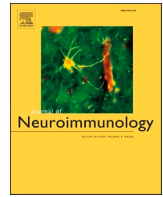


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Short Communication

New-onset refractory status epilepticus following the ChAdOx1 nCoV-19 vaccine

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ABSTRACT

Coronavirus is a novel human pathogen causing fulminant respiratory syndrome (COVID-19). Developing an effective and reliable vaccine was emergently pursued to control the dramatic spread of the global pandemic. The standard stages for vaccine development were unprecedentedly accelerated over a few months. We report a case of new-onset refractory status epilepticus (NORSE) after receiving the first dose of the ChAdOx1 nCoV-19 vaccine. We attribute the occurrence of NORSE to the vaccine due to the temporal relationship and the lack of risk factors for epilepsy in the patient. This report adds to the literature a possible rare side effect of a COVID-19 vaccine and contributes to the extremely limited literature on potential neurological side effects of viral vector vaccines. Healthcare providers should be aware of the possibility of post-vaccination epilepsy. The patient had recurrent seizures that were refractory to conventional antiepileptic drug therapy with a dramatic response to immunotherapy with pulse steroids and plasmapheresis. This likely reflects an underlying autoimmune mechanism in the genesis of post-vaccination generalized seizures without fever. Further research is needed to probe and study the exact mechanism at a more molecular level.

1. Introduction

Coronavirus is a novel human pathogen causing fulminant respiratory syndrome (COVID-19) that was first identified in December 2019 as a cluster of cases with fatal pneumonia in Wuhan, China. (Zhu et al., 2020) In March 2020, the World Health Organization declared a worldwide pandemic and designated the disease taxonomy as COVID-19. (Dong et al., 2020) The disease is an acute severe respiratory syndrome with florid pulmonary manifestations and multi-organ involvement including cardiovascular, musculoskeletal, gastrointestinal, and neurological complications. (Huang et al., 2020) Developing an effective and reliable vaccine was emergently pursued to control the dramatic spread of the global pandemic. The standard stages for vaccine development were unprecedentedly accelerated over a few months. Inactivated or live-attenuated viruses as well as recombinant proteins and vectors technologies have been employed to develop the COVID-19 vaccine. In addition, new platforms such as RNA and DNA vaccines were also used for the first time in a licensed vaccine. (Li et al., 2020) We report a case of new-onset refractory status epilepticus (NORSE) after receiving the first dose of the ChAdOx1 nCoV-19 vaccine.

2. Case report

A 42-year-old female nurse of Black South African descent presented to the emergency department complaining of headache and subjective fever that started one day prior. During the assessment, the patient developed a rising epigastric sensation and experienced jamais vu for the first time in her life that rapidly evolved into her first-ever generalized tonic-clonic seizure. She was given 2 mg of lorazepam on two occasions that failed to abort the seizure and was eventually loaded with 1 g of phenytoin. Her seizure stopped, and she was stabilized and drowsy with post-ictal amnesia. She had no history of fever, infection, or any risk factor for epilepsy. She received the first dose of the ChAdOx1 nCoV-19 vaccine 10 days prior to presentation. Clinically, she was lethargic but fully conscious, alert, oriented, and her vital signs were stable. Her pupils were reactive bilaterally and she was following commands and moving all limbs freely. Her laboratory investigations were unremarkable including toxicology screens, infectious diseases serology, electrolytes, organ function tests, inflammatory markers, autoimmune serology, and vasculitis screen. In addition, cultures from blood, urine, stool, and respiratory secretions were unremarkable. COVID-19 PCR

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