GRAND PLENARY

GR.1

Standardized approach to direct first pass aspiration technique for endovascular thrombectomy: description and initial experience with CANADAPT

IR Macdonald (Halifax) V Linehan (Halifax) B Sneek (Markham) D Volders (Halifax)*

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Background: Endovascular thrombectomy (EVT) is standard of care for acute ischemic stroke. There is growing evidence that A Direct Aspiration first Pass Technique (ADAPT) is a safe, efficient and effective approach for EVT, offering several advantages. This study describes initial institutional experience in the use of a standardized aspiration only technique: CANADAPT. Methods: Single center prospective cohort study was performed on patients treated for large/medium vessel ischemic stroke. A sequential stepwise aspiration only technique was applied, CANADAPT, consisting of three maneuvers, A, B and C. The reperfusion success rate, number of passes, use of rescue technique, complication rate and procedural cost was determined. Results: 22 patients were included representing M1 (77%), M1/2 (9%), carotid-T (9%) and basilar (5%) occlusions. First pass recanalization was achieved in 50% of patients. A further 4 patients had successful reperfusion with a second pass (total 68% success). 7 patients had stent rescue technique (SOLUMBRA). Of these, 5 patients (22% of total) had successful reperfusion. The cost per procedure was $6,630 ± 1069 for CANADAPT, and $13,530 ± 2706 for SOLUMBRA. Conclusions: CANADAPT represents a standardized approach to aspiration only thrombectomy. This study demonstrates the safety, efficiency and efficacy of this technique in EVT.

GR.2

Obesity and multiple sclerosis severity: a Mendelian randomization study

F Alzamanan (Montreal) Y Ding (Montreal) A Harroud (Montreal)*

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Background: Obesity is increasingly implicated in the development of multiple sclerosis (MS), but its effect on disease disability is less well-established. This study aims to investigate the association between obesity and MS severity utilizing Mendelian Randomization (MR). Methods: Employing a two-sample MR setting, we examined the effects of various obesity measures and adiposity distribution metrics on MS severity. Genetic proxies for body mass index (BMI) were selected from a study of 806,834 participants, with MS severity determined from a genetic study of age-related MS severity scores in 12,584 individuals with MS. Results: The main analysis reveals an association between elevated BMI and increased MS severity ($P = 0.03$). This is supported by a significant effect of whole body fat ($P = 0.04$), aligning with the hypothesis that obesity exacerbates MS disability. Sensitivity analyses suggest minimal heterogeneity and bias, indicating a potential causal effect. Conclusions: Our findings suggest that obesity adversely influences long-term disability outcomes in MS. The convergence of this genetic evidence with some of the prior observational studies strengthens the argument for a causal relationship between obesity and MS severity. These insights highlight obesity as a potentially modifiable risk factor in managing MS, underscoring the importance of weight management in MS treatment strategies.

GR.3

Distinct longitudinal brain atrophy trajectories in parkinson's disease clinical subtypes: insight towards precision medicine

S Fereshtehnejad (Toronto) R Moqadam (Montreal) R Postuma (Montreal) M Dadar (Montreal) A Lang (Toronto) Y Zeighami (Montreal)*

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Background: Parkinson's disease (PD) varies widely across individuals in terms of clinical manifestations and course of progression. We aimed to compare patterns of brain atrophy between PD clinical subtypes using longitudinally acquired brain MRIs. Methods: We used T1-weighted MRIs from Parkinson's Progression Markers Initiative (PPMI) on 134 PD individuals and 60 healthy controls with at least two MRIs. Patients were classified into three clinical subtypes at *de novo* stage using validated subtyping criteria based on major motor and non-motor classifiers (early cognitive impairment, RBD, dysautonomia): mild-motor predominant (n=74), intermediate (n=44), and diffuse-malignant (n=16). Deformation-based morphometry (DBM) maps were calculated and mixed effect models were used to examine the interaction between PD subtypes and rate of atrophy across brain regions over time, controlling for sex and age at baseline. Results: Individuals with 'diffuse malignant' PD showed a significantly higher rate of atrophy across multiple brain regions, including lateral nucleus of the forebrain, precuneus, paracentral lobule, inferior temporal gyrus, fusiform gyrus, and lateral hemisphere of the cerebellum (FDR corrected $p<0.05$). Conclusions: We demonstrated an accelerated atrophy pattern within several brain regions in 'diffuse malignant' PD subtype. These findings suggest the presence of a more diffuse multidomain neurodegenerative process in a subgroup of people with PD, favoring the existence of diverse underlying pathophysiologies.

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