

**P.072****The spectrotemporal characteristics of NMDA receptor encephalitis**

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*Background:* NMDA receptor encephalitis (NMDA-RE) is an autoimmune disorder caused by antibodies to the NR1-NR2B heterodimer of the NMDA receptor. Currently, disease status is tracked primarily by the presence of auto-antibodies in the cerebrospinal fluid (CSF) and serum. Using serological and CSF markers along with clinical parameters to track disease progress can be challenging since patient symptoms and disease progress can vary widely. *Methods:* EEGs were reviewed in a 31 year old male patient with proven NMDA-RE. EEG data were sampled from various times before and after diagnosis, as well as during various stages of treatment. All analyses were performed using Matlab (Mathworks). *Results:* We showed that using a simple 1/f model of spectral behaviour (Buzsaki and Draguhn, 2004), we could fit the power spectra of the raw data at various instances during routine EEGs. We have demonstrated that the values of specific fitting parameters vary in relationship to the patient's clinical status across various stages of illness. *Conclusions:* The aim of this project was to explore the potential utility of EEG as a complement to the usual clinical metrics used in monitoring NMDA-RE. The analysis techniques presented here highlight the use of EEG as a practical, minimally-invasive tool to monitor progress and potentially aid in clinical decision making.

**P.073****Transient osteoporosis of the hip during pregnancy associated with EMG signs of acute regional denervation**

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*Background:* Transient osteoporosis is an infrequent musculoskeletal condition most often seen in middle-aged males, but can rarely present during late pregnancy in females. Patients present with sudden onset of severe joint pain. MRI typically shows T2 hypersignals and bone marrow edema. Abnormal neurophysiological findings have only rarely been described in the literature. *Methods:* Case report *Results:* A 35-year old patient presented at 34 weeks of pregnancy with acute onset of right hip and leg pain. MRI showed marked T2 hypersignals in the head of the femur with distal extension and bone marrow edema pathognomonic of transient osteoporosis. Neurophysiological studies showed normal nerve conduction of the lower extremities, but fibrillation potentials and positive sharp waves were found acutely in proximal muscles of the affected extremity and not limited to a single nerve territory. Inflammatory markers were unremarkable. Treatment was conservative with rest and reduction of weight bearing and pain resolved in the hip, but recurred in the ipsilateral knee several months after delivery suggesting evolution toward regional migratory osteoporosis. *Conclusions:* Transient osteoporosis of the hip may be associated with EMG signs of denervation that could suggest a contributing neurogenic mechanism. Their prevalence may be underestimated and we suggest considering serial EMG studies in its investigation.

**NEUROSURGERY****CRITICAL CARE / NEURO TRAUMA****P.075****Rates of infection following craniotomy or craniectomy with subsequent cranioplasty in traumatic brain injury**

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*Background:* Postoperative infection is a significant cause of morbidity and mortality in traumatic brain injury (TBI) patients who undergo craniotomy and/or craniectomy. Data on the rates of infections associated with these procedures are limited. We present a single-center retrospective study on the rates of infection in post-traumatic craniotomies, craniectomies and cranioplasties. *Methods:* Data on 100 TBI adult patients who underwent a craniotomy, craniectomy and/or cranioplasty from 2011-2015 will be analyzed. Demographic and perioperative data including open/closed TBI, peri/postoperative infections, duration of procedure, type and mode of bone flap preservation will be retrieved. *Results:* Following our data collection (to be completed by the end of February), we expect infection rates of 3-20% in our study. Upon instituting a protocol similar to the Hydrocephalus Clinical Research Network's (HCRN) ventriculoperitoneal shunt (VP) protocol, we hope to reduce our post-TBI craniotomy/craniectomy/cranioplasty infections rates to less than 10%. Our projection is based on the HCRN protocol's 3.15% absolute risk reduction of VP shunt infections. *Conclusions:* The results of this study will emphasize the need for instituting robust perioperative protocols to reduce infections. Further research will be pursued following this study to establish a protocol similar to the VP shunt protocol from the HCRN, in an attempt to reduce perioperative rates of infection.

**P.076****Epidemiology of traumatic spinal cord injury patients in New Brunswick**

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*Background:* Characteristics of traumatic spinal cord injury (tSCI) patients admitted to the Saint John Regional Hospital and the Stan Cassidy Center for Rehabilitation from 2011 to 2014 were examined. *Methods:* Demographic, neurological and functional outcome data for 18 patients, who had consented to participate in a database for tSCI in Canada, was obtained. *Results:* The majority of patients were male (88.9%), with a mean age of 41.33 ( $SD = 17.17$ ). The most common causes of tSCI were motor vehicle accidents (41.2%) and falls (29.4%). Cervical spine injuries (70.6%) and an ASIA impairment scale classification of D (38.9%) predominated. The median latency from injury to surgery was 22.67 hours. Functional independence Measure scores ( $M = 64.17$ ,  $SD = 25.84$ ) indicated that motor/functional independence was impaired ( $M = 32.44$ ,  $SD = 19.15$ ) relative to cognitive independence ( $M = 31.83$ ,  $SD = 4.07$ ). *Conclusions:* The results suggest that characteristics of tSCI patients in New Brunswick are similar to the Canadian tSCI patient

population. Emergency care appears to be delivered in a timely fashion. Both centers participate in research registries focused on collecting data related to tSCI, surgical interventions, and patient outcomes. Registries are valuable research tools that allow for an alternative way to examine the quality of care their patients receive.

## P.077

### A Concussion-U educational presentation improves knowledge and attitudes of concussion amongst elite female high-school hockey players

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**Background:** Research has suggested that female athletes have a higher incidence of concussion compared to their male counterparts. As such, programs designed to improve knowledge and attitudes of concussion should target this high-risk population. Previous work demonstrated the effect of a novel Concussion-U educational presentation on knowledge and attitudes of concussion amongst male Bantam and Midget AAA hockey players. The objective of this study was to determine if the same presentation was effective in improving the knowledge and attitudes of concussion in a cohort of elite female hockey players. **Methods:** 26 elite female high-school aged (14-17) hockey players from the province of New Brunswick consented to participate in the study. Each participant completed a modified version of Rosenbaum and Arnett's Concussion Knowledge and Attitudes Survey questionnaire immediately before and after a Concussion-U educational presentation. Results were compared across the two time-points to assess the effectiveness of the presentation. **Results:** Concussion knowledge and attitude scores significantly ( $p < .001$ ) increased from pre-presentation to post-presentation by 12.5% and 13.4%, respectively. **Conclusions:** A Concussion-U educational presentation resulted in increased knowledge and improved attitudes towards concussion in elite female hockey players. Future research should examine the long-term retention of these improvements.

## P.080

### Traumatic brain injury in a rural indigenous population in Canada: a community-based approach to surveillance

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**Background:** Indigenous populations are disproportionately affected by traumatic brain injury (TBI). These populations rely on large jurisdiction surveillance efforts to inform their prevention strategies, which may not address their needs. This study describes the TBI determinants of a Quebec indigenous population, the Cree served by the Terres-Cries-de-la-Baie-James health region, and compares them to the determinants of two neighbouring health regions and the entire Province of Quebec. **Methods:** We conducted a retrospective population-based cohort study of incident TBI hospitalizations, stratified by the aforementioned health regions, in Quebec from 2000-2012. MED-éCHO administrative data were used for case finding. A sub-analysis of the Terres-Cries-de-la-Baie-James

adults was completed to assess for determinants of TBI severity and outcomes. Regression models, multiple imputations and a sensitivity analysis were used to account for biased associations. **Results:** 172 incident TBI hospitalizations occurred in the Terres-Cries-de-la-Baie-James region from 2000-2012. The incidence rate was 92.1 per 100,000 person-years and the adjusted IRR was 1.86 (95% CI 1.56-2.17) when compared to the entire province. Determinants of TBI for the Terres-Cries-de-la-Baie-James were significantly different from those of neighboring populations and the entire province. **Conclusions:** TBI surveillance information from large jurisdiction initiatives can be misleading for indigenous communities. Community-based surveillance provides evidence that these populations should use to prioritize prevention strategies.

## P.081

### Penetrating brain injury, recent case series of a single institution and literature review

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**Background:** Penetrating brain injury is a rare entity. Furthermore, clinical presentation can be highly variable and management difficult, especially when the foreign body is retained in the skull. **Methods:** We present a series of three recent cases of penetrating brain injury that happened at our institution including clinical and radiological data. We discuss management of those challenging cases and present a brief review of the literature. **Results:** Our cases (3) encompassed different mechanisms: bilateral nail gun injury, knife and aircraft propeller. All patients were male, with a median age of 37 years old. Work-up was negative for intracranial vascular injury. All patients were treated with initial craniectomy (bilateral in one case) and a course of antibiotics. Cranioplasty was later performed. All patients survived and evolved in favorable fashion. **Conclusions:** Penetrating brain injury is a rare injury, requiring individualized surgical and medical management. A few recommendations may be found in the literature but are often based on literature from blunt traumatic brain injury or war-related injuries.

## P.082

### Traumatic inter hemispheric subdural hematomas – clinical presentation, management and outcome

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**Background:** There is currently little data on the incidence, clinical outcome and management of traumatic interhemispheric subdural hematomas (IHSDHs). **Methods:** All patients admitted with an acute subdural hematoma (SDH) over a 5-year period at a Level I trauma center were included. A detailed review of all cases of large IHSDH ( $\geq 7$  mm) was performed to document clinical presentation, management and outcomes. **Results:** Of 1182 patients with acute subdural hematomas (SDHs), 420 had IHSDHs (24%), and 50 were large IHSDHs. For patients with large IHSDH, the average age was 76 years ( $\pm 11$ ) and 44% were female. The average GCS was 12 on presentation ( $\pm 4$ ), and the average GOSE was 4 ( $\pm 2$ ). 66% of patients had associated cranial/ intracranial injuries (fracture, subarachnoid/