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CORRESPONDENCE

Acute Fulminant Cerebral Edema Presenting as Refractory Status Epilepticus in a SARS-CoV-2 PCR-Positive Child Without Pulmonary Involvement: Authors' Reply

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To the Editor: This is regarding the query [1] related to our article, "Acute fulminant cerebral edema presenting as refractory status epilepticus in a SARS-CoV-2 PCR-positive child without pulmonary involvement" published in IJP [2], which mentions Acute fulminant cerebral edema (AFCE) and SARS-CoV-2 infection could be a mere coincidence or an association. Cerebrospinal fluid (CSF) bacterial culture with viral polymerase chain reactions (PCRs), peripheral smear for malaria were negative. Patient was immune-competent with normal CSF; hence fungal, HIV or parasitic etiologies were not considered. Multisystem inflammatory syndrome in children (MISC) was ruled out as SARS-CoV-2 antibodies were negative. Ideally, auto-antibodies and CSF cytokines were indicated but repeat CSF could not be done as there was herniation while previous CSF (guarded lumbar puncture) sample was exhausted. MRI with contrast revealed only leptomeningeal enhancement with normal flow voids. Repeat MRI showed cerebral edema with herniation without involving vascular territory ruling out venous or arterial infract. Immunotherapy (IVIG and methyl-prednisolone) and decongestive therapy (hypertonic saline and mannitol) were given. In-spite of multiple anti-seizure medications (levetiracetam, valparoate, phosphytoin, phenobarbitone, locosamide and clobazam), electrographic seizures responded only to midazolam and thiopental infusion. Autopsies of SARS-CoV-2 PCR + patients were not permitted during pandemic routinely. There was no family history of epilepsy and acquired brain injury. In previous seizures MRI and EEG were normal.

Children with SARS-CoV-2 related auto-immune encephalitis (AE) have sub-acute course; responding well to immunotherapy with variable positivity of auto-antibodies without mortality. Six pediatric AE cases were reported [2- anti myline-oligo-ganglioside (MOG), 2-NMDAR and 1 sero-negative and 1 unknown] [3]. Another three children with serum SARS-CoV-2 antibodies with negative auto-antibodies, with neurologic symptoms and CSF pleocytosis suggestive of post-infectious autoimmune-mediated encephalitis made remarkable recovery with immunotherapy [4]. Among 19/81 AE cases associated with SARS-CoV-2 infection; limbic encephalitis, anti-N-methyl-d-aspartate (NMDA) receptor encephalitis, new-onset refractory status epilepticus (NORSE), steroid-responsive encephalitis and unknown were reported in 7 (37%), 5 (26%), 2 (11%), 1 (5%) and 4 (21%) cases respectively.

Declarations

Conflict of Interest None.

References

1. Finsterer J. Acute fulminant cerebral edema presenting as refractory status epilepticus in a SARS-CoV-2 PCR-positive child without pulmonary involvement: correspondence. Indian J Pediatr. 2023. https://doi.org/10.1007/s12098-023-04685-8.
2. Botre A, Otiv M, Parekar A. Acute fulminant cerebral edema presenting as refractory status epilepticus in a SARS-CoV-2 PCR-positive child without pulmonary involvement. Indian J Pediatr. 2023;90:529.
3. Payus AO, Jeffree MS, Ohn MH, et al. Immune-mediated neurological syndrome in SARS-CoV-2 infection: a review of literature on autoimmune encephalitis in COVID-19. Neurol Sci. 2022;43:1533–47.
4. Hilado M, Banh M, Homans J, Partikian A. Pediatric autoimmune encephalitis following COVID-19 infection. J Child Neurol. 2022;37:268–72.

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