P.042

Dopamine Dysregulation Syndrome in Parkinson's Disease and its Management with Advanced Therapies

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Background: Dopamine Dysregulation Syndrome (DDS) is an adverse non-motor complication of dopamine replacement therapy in Parkinson's Disease. The current literature on DDS is limited, and it remains underdiagnosed and challenging to manage. **Methods:** We performed a retrospective chart review and classified patients according to risk factors that have been identified in the literature, UPDRS scores, intervention and outcome. Univariate analyses were performed to quantify these characteristics. **Results:** Prior psychiatric illness was identified in 70% of patients, impulse control disorder in 89% and substance abuse in 3.7%. Interventions included reduction of dopamine therapy (88.9%), deep brain stimulation (DBS) of the subthalamic nucleus (STN, 48.1%) or globus pallidus interna (GPi, 7.4%), and levodopa-carbidopa intestinal gel (LCIG) infusion (11.1%). Baseline UPDRS IV before treatment and MDS III after treatment were not significant between intervention groups (p=0.09 and p=0.13 respectively). Overall 88.9% patients improved at follow up, with medication only (75%), STN DBS (100%), GPi DBS (100%) and LCIG (33%). Relapse rate was 18.2%, in the STN group only. **Conclusions:** Our results suggest that GPi DBS, in concurrence with dopaminergic medication reduction, is the most effective intervention. STN DBS might be also beneficial although the associated medications reduction causes DDS relapse in a subgroup of patients.

Multiple Sclerosis

P.043

Long term MS clinical outcomes predicted by baseline serum neurofilament light levels

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Background: Prognostic biomarkers are badly needed to direct MS treatment intensity early in the condition Levels of serum neurofilament light chains (sNfL) result from the destruction of central nervous system axons in MS and correlate with the aggressiveness of the disease. **Methods:** In this prospective cohort study, we identified patients with serum collected within 5 years of first MS symptom onset with more than 15 years of clinical follow-up. Levels of sNfL were quantified in patients and matched controls using digital immunoassay. **Results:** Sixty-seven patients had a median follow-up period of 17.4 years (range:15.1-26.1). Median serum NfL levels in baseline samples of MS patients was 10.1 pg/ml, 38.5% higher than median levels in 37 controls (7.26pg/ml, p=0.004). Baseline NfL level was most helpful as a predictive marker to rule out progression; patients with levels less 7.62pg/ml were 4.3 times less likely to develop an EDSS score of ^{3}4 (p=0.001) and 7.1 times less likely to develop progressive MS (p=0.054). Patients with the highest NfL levels (3rd-tertile, >13.2 pg/ml) progressed most rapidly with an EDSS annual rate of 0.16 (p=0.004), remaining significant after adjustment for sex, age, and disease-modifying treatment (p=0.022). **Conclusions:** This study demonstrates that baseline sNfL is associated with long term disease progression.

P.045

Aquaporin-4 and Myelin Oligodendrocyte Glycoprotein Antibody Testing in Calgary: A Quality Improvement Review

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Background: Despite the availability of cell-based assays for aquaporin-4 (AQP4) and myelin oligodendrocyte glycoprotein (MOG) antibodies provincially, outside confirmatory testing is often performed (typically Mayo Clinic Laboratories, USA) when results deviate from expected. It is unknown how often this costly undertaking (upwards of $1,200 CAN) alters diagnosis and management. **Methods:** We undertook a quality improvement project evaluating the concordance/discordance rate with select chart review in all patients who had cell-based AQP4 or MOG IgG antibody testing at Mitogen Diagnostics (MitogenDx; Calgary, Alberta) and subsequent testing at Mayo Clinic Laboratories from as early as 2010 to July 2020. **Results:** Preliminary review of data from January 2016 to July 2020 retrieved 145 paired tests; 10 of which were discordant (concordance rate: 93.1%). Chart review confirmed 9 truly discordant cases, often associated with AQP4 or MOG weak-positive results (7/9 cases) or presumed false negative AQP4 results in prototypical neuromyelitis optica spectrum disorder (2/9 cases). **Conclusions:** Discordant results were rare when comparing MitogenDx local AQP4/MOG antibody test results to those referred out to Mayo Clinic Laboratories, impacting diagnosis and treatment in only 3 patients out of the total. Our results suggest costly outside confirmatory testing of AQP4/MOG antibodies could be reduced.

P.048

International MAGNIMS-CMSC-NAIMS consensus recommendations on the use of standardized MRI in MS

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Background: Standardized magnetic resonance imaging (MRI) guidelines published in 2015 by the Europoean