CNS/CSCN Chair's Select Abstract Presentations

B.01

CNS Andre Barbeau Memorial Prize

Age as a key determinant of inflammatory response, glial and axonal survival after traumatic spinal cord injury

JC Furlan (Toronto) Y Liu (Toronto) W Dietrich III (Miami) MD Norenberg (Miami) S Croul (Toronto) MG Fehlings (Toronto)*

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Background: This study examines whether age is a key determinant for inflammatory response, oligodendroglial apoptosis and axonal survival after traumatic spinal cord injury (SCI). *Methods:* This study includes post-mortem spinal cord tissue from 64 cases of SCI (at cervical or high-thoracic level) and 38 controls cases. Each group was subdivided into younger and elderly individuals (≥65 years). Alternating sections from 2 to 3 segments caudal to SCI and age/sex/level-matched segments from controls were stained for: (i) neuroinflammation (neutrophils, macrophages, lymphocytes); (ii) apoptotic oligodendrocytes; (iii) axons; (iv) extent of degeneration. The number of cells or axons was counted in the motor and sensory areas within the spinal cord using unbiased stereological techniques. *Results:* Younger and elderly individuals had statistically similar number of inflammatory cells in most of the stages post-SCI. Younger and elderly individuals had similar number of oligodendrocytes in apoptosis in all stages following SCI. The number of preserved axons did not significantly differ between younger and elderly individuals with SCI and without prior CNS injury. Extend of degeneration within the spinal cord white matter did not significantly differ between the two groups. *Conclusions:* Our results indicate that age at the time of injury does not adversely affect the cellular inflammatory response, oligodendroglial apoptosis and axonal survival after traumatic SCI.

B.02

CNS Francis McNaughton Memorial Prize

Blood hemoglobin concentration as a potential predictor of outcomes after acute ischemic stroke

JC Furlan (Toronto) J Fang (Toronto) FL Silver (Toronto)*

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Background: This study examines whether abnormal blood hemoglobin concentration (bHB) is associated with worse clinical outcomes and poorer prognosis after acute ischemic stroke. *Methods:* We included data from the Registry of the Canadian Stroke Network on consecutive patients with ischemic stroke who were admitted between July/2003 and March/2008. Patients were divided into groups as follows: low bHB, normal bHB, and high bHB. Primary outcome measures were the frequency of moderate/severe strokes on admission (Canadian Neurological Scale: <8), greater degree of disability at discharge (modified Rankin score: 3-6), and 30-day and 90-day mortality. *Results:* Higher bHB than the superior normal limit is associated with greater degree of impairment (OR=1.45, 95%CI: 1.06-1.95, p=0.0195) and disability (OR=1.49, 95%CI: 1.03-2.15, p=0.0331), and higher 30-day mortality (HR=1.98, 95%CI: 1.44-2.74, p<0.0001) after adjustment for major potential confounders. The Kaplan-Meier curves indicate that abnormal bHB is associated with higher mortality after acute ischemic stroke (p<0.0001). Lower bHB than the inferior normal limit is associated with longer stay in the acute stroke care center (OR=1.11, 95%CI: 1.02-1.22, p=0.017). *Conclusions:* Polycythemia on the initial admission is associated with poorer prognosis regarding the degree of impairment and disability, and 30-day mortality after an acute ischemic stroke. Anemia on admission is associated with longer stay in the acute stroke center.

B.03

Laboratory and clinical adverse events following initiation of dimethyl fumerate

YM Al Malik (Calgary) J Greenfield (Calgary) W Wall (Calgary) LM Metz (Calgary)*

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Background: Dimethyl fumerate (DF) is a first line therapy for relapsing remitting multiple sclerosis (RRMS). This retrospective cohort study aims to determine adverse events (AEs) after initiation of DF in a real world clinical setting. *Methods:* Data from patients at the Calgary MS Clinic with RRMS who initiated DF between July 1, 2013 and December 31, 2014 were analyzed. Demographic, clinical and lab information were collected from patient electronic medical records and the clinic database. *Results:* This analysis included 170 patients. At treatment initiation mean age was 42.1 years, 75% were women, mean disease duration was 12.5 years, median EDSS was 2.0, and 24% were treatment naïve. Median follow-up was 6.4 months (range: 1.5-17.7). AEs occurred in 101 (59%); the most common were flushing (31%), gastrointestinal (GI) side effects (24%), and elevated liver enzymes (18%). Other less frequent AEs included lymphopenia (lymphocyte count < 0.5) (4%) and proteinuria (4%). DF was discontinued by 17 (10%); median time to discontinuation was 3.1 months. Fifteen (9%) discontinued due to AE. *Conclusions:* AE associated with DF in a real world clinical setting is comparable to the Canadian monograph for flushing, GI side effects, and lymphopenia but lower for elevated liver enzymes and proteinuria.

B.04

Understanding the evolution of epilepsy – the value of collecting longitudinal data in the setting of a first seizure clinic

B Pohlmann-Eden (Halifax) KT Legg (Halifax) MH Schmidt (Halifax) CE Crocker (Halifax)*

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Objective: Our knowledge of disease mechanisms in epilepsy is biased by findings originating from cross-sectional studies and advanced stages of epilepsy. We provide a new perspective by collecting systematically longitudinal data from patients who present in early stages (ES). *Methods:* The Halifax First Seizure Clinic, founded in 2008, uses a comprehensive multimodal data basis addressing clinical presentation, neuroimaging, EEG findings, genetics, cognition, comorbidities, social parameters, and life style. Follow-up visits are 6, 12 and 24 months. *Results:* Out of 575 patients we identified 3 subgroups 1) Strictly first seizure, n=187, 2) New-onset epilepsy (> 1 seizure < 12 months), n=149, and 3) Newly-diagnosed epilepsy