



Contents lists available at ScienceDirect

American Journal of Emergency Medicine

journal homepage: www.elsevier.com/locate/ajem

Middle-age Asian male with cerebral venous thrombosis after COVID-19 AstraZeneca vaccination

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ARTICLE INFO

Article history:

Received 10 June 2021

Received in revised form 26 June 2021

Accepted 5 July 2021

Keywords:

COVID-19

ChAdOx1 vaccine

Thrombocytopenia

Cerebral venous sinus thrombosis

Emergency department

ABSTRACT

Vaccine-associated cerebral venous thrombosis has become an issue following the extensive vaccination program of the Coronavirus Disease of 2019 (COVID-19) Vaccine AstraZeneca (ChAdOx1 vaccine). The importance of early diagnosis should be emphasized due to the high mortality rate without appropriate treatment. Young female populations in western countries have been reported to be at a greater risk of this vaccine related thrombotic event, but cases in East Asia are lacking. Herein, we present the first case of cerebral venous sinus thrombosis 10 days after ChAdOx1 vaccination in a middle-age Asian male in Taiwan.

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1. Introduction

Cerebral venous sinus thrombosis (CVST), a rare form of stroke (0.5%–1%), has been recently found to be associated with COVID-19 vaccination with the ChAdOx1 vaccine. As of April 2021, 40 cases had been reported among 38.1 million recipients in the UK and EEA by the European Medicine Agency (EMA) and the Medicines and Healthcare Products Regulatory Agency (MHRA). The majority of such cases have been female, under the age of 55, and receiving anticoagulation and have occurred between 4 and 16 days after vaccination [1]. Vaccine-associated CVST (VACVST) carries considerable thrombotic risk, despite only mild to moderate thrombocytopenia, and the mortality of VACVST is 29–33%, significantly higher than the usual mortality of 4.4% [2,3]. Immediate and appropriate treatment with non-heparin anticoagulant is associated with better short-term survival and long-term prognosis. Therefore, early diagnosis of CVST is vital. Past studies have reported that Asians carried a lower risk of venous thromboembolism than other races [4]. Unlike reports from the US and Europe, a report of VACVST had not yet been published with regard to the Asian population. In this case report, we present the first East Asian case of VACVST involving the left internal

jugular vein with thrombotic thrombocytopenia in a middle-age Asian male in an emergency department (ED) in Taiwan.

2. Case report

A 52-year-old man with no underlying disease presented to the ED with nausea and thunderclap headache for 5 days. He also claimed pain on the left side of his neck, but he had no other symptoms. He received the ChAdOx1 vaccine 10 days prior, and headache developed gradually 5 days after vaccination. The patient's vital signs were as follows: body temperature 35.4 °C, blood pressure 129/90 mmHg, heart rate 67/min, respiratory rate 18/min. Physical examination revealed no neurological deficit with normal extra-ocular movement and visual power without photophobia, phonophobia, and meningeal signs. Laboratory work up revealed thrombocytopenia (Platelet $99 \times 10^9/L$) and elevated d-dimer (>20.0 mg/L) but was otherwise normal. Hyperdensity of the sinus, including Cord sign and dense vein sign at the left transverse and sigmoid sinuses, was discovered via non-enhanced computer tomography (CT) (Fig. 1). CT venogram revealed CVST at the left transverse sinus and sigmoid sinuses and thrombosis of the left internal jugular vein (Fig. 2). A diagnosis of VACVST with thrombotic thrombocytopenia was made. The oral anticoagulant agent Apixaban was immediately administered. Platelet factor 4 (PF-4) enzyme-linked immunosorbent assay (ELLISA) was confirmed positive 2 days after admission.

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