中文題目：血液透析病人於 AstraZeneca 疫苗施打後中央靜脈血栓形成

英文題目：Central vein occlusion with thrombosis after ChAdOx1 nCov-19 vaccination in a hemodialysis patient

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Introduction:

Coronavirus disease 2019 (COVID-19), caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is an ongoing pandemic. The ChAdOx1 nCoV-19 (Oxford - AstraZeneca) vaccine, an adenovirus vector - based technology vaccine, has been granted emergency authorization in many countries for the purpose of preventing the spread of SARS-CoV-2. However, rare cases of thrombosis at unusual sites, predominantly cerebral sinus thrombosis, associated with thrombocytopenia have been reported shortly after ChAdOx1 nCov-19 vaccine administration. Vaccine-induced immune thrombotic thrombocytopenia (VITT) is a recently established term used to describe a syndrome of thrombosis associated with thrombocytopenia following ChAdOx1 nCov-19 vaccine. VITT is believed to share the similar pathogenesis with heparin-induced thrombocytopenia (HIT).

In this case, we present a woman with end-stage renal disease on maintenance hemodialysis who developed thrombosis in her left-forearm subclavian vein after receiving the ChAdOx1 nCoV-19 (Oxford-AstraZeneca) vaccine. VITT was suspected and percutaneous transluminal angioplasty (PTA) was performed smoothly. The swelling of her left arm improved markedly after the procedure and the patient was discharged without any discomfort.

Case presentation:

A 64-year-old woman with hypertension and end-stage renal disease on maintenance hemodialysis via a left-forearm arteriovenous fistula since 2013 presented with progressive swelling of both the left upper and lower arm 5 days after receiving the ChAdOx1 nCoV-19 (Oxford-AstraZeneca) vaccine (days 0) in June, 2021. Her radiocephalic fistula was created in 2013. Cephalic arch stenosis was detected in 2016 and graft bypass from the forearm cephalic vein to the upper-arm cephalic vein was performed. The last PTA was performed on 2021/1/8, revealing left subclavian vein stenosis and balloon dilation was subsequently performed. This time, physical examination revealed thrills over the shunt, despite swelling over left forearm. Laboratory tests revealed decreased platelet count from 162,000/μL (day 0) to 111,000/μL (day 7). After suspecting central vein occlusion, PTA was performed (day 7), and it revealed occlusion with thrombosis in the left subclavian vein. A 240,000 U intravascular bolus and 75,000 U continuous 4-h drip of urokinase

were initially administered; and therefore, aspiration thrombectomy was performed smoothly. Subsequent to these treatments, left-arm swelling improved dramatically, and the patient continued to recieve hemodialysis via left-forearm arteriovenous shunt.

Discussion:

The pathogenic mechanism of VITT resembles that of HIT. Anti-platelet factor 4(Anti-PF4) antibodies are potential elicited by the inflammatory stimulus of the vaccination or by the vaccine itself, which cross-reacts with platelet factor 4 and platelets and subsequently causes a prothrombotic disorder. The diagnostic criteria for VITT include the following: (1) COVID-19 vaccination 4 - 42 days prior to symptom onset, (2) any venous or arterial thrombosis, (3) thrombocytopenia (platelet count < 150 X 109/L), (4) positive PF4/ heparin ELISA, and (5) markedly elevated D-dimer level (> 4 times the upper limit of the normal). In this case, we did not check the anti-PF4 antibody titer and D-dimer level; thus, we could not make a robust VITT diagnosis. In view of this, the diagnosis of VITT once a patient complains of limb swelling after vaccination with the ChAdOx1 nCoV-19 vaccine must not be overlooked.

Conclusion:

In patients with progressive limb swelling after ChAdOx1 nCoV-19 vaccination, VITT diagnosis must be considered.