

PLATFORM PRESENTATIONS

ADULT NEUROLOGY (CNS)

A.1

Plasma Chitinase 3-like 1 protein levels in people with Radiologically Isolated Syndrome correlate with choroid plexus volume and subcortical grey matter atrophy

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Background: Radiologically isolated syndrome (RIS) is characterized by incidental MRI findings suggestive of multiple sclerosis in asymptomatic individuals. Emerging blood biomarkers, including neurofilament light chain (NfL), glial fibrillary acidic protein (GFAP), and chitinase 3-like 1 protein (CHI3L1) are promising tools for evaluating neuroinflammation and neurodegeneration. **Methods:** This cross-sectional analysis included 47 individuals with RIS who underwent MRI and plasma biomarker assessments. Plasma levels of CHI3L1, NfL, and GFAP were measured using highly sensitive assays. Correlations between biomarkers and MRI markers, including T1-black holes (BHs), central vein sign (CVS) positive lesions, paramagnetic rim lesions (PRLs), choroid plexus volume (CPV), and thalamic and hippocampal volumes, were analyzed using linear regression. **Results:** Plasma CHI3L1 levels correlated with increased CPV ($\beta = 0.347$, $p = 0.017$) and reduced thalamic ($\beta = -0.309$, $p = 0.035$) and hippocampal ($\beta = -0.535$, $p < 0.001$) volumes. Plasma GFAP levels were associated with BHs, CVS, and PRLs, whereas plasma NfL showed no correlations with MRI measures. **Conclusions:** Plasma CHI3L1 correlates with subcortical grey matter atrophy and CPV increase in RIS, distinct from correlations observed with GFAP or NfL. This suggests that plasma CHI3L1 may reflect neurodegeneration and inflammation in RIS and provide insights into disease activity not captured by other biomarkers.

A.2

Cognitive outcomes of deep brain stimulation depend upon subiculum connectivity

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Background: Recent research has demonstrated that DBS sites in Alzheimer's (AD) and Parkinson's (PD) influencing cognition are functionally connected to the subiculum. However, the results

are mixed, and it is unclear how or if DBS site-subiculum connectivity can be optimized to improve patient cognition. **Methods:** We studied how subiculum connectivity influenced cognitive outcomes in both PD (subthalamic nucleus) and AD (fornix) DBS patients (total $n = 110$). We first confirmed DBS site-subiculum connectivity had opposite cognitive effects in each disease. We next investigated patient factors underlying these opposing effects. Lastly, we related our findings back to clinical practice to guide DBS programming in PD and AD. **Results:** DBS site-subiculum connectivity correlated with cognitive improvement in AD but decline in PD. This was dependent upon hippocampal atrophy; such that higher subiculum connectivity was beneficial when the hippocampus was atrophic but deleterious when it was intact. Finally, we related our findings back to anatomy with cadaveric dissections and present how DBS stimulation can be optimized to improve patient cognition. **Conclusions:** DBS site-subiculum connectivity influences cognition but depends on patient factors. Thus, to optimize cognition based on patient factors, DBS electrodes can be programmed to stimulate subregions with higher or lower subiculum connectivity.

A.3

Comparison of anterior versus posterior circulation stroke patients undergoing thrombectomy: results from the OPTIMISE registry

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Background: Anterior (ACS) and posterior circulation (PCS) stroke patients have different clinical presentations and prognoses, though both benefit from endovascular thrombectomy (EVT). We sought to determine whether ACS and PCS patients treated with EVT differed with regards to treatment metrics and functional outcomes. **Methods:** We retrospectively analysed the Canadian OPTIMISE registry which included data from 20 comprehensive stroke centers across Canada between January 1, 2018, and December 31, 2022. We performed a descriptive analysis of patients divided in two groups (ACS= carotid artery and its branches, PCS= vertebrobasilar system). **Results:** Of the 6391 patients included (5929 ACS and 462 PCS), PCS patients were younger (67 vs. 71.3, $p < 0.001$), more often male (61.9% vs. 48.6%, $p < 0.001$), had longer (in minutes) onset-to-door (362 vs. 256, $p < 0.001$), door-to-needle (172 vs. 144, $p = 0.0016$), and onset-to-puncture (459 vs. 329, $p < 0.001$) times. They were less often thrombolized (39.8% vs. 50.4%, $p < 0.001$), and more frequently underwent general anesthesia (47.6% vs. 10.6%, $p < 0.001$). Successful reperfusion and functional independence at 90 days were similar between the two groups. **Conclusions:** Patients with PCS had worst treatment metrics than ACS.