileptic therapy with topiramate are being recruited from outpatient pediatric neurology clinics at McMaster Children's Hospital. We aim to recruit 20 patients with metabolic acidosis and 20 control patients. Measures include blood gas, electrolytes, urine electrolytes and citrate. Patients with metabolic acidosis will be given daily sodium bicarbonate for one month, followed by repeat bloodwork. Seizure frequency will be prospectively documented in all participants throughout the three-month period. **Results:** Recruitment is ongoing, and three patients (1 with acidosis) have been recruited thus far. Results will be analyzed with chi-squared and paired T tests. **Conclusions:** This pilot study is the first to evaluate the safety and efficacy of sodium bicarbonate supplementation in patients receiving topiramate for seizure control.

P.046

Increasing EEG monitoring in the pediatric ICU - benefits and barriers

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Background: Non-convulsive seizures are common in critically ill patients and are best detected by continuous EEG (cEEG) monitoring. A recent consensus statement from the American Clinical Neurophysiology Society (ACNS) outlines the indications for EEG monitoring in critically ill patients. Our aim was to assess adherence to these indications, barriers to cEEG utilization as well as to optimize cEEG monitoring in critically ill children. **Methods:** We conducted a retrospective review of electronic medical records, analyzing patients admitted to the PICU from January 1st until June 23rd 2018, followed by an 8-week mentorship period, consisting of educational interventions as well as daily patient rounds to help identify patients meeting cEEG monitoring criteria. **Results:** Prevalence of patients meeting cEEG monitoring indications were similar in both the retrospective and mentorship period (18% vs. 23%). During the retrospective period, 23% of patients received cEEG monitoring, reaching 100% at the end of the mentorship period. The median delay for initiation of monitoring was 17 hours, largely due to restrictions in the availability of technologists. All cEEGs performed informed anti-convulsive management. **Conclusions:** An educational intervention was effective in increasing PICU cEEG monitoring. However, limited hours of technologist availability represented the largest barrier to timely cEEG monitoring.

P.047

The importance of assessing mental health in transition-aged adolescents with epilepsy

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Background: When compared to the general population, researchers have reported elevated rates of mental health issues in the pediatric epilepsy population. These issues have been found to be especially problematic around the time of transition from pediatric to adult care. This is significant because depression and/or anxiety have been found to be directly related to worsened seizure outcomes and quality of life. Despite this, no known Canadian pediatric epilepsy centers have integrated mental health assessment into mainstream practice. **Methods:** To explore the importance of mental health assessments, we looked at the prevalence rates of both depression and anxiety in 91 adolescents with epilepsy aged 14 to 18 (M=16.3, 51 males, 41 females) enrolled into an epilepsy transition clinic. **Results:** 58.3% of adolescents showed signs of depression (28.6% mild, 21.4% moderate, 6.0% moderately-severe, 2.4% severe), and 51.8% of adolescents showed signs of anxiety (31.8% mild, 10.6% moderate, 9.4% severe). Remarkably, 54.8% of patients presenting with moderate to severe depression and/or anxiety had not been previously identified **Conclusions:** These results suggest that in order to ensure the best possible outcomes for patients, mental health assessments should be integrated into the standard model of care for transition-aged adolescents with epilepsy.

P.048

Characterization of somatic mutations in mTOR pathway genes in focal cortical dysplasias

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Background: Focal cortical dysplasias (FCDs) are congenital structural abnormalities of the brain, and represent the most common cause of medication-resistant focal epilepsy in children and adults. Recent studies have shown that somatic mutations (i.e. mutations arising in the embryo) in mTOR pathway genes underlie some FCD cases. Specific therapies targeting the mTOR pathway are available. However, testing for somatic mTOR pathway mutations in FCD tissue is not performed on a clinical basis, and the contribution of such mutations to the pathogenesis of FCD remains unknown. **Aim:** To investigate the feasibility of screening for somatic mutations in resected FCD tissue and determine the proportion and spatial distribution of FCDs which are due to low-level somatic mTOR pathway mutations.