Platform Presentations

CACN Chair's Select Abstract Presentations

A.01

CACN 2015 President's Prize

Lidocaine for status epilepticus in pediatrics

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Introduction: Our goal was to perform a systematic review of the literature on the use of intravenous lidocaine in pediatrics for status epilepticus (SE) and refractory status epilepticus (RSE) to determine its impact on seizure control. M*ethods:* All articles from MEDLINE, BIOSIS, EMBASE, Global Health, HealthStar, Scopus, Cochrane Library, the International Clinical Trials Registry Platform (inception to November 2014), and gray literature were searched. The strength of evidence was adjudicated using both the Oxford and GRADE methodology by two independent reviewers. *Results:* Overall, 20 original studies were identified, with 19 manuscripts and 1 meeting abstracts. Two hundred and thirty-five pediatric patients were treated for 252 episodes of SE/RSE. Patients had varying numbers of anti-epileptic drugs (AEDs), 2 to 8, on board prior to lidocaine therapy. During 20 of the 252 (7.9%) episodes of SE/RSE, phenytoin was on board. The dose regimen of lidocaine varied, with some utilizing bolus dosing alone; others utilizing a combination of bolus and infusion therapy. Overall, 60.0% of seizures responded to lidocaine, with complete cessation and greater than 50% reduction seen in 57.6% and 12.3% respectively. Patient outcomes were sparingly reported. *Conclusions:* There currently exists level 2b, GRADE C evidence to support the consideration of lidocaine for SE and RSE in the pediatric population.

A.02

The long-term outcome of children with refractory epilepsy after a vagal nerve stimulator implantation: CHU Sainte-Justine experience

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Background: Debate persists in Canada about the cost and benefit of vagal nerve stimulation in patients with refractory epilepsy. The aim of our study was to evaluate the impact of a vagal nerve stimulator on the seizure frequency and the admission rate of children with refractory epilepsies over five years of follow-up. *Methods:* 52 patients were implanted between 2000-2013. Of these, 37 were followed at CHU Sainte-Justine and 21 kept seizure diaries. Seizure frequency was compared to the baseline at 6 months, 12 months, 24 months and 60 months of follow up using a multivariate ANOVA analysis. The hospitalization rate was calculated as the mean difference between the number of hospitalizations prior to and after the implantation. *Results:* Seizure frequency decreased by 58% at 6 months, by 61% at 12 months, by 53% at 24 months and by 63% at 60 months of follow up respectively compared to the baseline ($p< 0.001$). The hospitalization rate decreased by 50.87% after surgery ($p< 0.001$). *Conclusion:* In our population, vagal nerve stimulation has a sustained impact on seizure frequency and hospitalization rates. This supports previous data from our group and others on cost-effectiveness of the technique in children with refractory epilepsy.

A.03

Increased focal and diffuse cerebral demand after concussion

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Aim: To examine cortical activation during a memory task in children with and without post-concussion symptoms (PCS) following concussion. *Methods:* A case-controlled study within the Play-Game Trial (www.playgametrial.ca). Children (aged 8-18 years) with PCS at 1-month post-injury were eligible. The fMRI task was a working memory task. Pre-processing and single-subject analysis were performed in FSL. Group activation and inter-group difference maps were extracted. *Results:* 11 symptomatic, 12 asymptomatic, and 11 controls without concussion participated. Groups were similar in age (14.9, 14.0, and 13.8yrs; p=0.46), sex (p=0.984) and time post-injury (symptomatic: 37d; asymptomatic 35d; p=0.573). Compared with controls, symptomatic children demonstrated greater activation especially in the bilateral orbito-frontal cortex and cerebellum. A similar, less pronounced pattern was observed in asymptomatic subjects. *Conclusions:* Similar to adult studies, increased network activation may represent decreased "efficiency" and explain the cognitive fatigue in PCS. Further, children who are "asymptomatic" may not yet be fully recovered.

A.04

Neonatal hemorrhagic stroke: population-based epidemology

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Background: Stroke is a leading cause of perinatal brain injury and cerebral palsy. Term neonatal hemorrhagic stroke (NHS) is a common syndrome with poorly defined epidemiology. We aimed to determine incidence and mechanisms within a large population-based NHS sample. *Methods:* The Alberta Perinatal Stroke Project (APSP), a provincial registry ascertained NHS cases using exhaustive ICD-9/10 code searching (1992-2012, >2400 chart reviews). Prospective cases were captured through the Calgary Pediatric Stroke Program from 2007-2014 (n=387). All NHS cases underwent structured chart review using a data capture form and blinded review