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Samantha Gilg

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Case: A 17-year-old adolescent male presented with subacute diplopia and gait ataxia. He has a history of prematurity, attention-deficit, and hyperactive disorder (ADHD) and several congenital anomalies, and a family history of autoimmune diseases. Cerebrospinal fluid analysis showed a protein of 62 (range 15-45 mg/dl) and two oligoclonal bands. The brain and spine MRI findings and the steroid-dependent course suggested CLIPPERS with disease exacerbation upon corticosteroid withdrawal. After extensive workup, the diagnosis was made, excluding other etiologies such as infectious, neoplastic, and autoimmune conditions. We plan to treat him with rituximab and follow him up longitudinally. We obtained patient consent to use this case for educational purposes.

Conclusion: CLIPPERS presents distinctive clinical and MRI findings. Induction of remission by steroids should be followed by immunosuppression. B-cell depletion might effectively treat this condition by altering T cells' subset composition, activation, and function. Longitudinal follow-up is recommended for the possibility of an alternative diagnosis.

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Negative Is Not Always Negative: Improving Outcomes in Scalp Negative Seizures Using Intracranial EEG
Isha Snehal1, Arun Swaminathan1
1Department of Neurological Sciences, College of Medicine, University of Nebraska Medical Center

Mentor: Corey Georgesen
Program: Dermatology & Neurology
Type: Case Report

Background: Refractory seizures sometimes arise from deeper foci within the brain. When difficult to detect on scalp EEG, chances of successful epilepsy surgery are reduced. Two patients had scalp EEG negative seizures, got intracranial EEG and did well with responsive neurostimulation. Patient consent was obtained to utilize these cases for educational purposes.

Case: Patient I is a 29 yo F, with prior right temporal lobectomy, s/p VNS and 5-year seizure freedom before recurrence. MRI and PET showed signs of prior surgery. Scalp EEG and MEG were unremarkable.
Neuropsychological testing showed diminished core verbal function and memory. Wada testing revealed left dominance for language and memory. Stereotactic EEG captured focal impaired awareness seizures and focal aware seizures with early involvement of the right posterior cingulate (RPC) and right posterior insular (RPI) regions. Brain mapping/cortical stimulation revealed motor function in RPC and sensory in RPI regions precluding resection/laser ablation. RNS implantation in the RPC and RPI regions achieved seizure freedom 4 months after implantation.

Patient II is a 33 yo F, who would wake up, laugh/curse, vocalize and show left (focal) predominant hyper motor movements progressing to tonic-clonic convulsion. MRI brain showed a venous angioma. PET revealed decreased uptake in right posterior parietal, frontal and right inferior parietal regions. MEG was unremarkable. Neuropsychological testing showed weak bi-frontotemporal systems. IAP/Wada showed left dominance for language and memory. SEEK captured hyper motor seizures with early involvement of right orbito frontal (ROF) with spread to right hippocampal (RH) regions. RNS implantation in the ROF and RH regions achieved 30% seizure reduction 3 months post implantation.

Conclusion: Scalp EEG negative seizures remain challenging to treat. SEEG delineates seizure network and localizes the onset zone. This understanding will better help treat patients using neuromodulation or targeted therapies like ablation.

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Use of Carotid Embolic Protection Devices for Left Atrial Myxoma Resection in a Pediatric Patient
Samantha Gilg1, Ali Ibrahimiiye2, Jeffrey Delaney1
1Department of Pediatric Cardiology, College of Medicine, University of Nebraska Medical Center
2Department of Cardiothoracic Surgery, College of Medicine, University of Nebraska Medical Center

Mentor: Jeffrey Delaney
Program: Pediatric Cardiology
Type: Case Report

Background: Carotid embolic protection devices are used in adults for manipulation of atherosclerotic lesions with concern for embolization. This is not a routine practice done in pediatrics as thromboembolic sequelae is not a commonly encountered entity.

Case: A 14-year-old girl presented with left foot numbness and pallor with CT angiography showing a left femoral and popliteal arterial thrombus. She underwent thrombectomy of the left popliteal artery with restoration of flow. Echocardiogram revealed a large heterogeneous mobile mass in the left atrial appendage measuring 2 x 2 cm consistent with a myxoma requiring resection.

Prior to sternotomy, a 6Fr sheath was placed in the left femoral artery and a catheter was advanced to the right carotid artery. Angiography showed a vessel measuring 5-6 mm so a 6mm SpiderFX embolic protection device was deployed. The same process was completed in the left carotid artery. The sternotomy and operative resection of the left atrial mass was performed uneventfully on cardiopulmonary bypass after which the retrieval catheter was advanced and both carotid sleeves were removed. Direct inspection of the baskets showed no significant embolic material present. Consent was obtained to use this case for educational purposes.

Conclusion: This case represents a unique presentation of a left atrial myxoma in a teenager with a limb threatening embolic event. Carotid embolic protection devices are not commonly utilized in pediatrics but we report this case, which utilized these devices in a hybrid approach. We also believe that there are other indications in which utilizing these devices would be beneficial in pediatrics.

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Physician Awareness of Fertility Awareness-Based Methods
Francesca Ursua

Mentor: Stephen Cagle
Program: Family Medicine
Type: Original Research

Background: There is a knowledge gap regarding fertility and fecundity. Family physicians are uniquely positioned to educate patients on these topics due to their longitudinal care platform from birth to death. Fertility Awareness Based Methods (FABM’s), or Natural Family Planning, can increase understanding of fertility and fecundity.

Methods: Fourteen family medicine residents were provided the survey in Figure 1 before and after watching a FABM video lecture. A one-sample, paired t-test was used to compare survey results.

Results: There was a 100% response rate for the initial surveys and a 43% response rate for the conclusion surveys. Difference in level of understanding of the various types of FABM’s before ($M = 1.4$, $SD = 0.55$) and after ($M = 3.6$, $SD = 0.55$) was significant ($t(4) = -5.88$, $p < .01$). Difference in level of comfort counseling patients on FABM’s in outpatient visits before ($M = 1.2$, $SD = 0.52$) and after ($M = 3.4$, $SD = 0.52$) was significant ($t(4) = -5.88$, $p < .01$). Difference in level of knowledge of evidence for FABM’s before ($M = 1.2$, $SD = 0.52$) and after ($M = 3.6$, $SD = 0.55$) was significant ($t(4) = -5.88$, $p < .01$).

Conclusion: Family physicians can fill a knowledge gap regarding fertility and fecundity in the patient population using FABM’s due to their longitudinal care platform for patients. There is an overall low level of understanding of FABM, which might be improved with a specific tool or training curriculum.

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