Early Outcomes of Bivalirudin Therapy for Thrombotic Thrombocytopenia and Cerebral Venous Sinus Thrombosis After Ad26.COV2.S Vaccination

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Vaccine-induced thrombotic thrombocytopenia is a newly described disease process in the setting of expanding access to COVID-19 vaccination. The United States Centers for Disease Control and Prevention recommends treatment with an alternative to heparin in patients suspected of having vaccine-induced thrombotic thrombocytopenia. At this time there have been no reported outcomes from the treatment of vaccine-induced thrombotic thrombocytopenia with bivalirudin as a heparin alternative. We describe the early outcomes from the treatment of vaccine-induced thrombotic thrombocytopenia with bivalirudin as a heparin alternative. A 40-year-old Caucasian woman was found to have thrombocytopenia, cerebral venous sinus thrombosis, and pulmonary embolism following vaccination for COVID-19 with Ad26.COV2.S. She exhibited a steady rise in platelet count: 20×10^9/L at hospital day 0, 115×10^9/L at discharge on hospital day 6, and 182×10^9/L on outpatient follow-up on day 9. While the patient exhibited a transient drop in hemoglobin, there was no clinical evidence of bleeding. This patient did not demonstrate any clinical sequelae of thrombosis, and she reported resolution of her headache. Vaccination with Ad26.COV2.S appears to be associated with a small but significant risk for thrombotic thrombocytopenia within 13 days of receipt. The Centers for Disease Control and Prevention guidance to consider an alternative to heparin was not accompanied by specifically recommended alternatives. A single patient treated with bivalirudin for suspected vaccine-induced thrombotic thrombocytopenia subsequently experienced symptom improvement and a rise in platelet count and did not demonstrate any immediate negative outcomes. A provider may consider bivalirudin as an alternative to heparin in patients with suspected vaccine-induced thrombotic thrombocytopenia following Ad26.COV2.S vaccination, pending more definitive research. [Ann Emerg Med. 2021;78:511-514.]

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INTRODUCTION

The Ad26.COV2.S (Johnson & Johnson/ Jansen) vaccine is a recombinant replication-incompetent adenovirus serotype 26 vector vaccine encoding the stabilized prefusion spike glycoprotein of SARS-CoV-2.[1] On February 27, 2021, the United States Food and Drug Administration (FDA) granted emergency use authorization for this vaccine in patients over the age of 18 years.[2] As of this writing, 6.8 million doses of Ad26.COV2.S have been administered.[3]

On April 13, 2021, the United States Centers for Disease Control and Prevention (CDC) and the FDA issued a joint statement recommending a pause in the administration of the Ad26.COV2.S vaccine. This recommendation was the result of 6 cases of thrombocytopenia and cerebral venous sinus thrombosis in women aged 18-48 years with symptoms occurring 6-13 days after vaccination with Ad26.COV2.S.[3] The term vaccine-induced thrombotic thrombocytopenia was first used in a report of patients who received the ChAdOx1 nCoV-19 (AstraZeneca) vaccine.[4] These patients presented with both thrombosis and thrombocytopenia 5-15 days post-ChAdOx1 nCoV-19 vaccination. We describe a case of a patient presenting with a headache on the same day as the CDC statement. She had both thrombocytopenia and cerebral venous sinus thrombosis, consistent with previously described cases of vaccine-induced thrombotic thrombocytopenia. Based on the CDC guidance, she was not treated with heparin, receiving bivalirudin instead. This patient's early outcomes suggest that bivalirudin may be a safe alternative to heparin in patients demonstrating a presentation consistent with vaccine-induced thrombotic thrombocytopenia.

CASE REPORT

A previously healthy 40-year-old woman received the Ad26.COV2.S vaccine in early April 2021 (day 0). On