Acute messenger RNA-based SARS-CoV-2 vaccine–related meningitis/encephalitis is not uncommon

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Dear Editor,

I read with interest the article by Yoon et al. [1] about a 53-year-old female admitted for a seizure within <24 hours after her second dose of the BNT162b2 (Biontech Pfizer) vaccine (BPV). Work-up revealed mild pleocytosis; enhancement of the meninges on magnetic resonance imaging (MRI) with contrast; and continuous, generalized spikes on electroencephalography (EEG) [1]. The patient did not benefit from acyclovir, ceftriaxone, antiseizure drugs (ASDs), or steroids, but recovered incompletely with plasma exchange [1]. At the 1-month follow-up, she still had memory deficits [1]. Subsequent MRI showed new T2-hyperintensity of the amygdala and the hippocampus [1]. The case report is impressive, but some points require discussion.

I disagree with the statement that the index case is the first case of hyperacute encephalopathy after BPV. Vences et al. [2] described a 72-year-old male who developed fever, headache, confusion, aggressiveness, and gait disturbance one day after first BPV dose. Work-up revealed focal encephalitis in the anterior frontal and temporal lobes from which he recovered within two months without specific treatment [2]. Werner et al. [3] reported the case of a 35-year-old female who developed fever, headache, and rash two days after and status epilepticus eight days after her second BPV dose. Work-up revealed immune encephalitis and she recovered with ASDs, high-dose methylprednisolone, and plasma exchange [3]. Asaduzzaman et al. [4] described a 15-year-old female who experienced fever, diarrhea, restlessness, and carpopedal spasms 1 day after her first BPV dose and subsequently developed impaired consciousness and seizures. She was diagnosed with immune encephalitis and benefited significantly from methylprednisolone [4].

I also disagree with Yoon et al.’s diagnosis of encephalopathy [1]. According to the reported findings, the patient had meningitis/encephalitis [1]. Arguments for encephalitis/meningitis are that there was mild pleocytosis; enhancement of the meninges and cerebral cortex; persistent, generalized spiking on EEG; and that the patient initially presented with seizure, disorientation, slurred speech, and impaired memory. Did the patient also complain of headache or hypersensitivity to light or noise?

Many questions remain unanswered regarding this case. There were continuous generalized spikes on initial EEG [1]. Was nonconvulsive status epilepticus (NCSE) diagnosed? Which AEDs were used? Were they administered orally or intravenously? Was creatine-kinase elevated after seizure, and did the patient pass stool/urine or bite her tongue during seizure? Did she complain of muscle aches after seizure?

A limitation of the study is that cerebrospinal fluid (CSF) was not examined for cytokines, chemokines, and glial factors. These parameters have been shown to be increased in patients with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection or vaccination and cerebral involvement [5]. Such tests would also enable evaluation of whether CSF was positive for SARS-CoV-2 on polymerase chain reaction.
There is a discrepancy in the description of follow-up MRI [1]. First, the authors reported that there was no contrast enhancement, and one sentence later it is mentioned that meningeal contrast enhancement had improved [1], suggesting that it was still present on follow-up MRI. This discrepancy should be resolved.

There is also a discrepancy between the description of the neurological examination findings, which revealed disorientation, and the statement that the patient regained consciousness after plasmapheresis, suggesting that she had previously lost consciousness [1]. In the case of impaired consciousness, a description of whether the patient was drowsy, soporous, or comatose would be useful.

In conclusion, patients with pleocytosis and enhanced cortex and meninges after BPV should be diagnosed with immune meningitis/encephalitis if no infectious agents are detected. Seizures are common manifestations of meningitis/encephalitis and if disorientation or impaired consciousness persists, NCSE must be ruled out.

Conflicts of Interest
No potential conflict of interest relevant to this article was reported.

References