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Letter to the Editor

Cerebral Involvement in SARS-CoV-2 Infection Should be Specified to Ensure Optimal Treatment

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Letter to the Editor

We read with interest the article by Poluga *et al*. about a 62-year-old man with acute SARS-CoV-2 infection (SC2I) who presented with fever, cough, fatigue, altered mental status and psychosis and had a history of arterial hypertension and diabetes [1]. Cerebral computed tomography (CCT) was inconclusive and cerebral magnetic resonance imaging showed only mild cortical atrophy [1]. Cerebrospinal fluid (CSF) examination revealed mild aseptic pleocytosis, a slight increase in proteins and a slight increase in glucose [1]. Despite the negative detection of infectious agents in the CSF, the patient was diagnosed with SARS-CoV-2-related encephalitis and received symptomatic treatment from which he fully recovered within 10 days [1]. The study is noteworthy, but several points should be discussed.

The first point is that the examination of the clinical picture of the index patient was inadequate. Although meningitis caused by SC2I was suspected, the CSF was not examined for immunologic parameters that might indicate an immunologic response to the virus, such as interleukins, chemokines, glial factors, tau, 14-3-3, and neurofilament light chains [2]. The patient was also not tested for tuberculosis, HIV, lues or parasites. As the pleocytosis was only mild and no infectious agent could be identified, it is also conceivable that the patient had autoimmune encephalitis (AIE). In about half of cases with AIE, patients have autoantibodies associated with AIE, e.g. NMDA, AMPA, LGI1, CASPR2, GABA-A, GABA-B, DPPX, glycine, neurexin, MIG or IgLON, [3]. Was AIE considered and was there any evidence for it? A strong argument against SARS-CoV-2-associated encephalitis in the index patient is that the CSF was negative for SARS-CoV-2.

The second point is that venous sinus thrombosis (VST) was not ruled out by computed tomography venography (CTV) or magnetic resonance venography (MRI) with contrast [1]. The patient had a headache and an elevated D-dimer, indicating occlusion of one of the cerebral veins. A VST can regress spontaneously, but healing can usually be achieved by intravenous administration of heparin [4].

The third point is that it is unclear whether the MRI was performed with or without contrast [1]. The administration of contrast is crucial as it could show a single or multiple enhancing lesions suggestive of encephalitis. MRI may be normal in autoimmune encephalitis (AIE) and infectious encephalitis [5]. Was there any evidence of acute disseminated encephalomyelitis (ADEM), acute hemorrhagic necrotizing encephaliltis (AHNE), acute hemorrhagic leukoencephalopathy (AHNE), or acute necrotizing encephalopathy (ANE)?

The fourth point is that the patient had no electroencephalographic recordings [1]. Since the patient presented with disorientation and later became psychotic, it would have been important to record an EEG to rule out non-convulsive status epilepticus (NCSE). NCSE has been previously reported as a manifestation of cerebral involvement in SC2I [6].

The fifth point is that the specific treatment the patient received for aseptic pleocytosis was not stated [1]. What type of anti-inflammatory medication did the patient receive? What type of anti-edematous treatment was administered, steroids or diuretics? We should also know why the patient received anticoagulation [1].

In patients with cerebral involvement in SC2I, a comprehensive diagnostic workup is indicated. to avoid overlooking any of the many different cerebral complications of SC2I.

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