study, we prospectively validate the prognostic capabilities of a DNA methylation-based predictor and multiomic molecular groups (MG) of meningiomas. Methods: DNA methylation profiles were generated using the Illumina EPICarray. MG were assigned as previously published. Performance of our methylation-based predictor and MG were compared with WHO grade using generalized boosted regression modeling by generating time-dependent receiver operating characteristic (ROC) curves and computing area under the ROC curves (AUCs) along with their 95% confidence interval using bootstrap resampling. Results: 295 meningiomas treated from 2018-2021 were included. Methylation-defined high-risk meningiomas had significantly poorer PFS and OS compared to low-risk cases ($p<0.0001$). Methylation risk increased with higher WHO grade and MG. Higher methylome risk (HR 4.89, 95%CI 2.02-11.82) and proliferative MG (HR 4.11, 95%CI 1.29-13.06) were associated with significantly worse PFS independent of WHO grade, extent of resection, and adjuvant RT. Both methylome-risk and MG classification predicted 3- and 5-year PFS and OS more accurately than WHO grade alone ($\Delta AUC=0.10-0.23$). 42 cases were prescribed adjuvant RT prospectively although RT did not significantly improve PFS in high-risk cases ($p=0.41$). Conclusions: Molecular profiling outperforms conventional WHO grading for prognostication in an independent, prospectively collected cohort of meningiomas.

F.4

Anatomical assessment and comparative analysis of ventricular access points in pterional approach: a cadaveric study

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Background: In early-stage transsylvian aneurysm surgery, achieving brain relaxation is crucial for the safe exposure of aneurysms; however, in cases of tight, hemorrhagic brains, ventricular drainage is often required. Although Paine/Samson initially proposed a ventricular access point in the frontal horn of the lateral ventricle, and numerous points and techniques have been described since, their consistency and success rates have not undergone rigorous evaluation through comparative cadaveric anatomical studies. Methods: We injected 2 cc agar-agar solutions with distinct colors into the lateral ventricles of twelve cadaveric brains, utilizing four described points, followed by refrigeration at 4°C for one hour for each injection. Next, the brains were sectioned in the coronal plane at 2 cm intervals for evaluation. We assessed the efficacy of the injections in reaching the ventricles and measured the ventricular dimensions, in addition to calculating the Evans' index for each brain. Results: Injections at Paine/Samson's point achieved a 100% success rate, followed by Hyunn's point with a 91.6% success rate. The success rates at Temporal point and Park point were 83.3% and 58.3%, respectively. Conclusions: We emphasize the significance of direct ventricle puncture technique and our findings indicate that the classical Paine/Samson point is the most reliable among the evaluated methods.

F.5

A neurotransmitter-dependent mechanism of ependymal cell activation: Insights into a novel therapeutic target for spinal cord injury

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Background: The drivers that activate endogenous ependymal-derived neural stem/progenitor cells (epNSPCs) remain unknown. Understanding the mechanisms that govern the biology of these cells is critical in developing a therapeutic strategy to harness their regenerative potential after injury. Methods: FoxJ1-CreER-tdTomato reporter mice were used for epNSPC lineage tracing. A conditional genetic knock-out mouse line of glutamate-subtype AMPA receptor (AMPAR) subunits in epNSPCs was generated. Electrophysiological properties were assessed using single cell patch clamp and slice culture recordings. For in vivo studies, mice underwent cervical SCI. To examine the effect of positive modulation of AMPARs, mice received the ampakine CX546 or vehicle and underwent electrophysiological testing, behavioural assessment and spinal cord extraction. Results: Glutamate excitotoxicity, a hallmark in the pathogenesis of acute SCI, drives epNSPCs activation via AMPARs. Genetic knock-out of AMPARs in epNSPCs inhibits their activation following SCI. Positive pharmacological modulation of AMPARs after SCI enhances the migration and differentiation of epNSPCs, increases neuronal sparing and improves long-term locomotor/forelimb function. SCI decreases the excitability of corticospinal tract projections, which is improved with positive AMPAR modulation. Conclusions: Glutamatergic signaling via AMPARs is an important mediator of epNSPC activation after injury. Pharmacological targeting of this mechanism can be used to enhance endogenous regeneration and improve recovery post-SCI.

F.6

Opportunities for improvement: understanding drivers of emergency department visits within 90 days of posterior spinal decompression surgery

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Background: Canadian Emergency Departments (EDs) are overburdened. Understanding the drivers for postoperative patients to attend the ED allows for targeted interventions thereby reducing demand. We sought to identify "bounce back" patterns for subsequent QI initiatives. Methods: From April 1, 2016 to March 31, 2022, all provincial ED datasets (EDIS, STAR, Meditech) identified patients presenting within 90 days post-spine surgery. Using Canadian Classification of Health

Interventions codes, laminectomies (1SC80) and discectomies (1SE87) demonstrated the highest ED visit rates. Comprehensive chart reviews were conducted identifying surgical and medical reasons for presentation within this timeframe. Results: Reviewing a cohort of 2165 post-decompression patients, 42.1% presented to the ED (n=912) with 62.8% of these directly related to surgery. Primary reasons included wound care (31.6%), pain management (31.6%), and bladder issues (retention or UTI, 11.0%). Simple wound evaluation constituted 49.7% of wound-related visits, with surgical site infection 37.6% and dehiscence 6.6% accounting for the remainder. Pain-related presentations resulted in 72.3% discharge with additional medications, and 27.7% necessitating hospital admission. New or worsening neurologic deficits were reported in 8.9% of ED visits. Conclusions: These findings illuminate crucial aspects of post-operative care and ED utilization patterns. Prioritizing patient education, pain management, and wound care could help alleviate the national ED crisis.

POSTER PRESENTATIONS

Adult Neurology (CNS/CSC)

Dementia and Cognitive Disorders

P.001

Planning & decision-making in obsessive-compulsive disorder (OCD) through the lens of ERP: a comparative analysis

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Background: This study aimed to investigate the effect of impulsivity on the planning & decision-making of individuals with OCD compared to a control group, focusing on amplitude and latency during the Tower of London (TOL) task. Methods: A sample of a total of 76 (dominantly right-handed & aged between 18-30 yrs) participated. Participants with OCD were assessed with the Y-BOCS & symptom checklist, BIS-11, and the HCs were screened with the GHQ-12. ERP components were measured by using TOL on E-prime 3.0. The amplitude and latency along with the spectral power for each problem-solving task were measured and analyzed. Results: Statistically significant differences were found in the Latency variable in the left frontal area of the brain, indicating distinctive latency patterns in individuals with OCD compared to controls. No statistically significant differences were observed in amplitude or latency for other move sequences. High spectral activity was detected in individuals with OCD for an extended period. Conclusions: Individuals with OCD exhibit higher activity indicative of ambivalence during decision-making which indicates that to overcome impulsive urges, thus they need to put more cognitive effort to maintain the same outcomes. To maintain error-free results obsessive & compulsive behaviors are a necessary evil.

P.002

Distinct neuropsychiatric symptom trajectories in frontotemporal dementia across genetic mutations

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Background: Frontotemporal dementia (FTD) often presents with varying neuropsychiatric symptoms (NPS), which may differ based on genetic mutations. We hypothesized distinct NPS trajectories in FTD progression among carriers of chromosome 9 open reading frame 72 (C9orf72), progranulin (GRN), and microtubule-associated protein tau (MAPT) mutations. Methods: We analyzed 1662 participants from ALLFTD, including 342 C9orf72, 148 GRN, 168 MAPT mutation carriers, and 1004 noncarriers. We categorized participants into four stages based on CDR plus NACC FTLD global scores: 1) Presymptomatic (consistent CDR=0), 2) Early conversion (CDR increasing from 0 to 0.5), 3) Advanced conversion (CDR increasing from 0.5 to ≥1.0), and 4) Symptomatic (CDR>1.0). The Neuropsychiatric Inventory-Questionnaire (NPI-Q) assessed NPS changes, analyzed using a mixed-effects model, accounting for age and baseline scores. Results: Our results indicated similar NPS trajectories in the presymptomatic stage for all groups. Notably, during early conversion, C9orf72 and GRN carriers exhibited significantly higher NPI-Q score increases than MAPT carriers, primarily in psychosis and hyperactivity domains. In later stages, increases in NPS were similar across groups. Conclusions: This study suggests familial FTD progression, particularly in TDP-43 pathology, may involve more severe NPS like psychosis or hyperactivity,