Focal cortical dysplasia is a malformation of cortical development, which is the most common cause of drug resistant epilepsy in the pediatric population [1].

A qualitative research investigated factors that guide physicians' choices for minimally invasive and neuromodulatory interventions as alternatives to conventional surgery or medical management for pediatric drug-resistant epilepsy. North American physicians were recruited to one of 4 focus groups at national conferences. Discussions were analyzed using qualitative content analysis. A pragmatic neuroethics framework was applied to interpret results. Discussions revealed 2 major thematic branches: (1) clinical decision making and (2) ethical considerations. Under clinical decision making, physicians emphasized scientific evidence and patient candidacy when assessing neurotechnologies for patients. Ongoing seizures without intervention was important for safety and neurodevelopment. Under ethical considerations, resource allocation, among other financial considerations for technology adoption, were considerable sources of pressure on decision making. Access to neurotechnology was a salient theme differentiating Canadian and American contexts. When assessing novel neurotechnological interventions for pediatric drug-resistant epilepsy, physicians balance clinical and ethical factors to guide decision making and best practice [2].

Case series

A study included a cohort of 231 children (1-18 years) with focal drug-resistant epilepsy who underwent MEG as a part of their presurgical workup. Characteristics of MEG observations were described in all children. The concordance and agreement of Magnetic Source Imaging (MSI) of interictal discharges (IED) was estimated with either of the 3 subgroups - MRI lesion; presumed epileptogenic zone (EZ); or resection cavity. In operated children group, MEG dipole characteristics between good and poor outcome groups were assessed.

Results: A total of 153 cases (66.2%) showed frequent IEDs (60 spikes/60 min). Of the 173 cases where MSI showed clusters (74.9%), 151 had lesions and 22 were non-lesional. amongst patients with lesional epilepsy and MEG clusters, class I concordance (MEG localization either completely included or overlapped at least 60% with the MRI lesion) was seen in 60.92% with a Cohen's kappa of 0.608. In non-lesional epilepsy, class I concordance of MEG with presumed EZ was found in (81.81%) with an agreement of 0.317. Fifty-three children underwent surgery of whom 39 (73.58%) showed a good outcome (Engel I). In operated children, concordance between MEG focus and resection cavity was observed in 23 (58.97%) with good outcome and in 12 (86.72%) with poor outcome with no significant difference ($p>0.05$). However, MEG cluster regular organization and clusterectomy are associated with good seizure outcome postoperatively ($p< 0.05$). Presence of scatters were associated with poor outcome ($p<0.05$) in children with focal cortical dysplasia.

MEG provides useful information that can serve as a biomarker for prognosticating the surgical outcome in pediatric epilepsy. Cluster removal and regular cluster organization shows predictive power in post-surgical prognostication in children and the presence of scatters predicts poor outcome in children with focal cortical dysplasia [3].

1)
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2)
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3)

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