incidence may be much higher. Methods: The Alberta Children's Hospital (ACH) Rescue ECLS program cannulates patients who are then transferred to the partner program at Stollery Children's Hospital. Data was systematically collected from all patients cannulated for Rescue ECLS at ACH October 2011 and May 2023. Neuroimaging (CT, MR) performed after cannulation was reviewed for evidence of ischemic and hemorrhagic strokes and hypoxic-ischemic brain injury. Results: Seventy-one patients were included in the Rescue ECLS cohort. Median age at cannulation was 1.74 years (range 0-17.6 years, 51% female). Survival to hospital discharge was 65%. Primary indication for ECLS included cardiac (42%), respiratory (33.3%), extracorporeal cardiopulmonary resuscitation (ECPR; 23.2%) and trauma (1.4%). Seventy four percent of the cohort underwent neuroimaging, of whom 67% had evidence of neurologic injury including stroke (ischemic 67%; hemorrhagic 50%) or hypoxic-ischemic injury (33%). Risk of neurologic injury did not differ by indication for ECLS. Conclusions: Neuroimaging abnormalities are present in most pediatric patients imaged post-cannulation for Rescue ECLS. Further research into modifiable risk factors for specific ECLS-related brain injuries may help to improve outcomes for survivors.

C.5

Altered inflammatory profiles in critically ill children with neurologic involvement

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Background: More than 1 in 4 children admitted to the pediatric ICU (PICU) have suspected neuroinflammation for a variety of reasons. While often beneficial, uncontrolled inflammation can lead to secondary neurologic injuries and interfere with repair mechanisms. Methods: A prospective cohort study was initiated at Alberta Children's Hospital to evaluate neuroinflammation in children admitted to the PICU. Forty-eight cytokines, chemokines and growth factors collected at multiple pre-determined timepoints were analyzed along with data on clinical trajectory. Preliminary exploratory analyses of patients enrolled January 2022-July 2023 were completed. Results: Fifty-three patients were included in the initial analysis. Encephalopathy (18.9%), hypoxia (17%) and TBI (15.1%) were the most common reasons for enrollment. All groups had temporal alterations in serum cytokines, with primary inflammatory brain diseases having the highest levels of innate inflammation (cytokine storm) on admission and day one compared to other subgroups. There was a trend towards normalization of cytokine levels over time. Conclusions: Temporal profiling of cytokine levels can inform on neuroinflammatory pathways contributing to the clinical course in critically ill children. Further analysis is ongoing with the entire cohort to evaluate longitudinal and between-group differences. Improved understanding of altered neuroinflammatory pathways in this population may assist with rationalizing targeted immunotherapies to improve outcomes.

C.6

Sex differences in neurodevelopmental outcomes and brain development from early-life to 8-years in preterm males and females

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Background: Sex is associated with differences in early outcomes with preterm males at greater risk for mortality and morbidity. The objective of this study was to examine preterm sex differences in neurodevelopmental outcomes and brain development from early-life to 8-years. Methods: A prospective cohort of preterm infants born 24-32 weeks gestation were followed to 8-years with standardized measures. MRI scans were performed after birth, term-equivalent age and 8-years. Associations between sex, risk factors, brain volumes, white matter fractional anisotropy (FA) and outcomes were assessed using generalized estimating equations. Results: Preterm males (N=83) and females (N=72) had similar risk factors, brain injury and pain exposure. Sex was a predictor of cognitive scores (P=0.02) and motor impairment (P=0.03), with males having lower cognitive scores and higher motor impairment over time. There was a sex effect for FA (P=0.04), with males having lower FA over time. There were significant sex-brain injury and sex-pain interactions for cognitive and motor outcomes. Conclusions: In this longitudinal study, preterm males had lower cognitive scores and greater motor impairment, which may relate to differences in white matter maturation. Effects of brain injury and pain on outcomes is moderated by sex, indicating a differential response to early-life adversity in preterm males and females.

Clinical Neurophysiology (CSCN)

D.1

Efficacy, safety, and tolerability of subcutaneous efgartigimod in chronic inflammatory demyelinating polyneuropathy: results from the ADHERE trial

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Background: Efgartigimod, a human immunoglobulin G (IgG)1 antibody Fc fragment, blocks the neonatal Fc receptor,