

Neuroimaging Patterns in Vigabatrin-Related Toxicity

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Purpose

Up to 21% of children on vigabatrin treatment may demonstrate abnormalities on brain MRI. These have been reported as bilateral, symmetric, and reversible, involving the deep nuclei and brainstem. **We aimed to characterize the imaging findings in pediatric vigabatrin-related neurotoxicity in detail to identify any diagnostic patterns.**

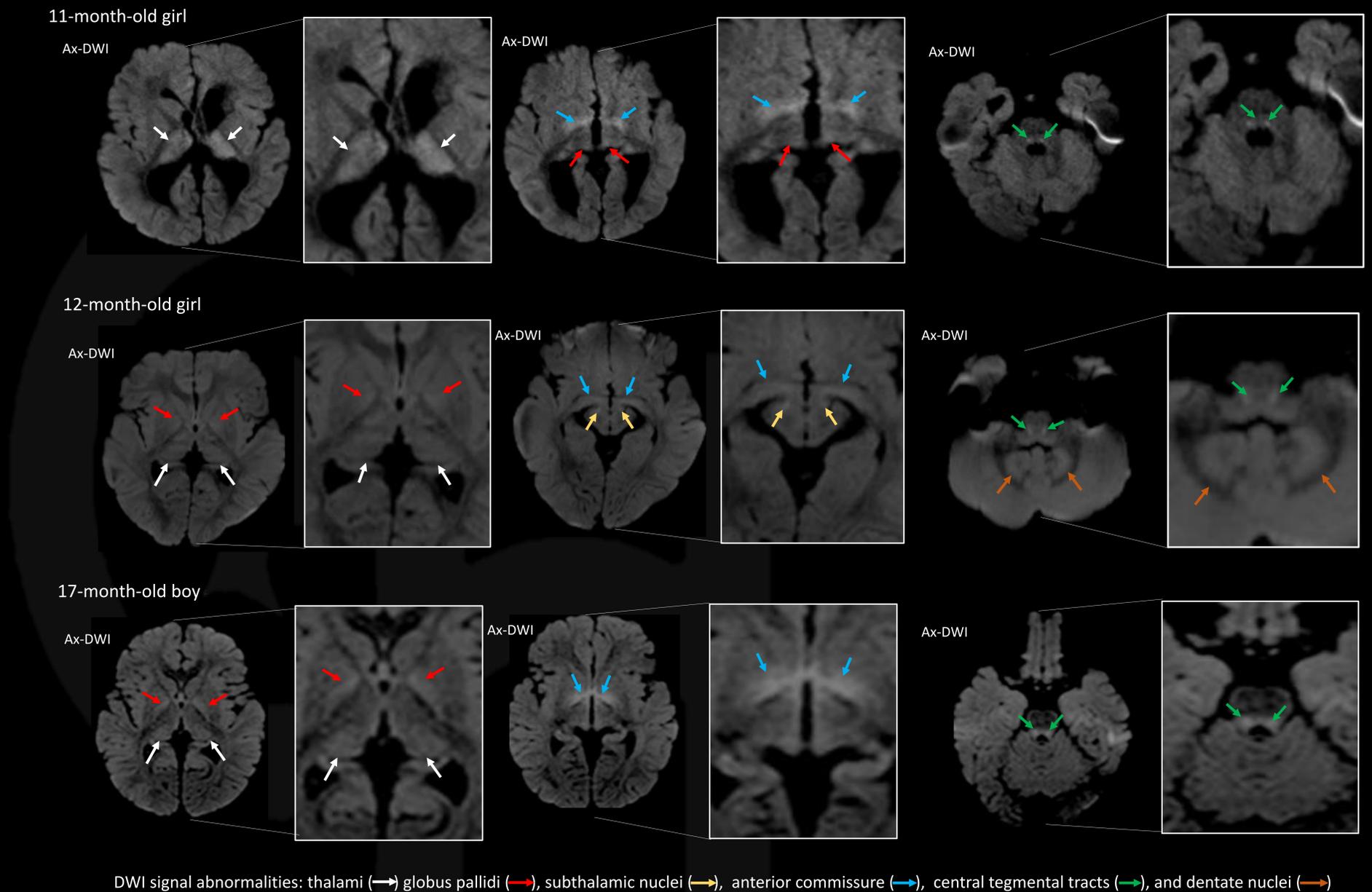
Methods

We evaluated 20 children with a history of refractory seizures treated with vigabatrin who and underwent brain MRI at our institution. A pediatric neuroradiologist assessed images on T2-W/FLAIR and DWI and categorized the location of any hyperintense lesions by location and whether they demonstrated restricted diffusion.

Results

The 20 patients had a mean age 24.7 ± 24.9 months. Proportions of involved locations are presented below:

CNS structure	T2 hyperintense (%)	Restricted diffusion (%)
Globus pallidi	70	70
Thalami	70	70
Subthalamic nuclei	60	60
Midbrain	65	55
Central tegmental tracts	60	55
Pons	60	50
Hypothalamus	60	35
Medulla	55	50
Anterior commissure	35	60
Dentate nuclei	30	20
Hippocampi	10	10



Conclusion

Vigabatrin-related changes in the CNS typically affect the globus pallidi, thalami and midbrain, with frequent characteristic signal abnormalities also present in the subthalamic nuclei and central tegmental tracts. This characteristic pattern of signal alteration should alert radiologists reading MRI scans in young children being treated for seizure, to the possibility of vigabatrin neurotoxicity.