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Acute Ischemic Stroke in a Pediatric Patient With Known Exposure to COVID-19 and Positive Serology



Neurological manifestations of COVID-19 in children are not fully understood. Recently, Kaur et al. reported a child with transverse myelitis and McAbee et al. described a child with seizures and encephalitis, in the setting of an acute COVID-19 infection.^{1,2} Acute ischemic stroke (AIS) and focal cerebral arteriopathy have also been reported.³

We describe a 17-month-old boy with acute-onset right arm and leg weakness due to a left pontine ischemic stroke. He had anti-COVID-19 antibodies, and his parents had experienced symptoms suggestive of a COVID-19 infection a few weeks earlier. Brain magnetic resonance imaging revealed an acute left pontine infarct (Fig). Head and neck magnetic resonance angiography was normal. Transthoracic echocardiography was normal.

He had a negative COVID-19 nasopharyngeal polymerase chain reaction (PCR) and positive COVID-19 serologies. Inflammatory, autoimmune, and hypercoagulable evaluation, including multi-system inflammatory syndrome markers, was unremarkable.

Genetic testing was normal. The cerebrospinal fluid (CSF) contained 1000 red blood cells/ μL , 2 white blood cells/ μL , glucose 60 mg/dL (the serum glucose was 90 mg/dL), and protein 15 mg/dL. A CSF Fil-murray meningitis/encephalitis PCR panel, New York State encephalitis panel, and varicella zoster virus antibodies were negative. CSF culture revealed no organisms. CSF COVID-19 PCR was not tested as he did not have an acute infection, and antibodies were deferred due to concern for false-positivity from CSF blood contamination.

He was discharged on aspirin 40.5 mg daily. At three-month follow-up, he could run with mild residual weakness.

Although COVID-19 has been associated with AIS in adults, there have been only a few reports in pediatrics. It has been postulated that the virus potentiates a prothrombotic and proinflammatory state via endothelial cell disruption and clotting cascade activation.⁴ In children, viral pathogens, most notably, varicella zoster virus, are associated with AIS, and vessel imaging can be normal in these cases.⁵ Although it is possible that our patient's stroke is

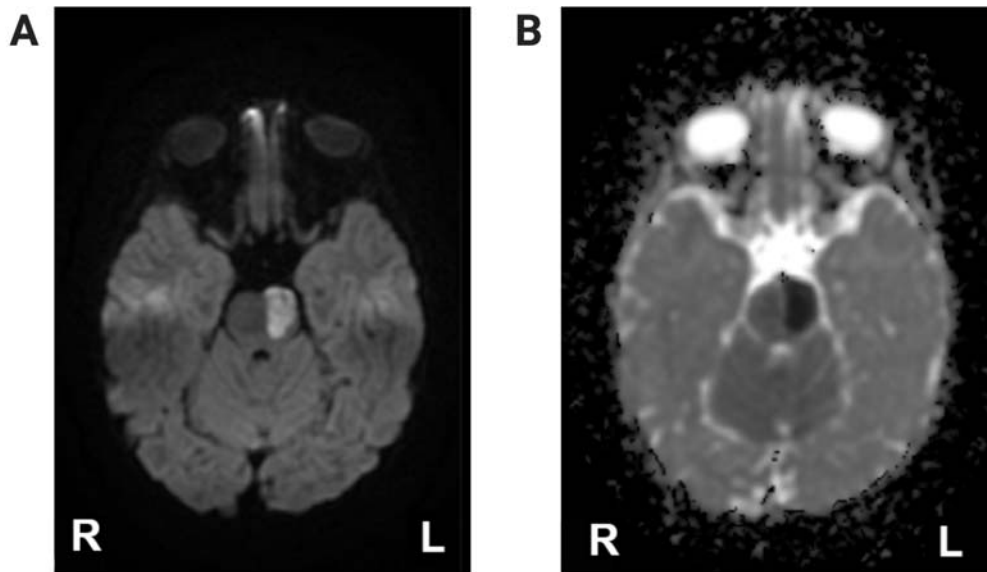


FIGURE. Brain imaging of patient. (A) Magnetic resonance diffusion-weighted imaging sequence showing left pontine stroke; (B) magnetic resonance imaging apparent diffusion coefficient sequence.

¹These authors contributed equally to this manuscript.

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idiopathic, we believe that COVID-19 could have been a possible trigger for his stroke given the presence of antibodies, the association of AIS and COVID-19 in adults, and an extensive negative evaluation for other causes of AIS.

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