AAP Case Report

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Topic
Neuronal Migration Disorder

Case Diagnosis
The Importance of Early Developmental Intervention on a rare case of Neuronal Migration Disorder: A Case Study.

Case Description

A 14-month-old female with a previous history of infantile spasms presented to clinic for concerns of a dystonic right upper extremity (RUE). At six weeks, the patient developed infantile seizures with postictal disorientation, and was treated with levetiracetam. Abnormal pre-seizure activity was present on EEG, while MRI brain revealed poly-micro gyri with calcified banding and leptomeningeal enhancement diagnostic for neuronal migration disorder (NMD). Notable on examination was a medial right winged scapula, pectoral spasticity graded 2/4, and favoring LUE movement when reaching for objects. Her RUE was postured in flexion with a radially deviated fist. She started early interventional therapies at 6 weeks old and has achieved timely gross, fine, cognitive, and social milestones with early intervention therapy. She was to continue occupational, physical, and speech therapy and fitted for a right wrist/arm theratog splint, with follow up in 6 months.

Discussions

Neuronal migration disorder (NMD) arises from abnormal tracking of neurons during embryonic development. This disturbance during neurogenesis may lead to neural circuits to not form and organize properly, leading to an increased risk of seizures and dystonia. The most common and nearly universal symptom of NMD is intractable epilepsy. As management of epilepsy is paramount once controlled therapy should not be disregarded. Early developmental intervention after birth may dramatically reduce cortical malformations and help restore neuronal patterning, leading the neonatal brain to reactivate cellular migration through neuroplasticity. We emphasize the rarity of this NMD case and that early intervention programs may improve functions needed for early development. Despite her initial poor prognosis, she was able to roughly achieve all developmental milestones, apart from speech at the 6-month milestone.

Conclusion
We present, the first reported case of neuronal migration disorder with emphasis and utilization on early developmental intervention for infants with neurological migration disorders.

References:

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Image 1:

https://www.ncbi.nlm.nih.gov/books/NBK1329/bin/poly-Image001.jpg

Image 2:

https://upload.wikimedia.org/wikipedia/commons/thumb/1/1f/Polymicrogyria.jpg/1024px-Polymicrogyria.jpg