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Intracerebral Hemorrhage due to Thrombosis with Thrombocytopenia Syndrome after Vaccination against COVID-19: the First Fatal Case in Korea

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Abstract

Vaccination with an adenoviral vector vaccine against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) can result in the rare development of thrombosis with thrombocytopenia mediated by platelet-activating antibodies against platelet factor 4 (PF4). This is a life-threating condition that may be accompanied by bleeding due to thrombocytopenia with thrombosis of the cerebral venous sinus or splanchnic vein. Herein, we describe the first fatal case of thrombosis with thrombocytopenia syndrome in Korea, presenting with intracranial hemorrhage caused by cerebral venous sinus thrombosis. A 33-year-old Korean man received the first dose of the ChAdOx1 nCoV-19 vaccination. He developed severe headache with vomiting 9 days after the vaccination. Twelve days after vaccination, he was admitted to the hospital with neurological symptoms and was diagnosed with cerebral venous sinus thrombosis, which was accompanied by intracranial hemorrhage. Thrombocytopenia and D-dimer elevation were observed, and the result of the PF4 enzyme-linked immunosorbent assay antibody test was reported to be strongly positive. Despite intensive treatment, including intravenous immunoglobulin injection and endovascular mechanical thrombectomy, the patient died 19 days after vaccination. Physicians need to be aware of thrombosis with thrombocytopenia syndrome (TTS) in adenoviral vector-vaccinated patients. Endovascular mechanical thrombectomy might be a useful therapeutic option for the treatment of TTS with cerebral venous sinus thrombosis.

Keywords: COVID-19 Vaccines; Endovascular Procedures; Intracranial Sinus Thrombosis; Mechanical Thrombolysis; Platelet Factor 4.

Conflict of interest statement

The authors have no potential conflicts of interest to disclose.

Figures