

Thrombotic Thrombocytopenia and Central Venous Sinus Thrombosis Post - COVID-19 Vaccination and its Treatment with Heparin Alternatives

Sir,

Vaccine-induced thrombotic thrombocytopenia (VITT) have been reported in literature of COVID-19 vaccination.¹ Cases have been put forward when patients with VITT were treated with heparin alternatives safely, following the guidance of international recommendations from Centers for Disease Control and Prevention (CDC).¹ Favourable outcomes informed us to explore the option of using heparin alternatives for patients with VITT.¹

A healthy 50-year gentleman came to the Emergency Department 14 days after receiving the first dose of Oxford/AstraZeneca COVID-19 vaccine (AZD1222) against coronavirus at a private clinic for the prevention of COVID-19 infection with a dose of 5 x 10¹⁰ viral particles per 0.5 mL. Vaccine was given intramuscular (IM) into the right deltoid muscle. He presented with a headache, vertigo and vision changes. There was no history of clotting disorders or any past significant medical or surgical history. There were no past vaccine-related side effects experienced by the patient. He denied any prior medication use. He further denied any limb weakness, fever, speech difficulty or gait instability. On arrival, his vital signs were within normal ranges. General and systemic examinations were unremarkable, including detailed neurological examination. Laboratory investigations showed thrombocytopenia and an elevated d-dimer. Peripheral smear showed no significant abnormalities. Due to persistent headache, computed tomography of brain showed central venous sinus thrombosis (CVST) in transverse and sigmoid sinuses.

The patient was started on desirudin, a direct thrombin inhibitor. Additional agents for platelet recovery were administered including intravenous immune globulin 1g/kg/hour. Prednisolone 1mg/kg daily was also administered. Patient showed improvement in thrombocytopenia until discharge. At follow-up visit, there was a resolution of headache as well. Follow-up computed tomography of brain showed resolution of thrombosis.

Clinical presentation leading to the diagnosis of CVST and thrombocytopenia following COVID-19 vaccination, based on reported cases including headache and lethargy 6-8 days after vaccination.^{1,2} VITT is found to be mediated by platelet activating antibodies against platelet factor 4.² With unclear pathogenesis, it warrants further diagnostic testing. The CDC recommended treat-

ment with heparin alternatives and such cases triggered a high level of suspicion of VITT in the patients with headache or other symptoms to suggest thrombotic episodes post COVID-19 vaccination.³ It is also essential for emergency physicians and general physicians to be aware of this condition. These findings warrant important clinical and public health implications. The CDC recommendations for VITT is to avoid heparin and to consider anticoagulation with heparin alternatives.¹⁻³ Cases with vaccine related side effects are now in limelight and active surveillance programmes are developed in many countries, in which healthcare workers are reporting side effects that happen after vaccine administration.^{3,4} Hematologists can play a significant role, while managing patients with VITT, as it represents serious events in the background of CVST with thrombocytopenia.

PATIENTS' CONSENT:

Verbal consent was taken and anonymity was ensured.

CONFLICT OF INTEREST:

None to declare.

AUTHOR'S CONTRIBUTION:

SS: Drafted and edited the manuscript solely.

REFERENCES

1. CDC Health Alert Network. Cases of cerebral venous sinus thrombosis with thrombocytopenia after receipt of the Johnson & Johnson COVID-19 vaccine. <http://emergency.cdc.gov/han/2021/han00442.asp>. [Accessed on April 17, 2021].
2. European Medicines Agency. COVID-19 vaccine AstraZeneca: Benefits still outweigh the risks despite possible link to rare blood clots with low blood platelets. Accessed April 20, 2021. <http://www.ema.europa.eu/en/news/covid-19-vaccine-astrazeneca-benefits-still-outweigh-risks-despite-possible-link-rare-blood-clots>.
3. Greinacher A, Thiele T, Warkentin TE, Weisser K, Kyrle PA, Eichinger S. Thrombotic thrombocytopenia after ChAdOx1 nCov-19 vaccination. *N Engl J Med* 2021. doi:10.1056/NEJMoa2104840.
4. <http://www.nature.com/articles/d41586-021-00880-9>.

Sadaf Sheikh

Department of Emergency Medicine, Sultan Qaboos University Hospital, Muscat, Oman

Correspondence to: Dr. Sadaf Sheikh, Department of Emergency Medicine, Sultan Qaboos University Hospital, Muscat, Oman

E-mail: sheikh.sadaf@gmail.com

Received: May 07, 2021; Revised: June 21, 2021;

Accepted: June 25, 2021

DOI: <https://doi.org/10.29271/jcpsp.2021.JCPSPCR.CR149>

