



Brief Report

Aseptic pleocytosis eight days after the first dose of a vector-based SARS-CoV-2 vaccine

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ABSTRACT

Objectives: Vaccination against SARS-CoV-2 is considered beneficial by the majority, but side effects occur in some cases.

Results and Conclusions: We report on a 28-year-old female who developed fever within 3 days of an initial dose with a vector-based SARS-CoV-2 vaccine. Eight days after vaccination, she developed paresthesias and dysesthesias of all four limbs. Cerebral imaging showed two non-specific and non-enhancing lesions in the left white matter. Cerebrospinal fluid (CSF) studies revealed pleocytosis of 82/3 cells. Examination for multiple sclerosis, neuromyelitis optica, acute, demyelinating encephalomyelitis, and Guillain-Barre syndrome was negative. She received steroids, which resulted in complete resolution of the neurological abnormalities. In summary, SARS-CoV-2 vaccination can occasionally be complicated by an inflammatory CSF syndrome, which resolves on administration of steroids.

Keywords: SARS-CoV-2, COVID-19, Vaccination, Side effect, Adverse reaction

INTRODUCTION

There is an increasing number of publications reporting suspected side effects of vector-based SARS-CoV-2 vaccines.^[1,2] These reports have already led to official steps being considered to limit the use of these vaccines.^[3] Of particular concern is the increased number of venous thrombosis with the use of SARS-CoV-2 vaccines.^[4] Here, we report mild clinical neurological impairment possibly related to the application of a vector-based SARS-CoV-2 vaccine just before the onset of neurological symptoms.

The patient is a 28-year-old female, height 158 cm and weight 47 kg, who was admitted with paresthesias and dysesthesias distally in all four limbs with dominance of the palma manus and planta pedis occurring 1 day before admission. Her previous history was conspicuous for administration of the first dose of a primate adenovirus vector-based SARS-CoV-2 vaccine 8 days before the onset of the sensory disturbances. She also reported an elevated body temperature on days 1–3 post-vaccination. The medical history was further positive for stress at work and chronic gastritis. She did not take any medication regularly. The neurological investigation revealed exclusively increased tendon reflexes on the lower extremities without pyramidal signs. Brain MRI showed only

two old, non-specific, and non-enhancing lesions in the left basal ganglia. MRI of the spinal cord was non-informative. Cerebrospinal fluid (CSF) studies revealed mild pleocytosis of 82/3 cells. No autochthonous IgG production was found in the CSF. Oligoclonal bands were negative. No infections agents were detected in the CSF. Visually evoked potentials were normal. Aquaporin and anti-MOG antibodies were negative. After intravenous administration of steroids 5 days after admission, the neurological symptoms completely disappeared within 6 days. The patient is currently refusing to receive the second SARS-CoV-2 vaccination.

The patient is of interest for a suspected and mild adverse reaction to the first dose of a vector-based SARS-CoV-2 vaccine occurring 8 days after vaccination. Arguments for a causal relationship are the exclusion of cerebral isolated syndrome, multiple sclerosis, and neuromyelitis optica, the exclusion of infectious agents as the cause of pleocytosis, the increased body temperature on days 1–3 post-vaccination, and the complete cessation of symptoms after administration of steroids. Whether the vaccination triggered, a previously non-symptomatic neurologic disorder remains speculative. However, the latency of 8 days between vaccination and occurrence of the sensory symptoms speak against a causal connection. Although reports of SARS-CoV-2 vaccine side

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effects are accumulating,^[1-5] further investigations into the frequency and severity of SARS-CoV-2 vaccine side effects are needed. Given the good tolerability of SARS-CoV-2 vaccines in millions of vaccinated individuals, the present case is unique and demonstrates that the immune response to the vaccine can cause rarely a CNS inflammatory syndrome.

In summary, the case shows that SARS-CoV-2 vaccinations can be complicated by a mild CNS inflammatory syndrome clinically manifesting with steroid-responsive sensory disturbances. Systematic, controlled, and cohort studies are required to prove or rule out a causal relationship.

Ethics approval

It was in accordance with ethical guidelines. The study was approved by the Institutional Review Board.

Author's contribution

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

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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Conflicts of interest

There are no conflicts of interest.

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