Children's Hospital collected baseline data on patients referred for concerns of attention deficits co-occurring with diagnosed neurologic illness/injury, or neurodevelopmental disorder (NDD). **Methods:** The Behaviour Rating Inventory of Executive Function (BRIEF-2), Behaviour Assessment System for Children (BASC-3), Parenting Stress Index (PSI-4) and medical and past treatment information were collected on initial clinic visit for patients aged 5-15 years. **Results:** BRIEF-2 Global Executive Composite demonstrated 88.9% of children had clinically elevated scores. Clinically significant scores were observed in 55.5% for BASC-3 Adaptive Skills index and 40% of parents in PSI-4 Total Stress scores. **Conclusions:** Children with neurologic illness/NDDs are at high risk of clinical impairments in attention and EF. In children referred for attention and behavioural regulation, there is clinically significant increased reporting of executive function impairment out of proportion to other behavioural difficulties. The clinic aims to improve overall functioning through treatment of unmanaged attention and EF deficits.

CLINICAL NEUROPHYSIOLOGY (CSCN)

EPILEPSY AND EEG

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Discriminating sharp-wave ripples and interictal epileptiform discharges in patients with mesial temporal epilepsy using intracranial EEG recordings

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Background: Interictal epileptiform discharges (IEDs) are known as epilepsy biomarkers for seizure detection, and It is essential for clinicians to detect them from from physiological events with similar temporal frequency characteristics. **Methods:** We analyzed the SEEG recordings obtained from patients with medically-resistant epilepsy (MRE) implanted with DE at the Western University Hospital Epilepsy Unit. The data were cleaned, denoised, montaged and segmented based on the clinical annotations, such as sleep intervals and observed Ictals. For event detection, the signal waveform and its power were extracted symmetrically in non-overlapping intervals of 500 ms. Each waveform's power across all detected spikes was computed and clustered based on their energy distributions. **Results:** The recordings included thirteen sessions of 24 hours of extracellular recordings from two patients, with 312 hours extracted from four hippocampus electrodes anterior and posterior hippocampus. Our results indicate IEDs carrying the most different characteristics in the bands [25-75] Hz; SWR, on the other hand, are distributed between [80-170] Hz. **Conclusions:** Our algorithm detected and successfully distinguished IED from SWRs based on their carrying energy during non-sleep periods. Also, the most powerful spectral features that they were distinguished from occur in [15-30] Hz and [75-90] Hz.

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Incorporation of Objective Structured Clinical Examination into EEG/Epilepsy Fellowship Training

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Background: For over 40 years, the objective structured clinical examination (OSCE) has been a part of medical education, eventually finding its way into most aspects of clinical training and evaluation. However, the EEG/epilepsy fellowship training has not classically involved OSCE evaluations. **Methods:** We designed and implemented a formative OSCE for pediatric and adult EEG/epilepsy fellows in Montreal, Quebec, Canada. The examination was offered in French and English. Stations included: technical issues, short cases, a long case, and communication. We solicited post-examination feedback from all participants via anonymous electronic survey after they had completed the Canadian Society for Clinical Neurophysiology (CSCN) EEG examination. We asked questions surrounding utility of the examination, areas for improvement, and whether the participant had been successful in passing the CSCN examination. **Results:** Six fellows took the initial formative OSCE. All six reported passing the subsequent CSCN examination. All participants reported the OSCE as useful in examination preparation. The communication station was consistently ranked as the least useful station, an unsurprising finding given that the CSCN examination does not involve a communication component. **Conclusions:** OSCE is an effective tool in assessment of the level of competence of EEG/epilepsy fellows, and as preparation for the CSCN EEG examination.

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Ultra-high field 7-Tesla magnetic resonance imaging and electroencephalography findings in epilepsy

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Background: Assessment of patients for temporal lobe epilepsy (TLE) surgery requires multimodality input, including EEG to ensure optimal surgical planning. Often EEG demonstrates abnormal foci not detected on clinical MRI. 7T MRI provides improved resolution and we investigated its utility to detect potential abnormalities associated with EEG. **Methods:** Images were acquired on 7T MRI scanner (N=13) in oatients with TLE. Evaluation of 7T imaging for focal abnormalities was performed. Correlation of 7T MRI findings with EEG of focal slowing or interictal epileptic spikes (IEDs) and seizures was performed. **Results:** Assessment of 7T MRI demonstrated concordance with TLE in 8/13 cases. Three cases exhibited abnormal 7T MRI abnormalities not detected by 1.5 T MRI. Eleven out of 13 cases had EEG findings without anatomic correlates on MRI, with IEDs localizing to contralateral temporal, frontal, and parieto-occipital lobes. 7T images did not reveal focal anatomical abnormalities to account for the EEG findings in these patients. **Conclusions:** To our knowledge, this is the first study to