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Letter to the Editor

Before Diagnosing SARS-CoV-2-Related Encephalitis, Alternative Etiologies must be Adequately Ruled out

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We read with interest the article by Bi *et al*. who reported on a 68 year-old female diagnosed with SARS-CoV-2-related encephalitis based on clinical presentation, symmetrical thalamic lesions on magnetic resonance imaging (MRI), and detection of SARS-CoV-2 RNA in the cerebrospinal fluid (CSF) [1]. The patient received methyl-prednisolone, acyclovir, and mannitol and made an incomplete recovery until discharge after seven days of hospitalisation [1]. The study is compelling but has limitations that should be discussed.

A limitation of the study is the discrepancy regarding the RT-PCR in CSF [1]. The case description does not mention that RT-PCR for SARS-CoV-2 in CSF was positive [1]. However, the discussion mentions that the RT-PCR in the CSF was positive for SARS-CoV-2. A positive CSF RT-PCR is also mentioned in the caption of figure 1, but it is unclear which of the panels is panel B. This discrepancy should be resolved. Elevated IgG antibodies against SARS-CoV-2 in the CSF do not confirm an acute SARS-CoV-2 infection, since IgG antibodies against SARS-CoV-2 can persist for months [2].

Another limitation is that the CSF was investigated only for six auto-antibodies associated with immune encephalitis (NMDA, AMPA-1, AMPA-2, LGI-1, GABA, CASPR2) [1]. Since the spectrum of autoantibodies associated with immune encephalitis is much broader (ANNA-1, ANNA-2, ANNA-3, amphiphysin, CRMP-5, GAD-65, GFAP, PCA-1, PCA-2, DNER, Ma-1, Ma-2, AMPAR, DPPX, IgLON-5, mGlu-R1, mGlu-R5) [3], it cannot be ruled out that the diagnosis immune encephalitis was overlooked. In addition, in about half of the cases with immune encephalitis, no antibodies associated with immune encephalitis are detectable in the CSF [4].

The opening pressure of the CSF at the spinal tap was increased (no reference limits were given) [1]. However, the CSF findings were normal except for antibodies against SARS-CoV-2 [1]. We should be informed how to explain the increased CSF pressure in the absence of major CSF abnormalities.

A further limitation is that no electroencephalogram (EEG) was recorded [1]. Since the patient presented with impaired consciousness and was unresponsive [1], it is imperative that non-convulsive status epilepticus (NCSE) be ruled out by the absence of epileptiform discharges on the EEG.

There is also a discrepancy between the statement that the patient was “unresponsive” and the statement that the patient presented with “slurred speech” [1]. This discrepancy should be resolved. It should also be mentioned what level of impaired consciousness the index patient was diagnosed with. Was he somnolent, soporous, or comatose?

There is no mention of the results of the virus panel. Before diagnosing SARS-CoV-2-related encephalitis, it is imperative to rule out viruses other than SARS-CoV-2 as the cause of the encephalitis.

It is not mentioned whether the cerebral MRI was carried out with or without contrast medium. Contrast application is critical to assess the extent of encephalitis and surrounding edema. The MRI images shown in figure 1 appear to have been created without contrast media.

Overall, the interesting study has limitations that put the results and their interpretation into perspective. Addressing these issues would strengthen the conclusions and could improve the status of the study. Before diagnosing SARS-CoV-2-related encephalitis, autoimmune encephalitis, and encephalitis caused by infectious agents other than SARS-CoV-2 should be sufficiently ruled out.

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Keywords: Encephalitis, SARS-CoV-2, COVID-19, PCR, Cerebrospinal Fluid

References

1. Bi Q, Gu H, Qu M, Li Z, Mu X, Zhang L. A case report of encephalitis induced by SARS-CoV-2 confirmed by etiology: First case in Qingdao, China. J Neurovirol, 2023, 1-5. Doi: 10.1007/s13365-023-01141-3
2. Yousefi Z, Taheri N, Dargahi M, Chaman R, Binesh E, Emamian MH, *et al*. Long-Term Persistence of Anti-SARS-COV-2 IgG Antibodies. Curr Microbiol. 2022; 79(4):96. Doi: 10.1007/s00284-022-02800-
3. Abbatemarco JR, Yan C, Kunchok A, Rae-Grant A. Antibody-mediated autoimmune encephalitis: A practical approach. Cleve Clin J Med. 2021; 88(8):459-471. Doi: 10.3949/ccjm.88a.20122
4. Dou Q, Yang C, Tian M, Yuan X, Li R, Shu X. Clinical Characteristics and Prognosis of Antibody-Negative Autoimmune Encephalitis in Children: A Single-Center Retrospective Study. Pediatr Neurol. 2022; 133:9-14. Doi: 10.1016/j.pediatrneurol.2022.05.007