COVID-19 Mediated Neuro-Immunologic Disease

Letter To The Editor

With interest we read the article by Sánchez-Morales et al (2021) about a retrospective study of 10 pediatric patients with neurological manifestations of an infection with SARS-CoV-2 (COVID-19) (Sánchez-Morales, A. E. et al 2021). Three patients had Guillain-Barre syndrome (GBS), two optic neuritis, two acute ischemic stroke, one myositis with rhabdomyolysis, one acute cerebellar ataxia (ACA), and one anti-NMDA-R immune encephalitis (Sánchez-Morales, A. E. et al 2021). It was concluded that acute neurological compromise during these days suggests an infection with SARS-CoV-2 (Sánchez-Morales, A. E. et al 2021). The study is appealing but raises comments and concerns.

We do not agree with the notion that the patient with optic neuritis is the first pediatric case with SARS-CoV-2 associated optic neuritis (Sánchez-Morales, A. E. et al 2021). In a recent review about cranial nerve involvement in COVID-19, a 15yo male with mild COVID-19 was reported who had optic neuritis and neuromyelitis optica (NMO)-like features (de Ruijter, N. S. et al 2020) [Finsterer, submitted]. This particular patient benefited from steroids.

There is a discrepancy between table 3 and the information in the text. According to table 3, 5 patients had probable COVID-19 but in the text only 3 patients had probable COVID-19. This discrepancy should be solved. The weak evidence for COVID-19 in the 10 patients argues against a causal relation between the neurological abnormalities and SARS-CoV-2.

We should be told about the underlying cause of ACA in one patient (Sánchez-Morales, A. E. et al 2021). Was ACA attributable to cerebellar affection (cerebellitis), to spinal cord affection, or due to neuropathy of peripheral nerves? Were there cerebellar signs other than ataxia (e.g. slurred speech, dysmetria, dysdiadochokinesia, positive rebound)?

Concerning the two patients with acute ischemic stroke, we should be told if they carried any classical risk factors for ischemic stroke, such as arterial hypertension, diabetes, hyper-lipidemia, or atrial fibrillation. Since venous sinus thrombosis (VST) is an increasingly recognised complication of a SARS-CoV-2 infection (Abdalkader, M. et al 2021), we should be told if the two patients had ischemic stroke following VST, particularly if the D-dimer was elevated or if magnetic resonance venography revealed VST. Concerning the treatment of acute ischemic stroke we should be told if the two index patients underwent thrombolysis or if they required mechanical thrombectomy. Did any of the two require oral anticoagulation?

Concerning the three patients with GBS we should be informed about the subtype of GBS (AIDP, AMAN, AMSAN, MFS, Bickerstaff’s brainstem encephalitis (BBE), polynuerritis cranialis, cervico-brachial GBS) that was found in the three patients. It is also of interest which type of treatment the three patients received. Steroids, immunoglobulins, or plasma exchange?
The patient with immune encephalitis is interesting as an increasing body of evidence accumulated showing that SARS-CoV-2 can trigger the development of immune encephalitis or immune myelitis (Pizzanelli, C. et al 2021). Single cases with limbic encephalitis, NMDAR-positive immune encephalitis, and BBE have been previously reported (Álvarez Bravo, G. & Ramió I T. L. 2020).

Overall, the interesting study has several limitations. The underlying cause of ACA and of ischemic stroke should be clarified. The subtypes of GBS should be presented and which therapy was applied for ischemic stroke respectively GBS. Immune encephalitis/myelitis should be stressed as a neurological complication of COVID-19.

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