LETTER TO THE EDITOR

Undetermined Fatal Complications of SARS-CoV-2 Vaccinations Require Clarification by Autopsy

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We read with interest the article by Kumar et al. about a 40-year-old female with a history of arterial hypertension, myalgia 21 days prior, and SARS-CoV-2 vaccination 14 days prior, who was admitted for acute-onset, severe back pain without radiation followed by paraparesis on the next day, progressing to quadriplegia and respiratory insufficiency.[1] Acute disseminated encephalomyelitis (ADEM) was diagnosed, but despite application of steroids and intravenous immunoglobulins (IVIG), the outcome was fatal.[1] The study is appealing but raises concerns that need to be discussed.

We disagree with the diagnosis of ADEM.[1] Acute disseminated encephalomyelitis usually goes along with pleocytosis >100/3 cells, elevated cerebrospinal fluid (CSF) protein, and in some cases also with positive oligoclonal bands.[2] However, CSF investigations in the index case were non-informative. We should know if the patient underwent a second spinal tap before decease. Furthermore, only a single supratentorial lesion was detected on imaging. Cerebral MRI usually shows widespread bilateral lesions in ADEM.

Furthermore, various differential diagnoses were not appropriately ruled out in the index patient. Neuromyelitis optica spectrum disorder (NMOSD) has not been ruled out by determination of the aquaporin-4 antibodies (AQP-4 IgG). Neuromyelitis optica spectrum disorder has been repeatedly reported as a possible complication of SARS-CoV-2 vaccinations.[3] Unfortunately, it is not indicated if the patient had received gadolinium for the cerebral MRI. In NMOSD, enhancement of the optic nerves can be seen.[4] Missing are susceptibility-weighted images (SWI) to rule out acute hemorrhagic leukoencephalitis (AHLE). Although AHLE has not been reported as a complication of SARS-CoV-2 vaccination, it is a known complication of SARS-CoV-2 infections and has been reported after vaccination against the papillomavirus.[5] A third differential not entirely ruled out is central nervous system (CNS) vasculitis. Normal digital subtraction angiography (DSA) does not rule out vasculitis. We should know that if the blood sedimentation rate, antinuclear antibodies (ANA), or antineutrophil cytoplasmic antibodies (ANCA) were elevated and if a brain biopsy was considered.

The second objection is that a causal relation between the SARS-CoV-2 vaccination and the occurrence of the CNS lesions remains unproven. Arguments against a causal relation are that only a few cases with ADEM following SARS-CoV-2 vaccination have been reported and that the patient experienced non-specific generalized myalgia 1 week prior to the vaccination.

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There is a discrepancy between the description of the MRI findings within the text and Figure 1. In Figure 1, lesions of the cervical spine are presented. However, in the text, the lesions were located between T3 and T11. According to the lesions shown in Figure 1, the index patient should have presented not only with paraparesis but rather with quadriparesis. This discrepancy should be solved. Did the patient undergo a second spinal MRI?

Spinal lesions T3–T11 were interpreted as ischemic stroke of the spinal cord.[1] Missing in this respect are apparent diffusion coefficient (ADC) maps to confirm that the hyperintense DWI lesions truly represent a cytotoxic edema.

Missing is the determination of the cytokine and chemokine profile in the CSF. Particularly interleukin (IL)-6, IL-8, IL-1a, and TNF-alpha can be elevated in patients experiencing CNS side effects from a SARS-CoV-2 infection or vaccination.

A shortcoming of the study is that no autopsy findings were presented. It would have been interesting to know the patho-anatomical diagnosis and if there was a discrepancy compared with the clinical diagnosis.

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. Patients with progressive axial and quadriparesis require extensive

work-up to rule out all differentials before attributing progressive CNS lesions to a SARS-CoV-2 vaccination.

Author Contributions

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

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References

1. Kumar A, Sabharwal P, Gupta P, Singh VK, Rao BK. A fatal case of acute disseminated encephalomyelitis: A diagnosis to ponder in pandemic. Indian J Crit Care Med 2022;26(4):518–520. DOI: 10.5005/jp-journals-10071-24185.
2. Neurologienetzt. https://www.neurologienetz.de/fachliches/erkrankungen/entzuendliche-erkrankungen-des-zns/akute-demyelinisierende-enzephalomyelitis-adem.
3. Fujikawa P, Shah FA, Braford M, Patel K, Madey J. Neuromyelitis optica in a healthy female after severe acute respiratory syndrome Coronavirus 2 mRNA-1273 vaccine. Cureus 2021;13(9):e17961. DOI: 10.7759/cureus.17961.
4. Son DY, Park KA, Seok SS, Lee JY, Oh SY. Initial pattern of optic nerve enhancement in Korean patients with unilateral optic neuritis. Korean J Ophthalmol 2017;31(1):71–79. DOI: 10.3341/kjo.2017.31.1.71.
5. Wellnitz K, Sato Y, Bonthius DJ. Fatal acute hemorrhagic leukoencephalitis following immunization against human papillomavirus in a 14-year-old boy. Child Neurol Open 2021; 8:2329048X211016109. DOI: 10.1177/2329048X211016109.