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Correspondence

COVID-19 Infection Presenting as Acute-Onset Focal Status Epilepticus



Documented cases of neurological complications in patients with SARS-CoV-2 are accumulating. Status epilepticus and encephalopathy has now been reported as a presenting symptom in adults and children with coronavirus disease 2019 (COVID-19).^{1,2} Our team admitted a nine-year-old boy with no medical history following an episode of focal status epilepticus and encephalopathy. He was afebrile and without signs of meningismus at the time of admission. One milligram of lorazepam administered intravenously terminated his symptoms with rapid return to baseline mental status. Laboratory studies did not reveal leukocytosis or electrolyte abnormalities. A computed tomographic scan of the head was normal. Video electroencephalography showed continuous delta slowing throughout the right hemisphere without epileptiform features. Lumbar puncture and antibiotics were deferred given his rapid improvement. Eight hours after admission, he developed fever with intractable vomiting. PCR testing for COVID-19 returned positive. An magnetic resonance imaging following discharge was normal, and he has remained seizure free off of antiseizure medications.

Our attention necessarily turns to the neuropathophysiology of COVID-19. In their letter, our colleagues McAbee et al. note several proposed mechanisms by which the novel coronavirus may cause seizures and encephalopathy: direct infection, autoimmune response, postinfectious process, and vascular processes including thrombosis and infarction. We would like to add dysregulated cytokine signaling to the list of proposed mechanisms. Given what we are learning about the cytokine cascade triggered by this novel coronavirus, a mechanism involving this system should logically be explored.³ Proinflammatory cytokines such as interferon- γ , interleukin (IL)-6, and IL-8 are associated with febrile seizure.⁴ More intriguing perhaps, cerebrospinal fluid IL-6 has been

associated with complex febrile seizures.⁵ Insights gained through the exploration of cytokine response activated by SARS-CoV-2 may also illuminate the elusive causal pathway leading to febrile seizures and as other colleagues have suggested, perhaps unknown targets for future antiepileptic drugs.⁶

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