Teaching NeuroImages: Restricted diffusion in the corpus callosum after traumatic diffuse axonal injury

Brian L. Edlow, MD
Eli L. Diamond, MD, MPhil

A 19-year-old woman was hit by a car and found to be somnolent and inattentive on neurologic examination. Head CT demonstrated bifrontal traumatic microbleeds (figure), suggesting hemorrhagic diffuse axonal injury (DAI). MRI performed 7 days later showed extensive diffusion restriction in the genu of the corpus callosum extending into the bifrontal white matter. Follow-up MRI on day 27 confirmed resolution of these signal changes. The time course for diffusion restriction in DAI is variable, persisting up to 18 days post-trauma. Its pathogenesis has yet to be fully elucidated, with potential etiologies including swelling of sheared axons, Wallerian degeneration of interhemispheric neurons, and microvascular injury causing ischemia.

REFERENCES

Address correspondence and reprint requests to Dr. Brian L. Edlow, Brigham and Women’s Hospital, Harvard Medical School, Department of Neurology, 75 Francis Street, Boston, MA 02115 bedlow@partners.org

From Brigham and Women’s Hospital, Harvard Medical School, Boston, MA.

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