modalities recording simultaneously. No seizure was identified by either modality in 23 recordings. Seizures were identified in 4 vEEG recordings; the aEEG partially identified these seizures.

- aEEG specificity of 0.87, negative predictive value 0.8, sensitivity 0.44 and positive predictive value 0.57
- Bedside clinician contacted a neurologist 9 times; in 2 cases, this prevented unnecessary treatment.

Conclusions: In this small sample, aEEG had good specificity for ruling out seizures, but low sensitivity for detecting them. The new combined pathway may prevent unnecessary treatment.

P.056

Combined conventional and amplitude-integrated EEG monitoring in neonates: a prospective study

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Background: Seizure monitoring via amplitude-integrated EEG (aEEG) is standard of care in many NICUs; however, conventional EEG (cEEG) is the gold standard for seizure detection. We compared the diagnostic yield of aEEG interpreted at the bedside, aEEG interpreted by an expert, and cEEG. **Methods:** Neonates received aEEG and cEEG in parallel. Clinical events and aEEG were interpreted at bedside and subsequently independently analyzed by experienced neonatology and neurology readers. Sensitivity and specificity of bedside aEEG as compared to expert aEEG interpretation and cEEG were evaluated. **Results:** Thirteen neonates were monitored for an average duration of 33 hours (range 15-94). Fourteen seizure-like events were detected by clinical observation, and 12 others by bedside aEEG analysis. None of the bedside aEEG events were confirmed as seizures on cEEG. Expert aEEG interpretation had a sensitivity of 13% with 46% specificity for individual seizure detection (not adjusting for patient differences), and a sensitivity of 50% with 46% specificity for detecting patients with seizures. **Conclusions:** Real-world bedside aEEG monitoring failed to detect seizures evidenced via cEEG, while misclassifying other events as seizures. Even post-hoc expert aEEG interpretation provided limited sensitivity and specificity. Considering the poor sensitivity and specificity of bedside aEEG interpretation, combined monitoring may provide limited clinical benefit.

P.057

Solely neonatal hypoxic ischemic encephalopathy or more? A study examining genetic predisposition towards a clinical picture of HIE

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Background: Neonatal hypoxic ischemic encephalopathy (HIE) is a clinical phenomenon, that often results from pre or perinatal reduced cerebral blood flow and/or hypoxemia. However, in some cases, neonates present with HIE without significant risk factors or have an unusual clinical course. With the advent of advanced genetic testing, we aimed to explore if such infants had genetic risk factors predisposing them to an HIE-phenotype. **Methods:** We reviewed 206 charts of infants meeting local protocol criteria for moderate to severe HIE at Level III NICU's in Calgary, Alberta. Of these, 27 patients had genetic testing such as microarray, whole exome sequencing, or gene panels. **Results:** Six/twenty-seven patients had genetic mutations; two CDKL5 mutations (protein kinase), one CFTR mutation (cystic fibrosis), one PDH deficiency, one CYP21A2 mutation (congenital adrenal hyperplasia), and one ISY1 (VUS; pre-mRNA splicing). Two patients had noted difficult deliveries and four had minor complications, but all were out of keeping with the severity of presumed HIE. **Conclusions:** This preliminary study demonstrates a possible association between genetic co-morbidities and predisposition towards HIE in the context of a relatively uneventful pre/perinatal course. Earlier identification of genetic etiology, recognized by a discrepancy between risk factors and clinical presentation, could aid in treatment decisions and outcome prognostication.

Neuroimaging

P.058

Tuberous sclerosis complex associated intracranial abnormalities identified in utero via antenatal ultrasound

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Background: Tuberous sclerosis complex (TSC) is characterized by growth of benign tumors in the skin, brain, kidneys, lung and heart. Prognosis is mostly determined by the extent of brain involvement as tumors in the brain lead to seizures and cognitive problems. Epilepsy is highly associated with the cognitive abnormalities in TSC and recent evidence suggests anti-epileptic treatment before onset of seizures reduces epilepsy severity and risk of mental retardation. Screening and potential identification of TSC in utero via ultrasound would allow for prophylactic seizure management in these children. The sensitivity of antenatal ultrasound in the identification of brain abnormalities associated with TSC has not yet been published. In this case, we review the antenatal ultrasounds of a child with TSC for evidence of brain abnormalities in utero. **Methods:** Retrospective review **Results:** Retrospective review of antenatal ultrasounds showed some evidence of intracranial abnormalities. Ultrasound at 34 weeks and 4 days gestation revealed an echogenic density in the right ventricle that correlates with SEGA on post-natal MRI brain at 12 days of life. Post-natal brain ultrasound at 37 weeks revealed multiple cranial abnormalities not seen in utero. **Conclusions:** There are limitations to antenatal neurosonography in the detection of intracranial abnormalities associated with TSC.