CLINICAL AND EXPERIMENTAL VACCINE RESEARCH

Clin Exp Vaccine Res 2023;12:85-86
https://doi.org/10.7774/cevr.2023.12.1.85
pISSN 2287-3651 • eISSN 2287-366X

Before blaming SARS-CoV-2 vaccines for thalamic lacunar stroke, alternative etiologies must be ruled out

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Received: July 13, 2022
Revised: December 22, 2022
Accepted: December 23, 2022

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

Dear Editor,

We read with interest the article by Shahali et al. [1] about a 72-year-old male who was admitted 9 days after the first dose of the AstraZeneca vaccine for headache, dizziness, gait disturbance with a tendency to fall, and right-sided hemichorea. The neurological deficits were attributed to left thalamic lacunar stroke due to vaccination-induced immune thrombotic thrombocytopenia and treatment with low molecular heparin (nadroparin), ozagrel, edaravone, prednisolone, and haloperidol was started. Two weeks after the start, the patient received warfarin [1]. The outcome after 3 weeks was described as "satisfactory" [1]. The study is excellent but raises concerns that should be discussed.

We disagree with the notion that there is a causal relationship between vaccination and thalamic stroke. In addition to vaccination, several other causes of lacunar stroke have not been ruled out. The patient has not undergone echocardiography to rule out congestive heart failure, cardiomyopathy, myocardial ischemia, Takotsubo syndrome, noncompaction, endocarditis, or myocarditis. Or do the authors mean "echocardiography" when they use the term "echo-Doppler"? The results of the standard electrocardiogram or Holter recordings are not mentioned. Because a lacunar stroke can also be embolic, it is crucial to rule out all causes of cardioembolism, including atrial fibrillation or ventricular arrhythmias. There is no evidence of blood pressure monitoring at admission or during the 3-week hospital stay. Readers were not informed of hemoglobin A1c levels, pro-natriuretic peptide levels, or troponin levels. No information was given on anti-nuclear and anti-neutrophil cytoplasmic antibodies. There is also no information on the results of the carotid ultrasound. Because lacunar stroke is most commonly caused by microangiopathy, it is crucial that studies of generalized atherosclerosis have been performed. It remains unclear whether the patient was a smoker or not. We do not know if the patient had hyperlipidemia or a normal lipid profile.

No evidence has been provided that the thalamic lesion shown in Fig. 1 of Shahali et al. [1] truly represents cytotoxic edema. We were to be told whether the apparent diffusion coefficient maps were hypo-, iso-, or hyperintense. Especially in a patient with no history of cardiovascular risk factors, it is important that cerebral ischemia be confirmed or ruled out by multimodal magnetic resonance imaging.

The patient was admitted because of headache, but no explanation for the headache was given. The D-dimer was significantly increased [1]. Therefore, it is important that venous sinus thrombosis is adequately ruled out by magnetic resonance venography

or conventional angiography. We should know whether other causes of headaches such as insomnia, alcohol, nicotine, hypertensive crisis, encephalitis, meningitis, vasculitis, or vasoconstriction syndrome have been adequately ruled out. Has acanthocytosis been ruled out as the cause of the chorea?

A mini-mental state exam (MMSE) of 24 is abnormal and suggests cognitive impairment. Since the history did not indicate dementia, an explanation for this finding should be given. The thalamic lesion does not explain the cognitive impairment. Has the MMSE normalized upon discharge?

The results of the electroencephalography to rule out seizure activity are missing. Regarding the jerky movements on the right side, it is unclear why the patient underwent surface electromyography.

It is not clear why the patient was transferred to the intensive care unit (ICU) [1]. The patient had a lacunar stroke and an immune thrombocytopenia of 42,000/mm^3 [1]. This is not an indication for admission to the ICU. We should know if the patient suffered respiratory failure, sepsis, or myocardial infarction. Was mechanical ventilation required?

There is no explanation as to why the patient was anticoagulated. Was there evidence of atrial fibrillation or intraventricular thrombus formation?

Overall, the interesting study has some limitations that call into question the results and their interpretation. Clarifying these weaknesses would strengthen the conclusions and could further improve the study.

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Reference

1. Shahali H, Farahani RH, Asgari A, Hazrati E. Thalamic hemi-chorea: a rare complication after receiving the adenoviral vector-based COVID-19 vaccine: a case report. Clin Exp Vaccine Res 2022;11:217-21.