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Visual Diagnosis

An Atypical Case of Anti-N-Methyl-D-Aspartate Receptor Encephalitis

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Patient Description

This 12-year-old girl presented with a seizure, followed by slurred speech, word-finding difficulty, and abnormal mouth and tongue movements. She had been healthy until age five years, when she developed seizures and coma requiring prolonged hospitalization for presumptive viral encephalitis, with subsequent residual cognitive difficulties; no testing was done for autoimmune encephalitis. She subsequently had right hemiparesis at age seven years that resolved with physical therapy. On initial evaluation, she exhibited word-finding difficulties, dysarthria, orolingual dyskinesia, and left dysmetria. Cranial magnetic resonance imaging showed bilateral nonenhancing fluid-attenuated inversion recovery hyperintensities involving cerebellar hemispheres and tonsils without diffusion restriction, unchanged since initial imaging at age five years (Figs 1 and 2). With a history of encephalitis without a definitive diagnosis, orolingual dyskinesia, and nonspecific cerebellar abnormalities on neuroimaging, the initial differential included autoimmune encephalitis. Serum and cerebrospinal fluid anti-N-methyl-D-aspartate receptor (anti-NMDAR) antibodies were positive. She received intravenous methylprednisolone, intravenous immunoglobulin, and rituximab, with resolution of her dyskinesia, speech difficulties, and seizures. An evaluation for malignancy revealed three hepatic lesions, which upon biopsy showed focal nodular hyperplasia. This type of lesion is unusual in children, representing only 0.02% of all pediatric tumors, but does not undergo malignant transformation and generally remains stable or decreases in size.[1] We decided to monitor the lesions instead of resecting them, given the natural history of the lesions and the lack of reported association of anti-NMDAR encephalitis with liver tumors and because her condition improved.

Discussion

Although this girl had some common features of pediatric anti-NMDAR including seizures, dyskinesia, and magnetic resonance imaging abnormalities,[2,3] her course is unusual because she experienced a spontaneous recurrence of symptoms several years after her initial illness. We propose two hypotheses that would explain this unusual clinical course. The first possibility is that she did have viral encephalitis at age five years and subsequently developed anti-NMDAR antibodies. New development of anti-NMDAR antibodies not found at initial presentation has been reported in patients with viral encephalitis.[4,5] However, unlike in ourpatient, these individuals had either ongoing clinical deterioration or clinical relapse shortly after initial treatment. The other, more likely, possibility is that she had

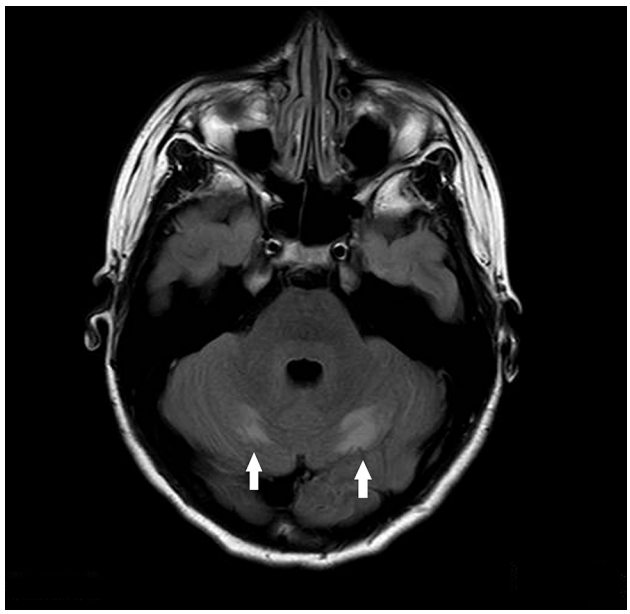

FIGURE 1.
Axial fluid-attenuated inversion recovery image showing cerebellar hyperintensities (arrows).

Conflicts of Interests: J.D. is on the editorial boards of Pediatric Neurology and Journal of Child Neurology and has received grants from the Epilepsy Foundation of Greater Los Angeles. E.J. has nothing to disclose.

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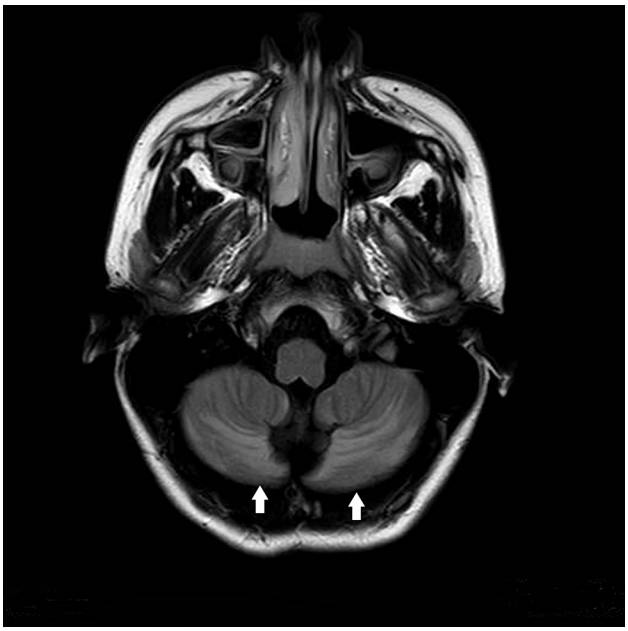

FIGURE 2.
Axial fluid-attenuated inversion recovery image showing cerebellar hyperintensities and volume loss (see arrows).

anti-NMDAR encephalitis all along. Some patients with anti-NMDAR encephalitis improve spontaneously without immunotherapy, only to relapse later.[6] A high index of suspicion for an alternative diagnosis must be maintained in individuals with a recurrence of "viral" encephalitis, including when classic features are not present.

Author contributions: E.J. obtained a signed informed consent from parent and wrote the first draft of the manuscript; J.D. was the senior author, edited the first draft, and provided the figures.

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