Teaching NeuroImage: Nitromethane-Induced Acute Reversible Encephalopathy

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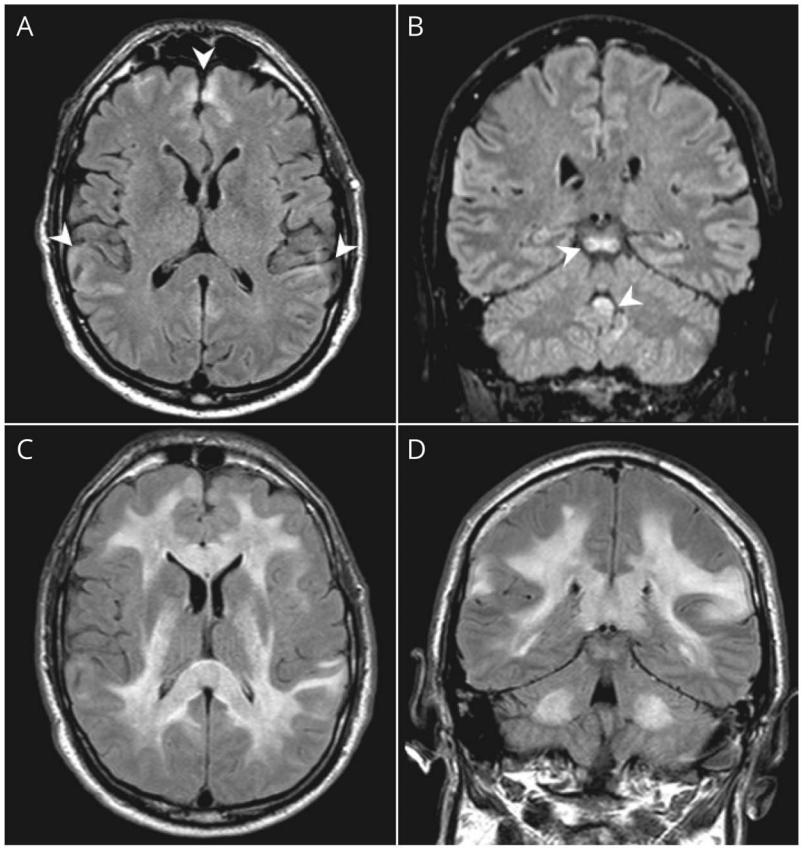
Figure 1 Brain MRI, Axial and Coronal Fluid-Attenuated Inversion Recovery Images



Brain MRI 2 days after admission (A, B) shows multifocal signal abnormalities in the gray matter of both cerebral hemispheres (arrowheads in A), quadrigeminal plate, and cerebellum (arrowheads in B). The follow-up brain MRI (C and D), performed during the 10th day of hospitalization, shows partial resolution of the gray matter lesions and development of extensive vasogenic brain edema.

A 60-year-old man presented to the emergency department reporting that he accidently swallowed a sip (about 20 mL) of nitromethane he used as fuel for his racing bikes. Over the following 2 days, he became stuporous, experienced tonic-clonic seizures, and ultimately fell into a coma. Brain MRI showed multifocal gray matter T2/fluid-attenuated inversion recovery hyperintensities consistent with previously published findings of acute nitromethane encephalopathy[1] (Figure 1, A and B).

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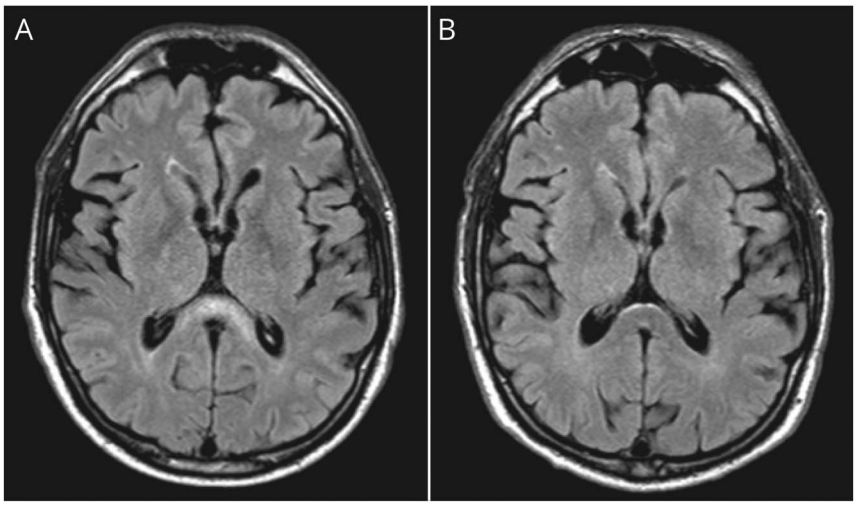
Figure 2 Brain MRI, Axial Fluid-Attenuated Inversion Recovery Images



MRI at discharge (A) shows reabsorption of the vasogenic edema, except for a faint residual hyperintensity of the splenium, and resolution of the gray matter lesions; 6 months later, a follow-up MRI (B) is normal.

After 1 week, the follow-up MRI showed massive vasogenic brain edema (Figure 1, C and D). Nonetheless, the patient's condition was improving with supportive therapy only. One month after his admission, he was back to baseline and he was discharged; 6 months later, brain MRI was normal (Figure 2).

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Reference

1. Fernández EA, González CG, Pardillo JC, García VM. Nitromethane encephalopathy MRI. *Neurology*. 2008;70(10):814.

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