

Thrombotic thrombocytopenia after ChAdOx1 nCov-19 vaccination.**Background & Objectives:**

- Unusual thrombocytopenia and thrombosis events developed after vaccination with the ChAdOx1 nCov-19 (AstraZeneca) vaccine.
- The article focuses on the pathogenesis of this unusual clotting disorder.

Methods: Clinical and laboratory features of 11 patients who developed thrombosis or thrombocytopenia after vaccination with ChAdOx1 nCov-19 were studied. ELISA was used to detect platelet factor 4 (PF4)–heparin antibodies and a modified (PF4-enhanced) platelet-activation test to detect platelet-activating antibodies under various reaction conditions. 28 patients referred for invx of VITT and positive on PF4-heparin immunoassay screening.

ACADEMIC P.E.A.R.L.S

Pediatric **E**vidence **A**nd **R**esearch **L**earning **S**nippet



Vaccine-induced immune thrombotic thrombocytopenia (VITT)

Results :

Of the 11 patients, 9 women, median age 36 years (range, 22 to 49). Events begin 5 to 16 days after vaccination. Thrombotic events included 9 cerebral venous thrombosis, 3 splanchnic-vein thrombosis, 3 pulmonary embolism, and 4 other thrombosis. 6 died. Five patients had disseminated intravascular coagulation. None of the patients had received heparin before symptom onset. All 28 patients who tested positive for antibodies against PF4–heparin tested positive on the platelet-activation assay in the presence of PF4 independent of heparin. Platelet activation was inhibited by high levels of heparin, Fc receptor–blocking monoclonal antibody, and immune globulin (10 mg per milliliter). Additional studies with PF4 or PF4–heparin affinity purified antibodies in 2 patients confirmed PF4-dependent platelet activation.

Conclusions: Vaccination with ChAdOx1 nCov-19 can result in the rare development of immune thrombotic thrombocytopenia mediated by platelet-activating antibodies against PF4, which clinically mimics autoimmune heparin-induced thrombocytopenia.

Key message: Immune thrombotic thrombocytopenia after ChAdOx1 nCov-19 vaccination is rare but can happen.

EXPERT COMMENT

“This Vaccine-induced immune thrombotic thrombocytopenia (VITT) is very rare. Pathogenesis of VITT is not yet clear, but in almost every patient, high levels of antibodies to PF4 were identified by ELISA. Also VITT occurred not only after Vaccination with ChAdOx1 nCov-19 but also after vaccination with Pfizer BioNTech mRNA Vaccine, Moderna mRNA vaccine and Johnson & Johnson/Janssen Ad26.COVS adenoviral vector vaccine. Treatment includes IVIG, High dose steroids and the non-heparin antithrombotic agents.”

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With warm regards,

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Reference

Greinacher A, Thiele T, Warkentin TE, Weisser K, Kyrle PA, Eichinger S. Thrombotic Thrombocytopenia after ChAdOx1 nCov-19 Vaccination. N Engl J Med. 2021 Apr 9. doi:10.1056/NEJMoa2104840. Epub ahead of print. PMID: 33835769