P.040

Natalizumab-associated progressive multifocal leukoencephalopathy occurring at low positive anti-JC virus antibody level

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Background: Risk of progressive multifocal leukoencephalopathy (PML), a serious adverse event of natalizumab therapy, is higher with positive anti-JC virus antibody status, greater cumulative exposure to natalizumab and prior immunosuppressant use. Plavina et al. (2014) showed that plasma or serum anti-JC virus antibody index value may allow further PML risk stratification. Among anti-JC virus antibody positive multiple sclerosis patients with no prior immunosuppressant treatment receiving natalizumab, anti-JC virus antibody index >6 months prior to PML diagnosis was significantly higher among those who developed PML with 96% consistently having an anti-JC virus antibody index >0.9. *Methods:* We describe a case of natalizumab-associated PML with low positive anti-JC virus index value prior to diagnosis. *Results:* A 53 year old man with 20 year history of relapsing remitting multiple sclerosis was diagnosed with PML following 46 infusions of natalizumab. Glatiramer acetate was his only prior immunomodulatory therapy. Routine MRI surveillance resulted in diagnosis of PML following detection of a confluent right anterior frontal T2 hyperintense lesion extending across the corpus callosum. Six months prior, routine MRI surveillance demonstrated a small right frontal T2 hyperintensity with no diffusion restriction while serum anti-JC virus antibody index was 0.69. *Conclusions:* Natalizumab-associated PML may develop despite low positive anti-JC virus index value.

P.041

Disease phenotype analyses of relapsing-remitting multiple sclerosis in Canada and Saudi Arabia

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Background: Multiple sclerosis (MS) exhibits a spectrum of clinical findings, especially in relapsing-remitting MS (RR-MS). To assess the effects of geographic location and ethnicity on RR-MS phenotype, we investigated RR-MS patients in Canada and Saudi Arabia. *Methods:* A retrospective cross-sectional analysis of patients receiving active care in MS Clinics was performed in Medina, Saudi Arabia and Edmonton, Alberta. Demographic and clinical data was collected for each patient. *Results:* 98 patients with treated RR-MS were recruited (n=51, Medina; n=47, Edmonton); 40 patients were Caucasian (Edmonton) while 46 patients were Bedouin (Medina). Although the disease duration was longer in the Edmonton (5.7+2.3 yr) compared to the Medina group (4.4+1.4 yr) ($p<0.05$), the mean age of RR-MS onset, relapse rate and EDSS change were similar. The female:male ratio was comparable in Edmonton (35:12) and Medina (32:19), as was the risk of optic neuritis. The likelihood of an infratentorial lesion-associated presentation differed (Edmonton, n=23; Medina; n=13) among groups ($p<0.05$). Spinal cord lesions on MRI were more frequent in Edmonton (n=18) compared to Medina (n=1) patients ($p<0.05$). *Conclusions:* Despite differences in location, ethnicity, and a predominance of infratentorial lesion burden the Edmonton group, the RR-MS phenotype displayed similar disease severity and trajectory in these cohorts.

P.042

The low adherence and disability outcomes of disease-modifying drugs in Multiple Sclerosis in Saskatchewan, a cohort study, 1997-2014

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Background: The beneficial effects of the injected disease-modifying drugs (DMDs) in relapsing-remitting Multiple Sclerosis have been previously reported. However the results related to disability outcomes and the reduction of disease progression in the pivotal trials and few longer studies are variable and inconclusive. *Objectives:* To determine the utilization and the disability outcomes of the DMDs on relapsing-remitting Multiple Sclerosis over fifteen years. *Methods:* A prospective open-label cohort of 262 clinical definite patients, 78 men and 184 women, with two attacks in the past two years and a disability level DSS≤5.5 were enrolled consecutively from December 1997 to November 1999. A descriptive analysis of the cohort and individual drugs outcomes were performed. The results were compared to natural history studies of Multiple Sclerosis as controls. *Results:* At 15 years, one-seventh, 38/262 (14.5%) remain on the initial prescription, Betaseron, 15/131 (11.5%), Copaxone, 16/102 (15.5%) and Rebif 7/28 (25%), Avonex 0/1. 223(63.6%) had discontinued at a mean duration of 5.5(SD=4.7) years. 95/262 (36.4%) remain on a drug after switches. The DSS levels of the individual DMDs were analyzed. *Conclusion:* One-seventh of participants remained on their first prescription. Because of low adherence, the impact of DMDs on disease progression in the longer term cannot be verified.

P.043

Prolonged-release fampridine as adjunct therapy to active enabled motor training in multiple sclerosis patients: a pilot, double-blind, placebo-controlled study

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Objectives: To investigate if MS subjects treated with PRF 10mg BID will show a greater benefit from active enabled motor training compared with placebo. *Methods:* Single center, phase 4, pilot, placebo-controlled, double-blind 18 weeks study. Fifteen patients were randomized to receive PRF 10mg BID and fifteen to received placebo BID. All patients participated in active enabled motor training of 3 sessions of 1 hour/week for 6 weeks. Patients were evaluated at -4, 0, 6 and 14 weeks using the timed 8 meters walk (8MW), the 6 minute walk (6MW) and the timed sit to stand (STS). *Results:* The PRF treated group achieved a higher mean percent improvement from baseline in all tasks at both 6 and 14 week time points. The difference reached statistical significance (mean difference of 14.29, p=0.046) for the 8MW at the 14 week time point. A higher incidence of responders (>20% improvement from baseline) was seen in the PRF treated group at 6 weeks on the 8MW (odds ratio [OR] of 2.31) and

the 6MW (OR of 1.63), and at 14 weeks on the 8MW and the STS (OR of 2.0). *Conclusions:* PRF in MS patients appears to enhance the benefit of active enabled motor training and to better sustain it over the following 8 weeks.

Neurology (Neurocritical Care/Neuro Trauma)

P.044

Time to loss of neurological function after circulatory arrest: a scoping review

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Background: Donation after circulatory death (DCD) can reduce organ transplant waiting times. When defining death using circulatory criteria, brain function is usually not assessed. Residual brain function and the state of consciousness at the time of circulatory arrest is unknown. We have an ethical responsibility to ensure the donor is free of pain and psychological distress. *Methods:* We performed a scoping review of the literature to determine the time intervals associated with the loss brain function after circulatory arrest. *Results:* A total of 1133 articles were reviewed and 38 were included in the review. In humans, 8 studies showed loss of EEG activity under 30 seconds. Four studies revealed loss of EEG between 39.6 and 66 seconds. Clinically, loss of consciousness was shown to occur between 4 and 21 seconds. In animals, 13 studies also revealed loss of EEG under 30 seconds. In four other animal studies, EEG was lost between 37 and 120 seconds. *Conclusion:* The time required to lose brain function varied according to clinical context and method by which this function is measured. Existing literature is scarce and limited to observational studies and case reports.

P.045

NMDA-receptor encephalitis: An unsual case of refractory status epilepticus

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Objective: Case report of NMDA receptor encephalitis in a young man with early refractory status epilepticus and atypical radiological findings. *Background:* Anti-NMDA receptor encephalitis is an autoimmune disorder due to antibodies to the NR1-NR2B heterodimer of NMDA receptor. On imaging, it typically presents with T2 hyperintensities in mesio-temporal lobes, cerebral cortex and basal ganglia. We present a case with a dramatic clinical evolution and novel imaging findings. **Design**/*Methods:* Case report and review of imaging. *Results:* 29-year-old male presented with mood disturbance followed by partial-complex seizures, facial dyskinesia and choreoathetotic movements. Initial MRI showed subtle T2-hyperintensities in mesio-temporal lobes. Diagnosis of NMDA-receptor encephalitis was confirmed after CSF antibody detection. Prior to diagnostic confirmation, he developed refractory status epilepticus, and concomitant signs of herniation. A repeated MRI showed increased T2-hyperintensities of thalami and mesencephalon, with cerebellar involvement and transtentorial/foraminal herniation. Restricted diffusion was documented in the cerebellar cortex/thalami/putamina and caudate. IV corticosteroids and hypertonic fluid reversed herniation, and halted the seizures. *Conclusions:* To our knoweldge, we report the first case report of uncal and tonsillar herniation in NMDA-r encephalitis secondary to atypical, predominant cerebellar involvement. This case highlights life-threatening manifestation that physicians might encounter, and a possible role for high dose IV corticosteroids as an adjunct treatment for brain edema and seizures.

Neurology (Neuromuscular)

P.046

Disparate production of IL-27 in CSF and plasma of Guillain-Barré syndrome and other neurological disorders

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Background: IL-27 acts as a 'master regulator' in modulating inflammation and was responsible for a number of autoimmune diseases. However, the role of IL-27 was not addressed in Guillain-Barré syndrome (GBS). *Methods:* Sixty-five subjects including 19 with GBS, 7 with encephalitis or meningitis, 23 with multiple sclerosis or neuromyelitis optica as well as 11 with other non-inflammatory neurological disorders were enrolled. ELISA was used to detect the concentrations of IL-27 in paired samples of cerebrospinal fluid and plasma. *Results:* The mean concentration of IL-27 in GBS patients was significantly lower than in other neurological disorders both in CSF and in plasma (all $p < 0.05$). GBS patients with cranial involvement, decreased reflexes, hypaesthesia, autonomic nerve dysfunction, MRC score <30 are inclined to have a lower CSF IL-27 level than patients without these symptoms (182 pg/ml, 181 pg/ml, 185 pg/ml, 185 pg/ml, 194 pg/ml vs 211 pg/ml, 205 pg/ml, 202 pg/ml, 198 pg/ml, 199 pg/ml, respectively). Similar results were noted in plasma except for cranial involvement. *Conclusions:* Production of IL-27 was disparate between GBS and other neurological diseases and a significantly lower level of IL-27 was observed in GBS patients, indicative of an anti-inflammatory role of IL-27 in GBS.

P.047

Enteral nutrition in amyotrophic lateral sclerosis (ALS): Canadian practices

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Background: Dysphagia from ALS may be treated by enteral nutrition; however criteria for timing of feeding tube placement has not been well studied. The aim of this project was to better understand the practice of enteral nutrition management within Canadian ALS clinics. *Methods:* ALS clinics were asked if they had written guidelines for timing of PEG insertion and if not, what criteria they