Teaching *NeuroImages*: Wallerian degeneration in evolving pediatric stroke

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Figure MRI at presentation and at 18 days

Imaging at presentation reveals right middle cerebral artery territory diffusion restriction on axial (A) and coronal (B) sequences without obvious white matter involvement. Two weeks later, subacute basal ganglia stroke is seen with evidence of diffusion restriction of right-sided corticospinal tracts on axial and coronal (C-H) sequences, suggesting wallerian degeneration.

An 8-year-old girl presented with acute hemiparesis and facial palsy. MRI demonstrated right middle cerebral artery territory infarction (figure, A and B), secondary to traumatic dissection. Following

discharge, multiple visits for nonspecific neurologic symptoms prompted repeat short-term imaging, initially concerning for right midbrain infarction (figure, C-H).

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Wallerian anterograde demyelination following neuronal injury is a neuropathologic phenomenon with 4 radiologic phases. Conventional MRI reveals no changes 2–4 weeks postictus; however, diffusion-weighted imaging (DWI) reveals white matter signal changes with apparent diffusion coefficient correlate.^{1,2} DWI changes in white matter tracts ipsilateral to infarct should prompt consideration for wallerian degeneration instead of new infarction.

AUTHOR CONTRIBUTIONS

Andres Jimenez-Gomez contributed to case preparation, literature review, and editing. Robert Clinton Stowe contributed to imaging selection, literature review, and manuscript editing.

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DISCLOSURE

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