



Commentary

De novo altered mental state after SARS-CoV-2 vaccination requires extensive diagnostic work-up

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Letter to the Editor

We read with interest the article by Al Mashdali et al. about a 32 years old previously healthy male who developed forgetfulness, depression, confusion, disorientation, and agitation two days after having received the first dose of the anti-SARS-CoV-2 Moderna vaccine [1]. Despite application of ceftriaxone and acyclovir for suspected encephalitis, his condition progressed and he developed auditory hallucination, and behavioural disorder requiring the application of haloperidol and lorazepam [1]. He partially recovered not earlier than after application of steroids upon suspicion of immune encephalitis [1]. The study is appealing but has several limitations that raise concerns and need to be discussed.

Various differential diagnoses of the condition were not appropriately excluded. Missing is the application of contrast medium on cerebral MRI to exclude autoimmune encephalitis. Autoimmune encephalitis, previously reported as a complication of SARS-CoV-2 vaccinations [2], can be excluded only by application of contrast medium. Absence of specific autoantibodies occasionally found in autoimmune encephalitis does not exclude autoimmune encephalitis.

Missing are the computed tomography angiography (CTA), magnetic resonance angiography, and black blood sequences to rule out cerebral vasculitis. Cerebral vasculitis has been previously reported as a complication of SARS-CoV-2 vaccinations [3], may manifest without headache and only elevated cerebrospinal fluid (CSF) protein, and may respond to steroids.

A third differential not excluded was venous sinus thrombosis (VST). VST is a well-known complication of SARS-CoV-2 vaccines [4] and can manifest clinically with confusion but without headache. To rule out VST, application of contrast medium during an MR venography is required.

Missing is the exclusion of an acute SARS-CoV-2 infection complicated by encephalopathy. We should be told if RT-PCR for SARS-CoV-2 was negative on admission. Missing in this respect is also the RT-PCR for SARS-CoV-2 in the CSF.

Missing is the exclusion of a non-convulsive status epilepticus by

repeated electroencephalography (EEG) recordings.

Since SARS-CoV-2 vaccination can be complicated by delirium [5], it would have been necessary to refer the patient to the psychiatrist.

Missing is the cytokine and chemokine profile in the CSF and the determination of glial markers. There is increasing evidence that SARS-CoV-2 associated CNS disease and CNS abnormalities following SARS-CoV-2 vaccinations are accompanied by upregulation of various interleukines (ILs), such as IL-8, IL-6, IL-1a, or TNF-alpha [6].

Overall, the interesting study has several limitations and inconsistencies that call the results and their interpretation into question. Clarifying these weaknesses would strengthen the conclusions and could improve the status of the study. CNS complications following SARS-CoV-2 vaccinations require extensive work up not to miss a pathophysiological explanation.

Ethics approval

Was in accordance with ethical guidelines. The study was approved by the institutional review board.

Funding sources

No funding was received.

Author contribution

JF: design, literature search, discussion, first draft, critical comments, final approval.

Consent for publication

Was obtained from the patient.

Abbreviations: CSF, cerebrospinal fluid; CTA, computed tomography angiography; VST, venous sinus thrombosis.

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Availability of data

All data are available from the corresponding author.

Code availability

Not applicable.

Declaration of competing interest

The author declares no conflicts of interest.

Acknowledgement

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