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Extra-temporal lobe Epilepsy surgery in children

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Frontal Lobe Epilepsy (FLE) is the second most common type of localization-related epilepsy that undergoes surgical treatment, and probably the most challenging in terms of medical and surgical treatment. Posterior Cortex Epilepsy (PCE) surgery accounts for about 20% in large pediatric series and its diagnostic complexity has been emphasized in literature. We present an exclusively pediatric patient population – age at surgery of less than 16 years - with at least 2 years of postoperative follow up, consisting in:

- A group of 85 children who underwent surgery for pharmaco-resistant FLE with tailored resections located strictly within the anatomical limits of the FL, and
- A group of 70 children who received resections in the posterior part of the brain, namely in the parieto-occipital lobes and the occipital border of the temporal lobe, for pharmaco-resistant PCE.

Thirty-eight percent of patients necessitated an invasive pre-surgical evaluation with Stereo- EEG. Seizure freedom (Engel class I) was achieved by 74% of the FLE group and 86% of the PCE group. Clinical characteristics, global outcome and prognostic elements of seizure outcome of these two distinct populations will be discussed.

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Comparing cortical auditory processing in children with typical and atypical BECTS: Electrophysiological evidence of the role of NREM sleep abnormalities

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Benign Epilepsy with Centro-Temporal Spikes (BECTS) is the most common idiopathic childhood focal epilepsy. Many studies have shown neuropsychological difficulties in BECTS children, despite a normal intelligence, involving memory, language and attention, sometimes relating them to the frequency of Non-Rapid Eye Movement (NREM) sleep Interictal Epileptiform Discharges (IED). Moreover, the atypical evolutions of BECTS form a spectrum of conditions comprising Atypical BECTS and suggest that the ongoing nocturnal activity specifically determines the neuropsychological deficit whose degree and severity depend on the extent of awake and sleep activity, and on the predominant discharge localization. In Typical and Atypical BECTS, the transitory neuropsychological deficits related to sleep IED can become enduring despite EEG and seizure control. The nature of this trouble has been supposed to be a short-term form of language-related memory deficit attributed to dysfunction of temporal areas, so much affected by increasing degrees of NREM IED to cause a persistent risk for learning disorders. The use of electrophysiological measures beside the EEG, such as the cognitive evoked-potential Mis-Match Negativity (MMN) detecting auditory discrimination, can provide clues about the neurobiological substrate of the neuropsychological deficits. Moreover, results obtained by the recording of MMN procure suggestions for neuropsychological diagnosis and treatment. The early (i.e., during the developmental sensitive periods) detection of auditory deficit can reduce the risk of further developmental disorders, such as learning disorders.

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