Study outlines mechanism behind rare blood clots linked to COVID-19 vaccine

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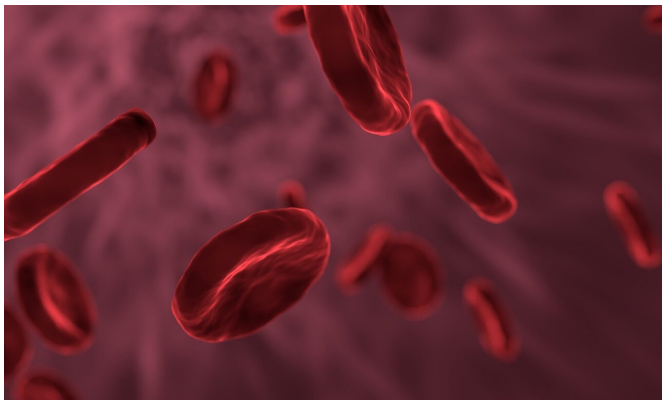

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A new research paper looking at rare cases of blood clots in the brain and low platelets seen in some patients after vaccination has been published in the *New England Journal of Medicine*.

The University of Liverpool's Professor Tom Solomon is a co-author on the paper, which highlights the importance of rapidly spotting this new syndrome, vaccine-induced thrombosis and thrombocytopenia (VITT), and the importance of following a particular treatment approach that is very different from the standard approach to thrombosis.

The researchers stress that vaccination remains the key route out of the pandemic, and everyone should continue to receive a vaccine when offered one.

The research team was led by Professor Marie Scully from University College Hospitals NHS Foundation Trust. Professor Scully and Dr. Will Lester from University Hospitals Birmingham NHS Foundation Trust were the first clinicians in the UK to spot the link between the Oxford/AstraZeneca vaccine and rare cases of blood clotting with a low platelet count, before identifying the correct diagnostic test for the syndrome and recommending a treatment approach which avoids the use of the blood thinner heparin.

In the paper, the researchers report on the cases of 23 patients, who all presented with thrombosis and thrombocytopenia after receiving the AstraZeneca vaccine. No patients had underlying conditions which would predispose them to blood clots.

Tests confirmed the presence of the PF4 antibody (platelet factor 4) in almost all cases (21 out of 23). These antibodies are usually triggered in rare instances by the blood-thinning drug heparin, a syndrome known as heparin-induced thrombocytopenia (HIT). But the patients reported in this study did not receive heparin, so could not have had HIT.

The researchers conclude that they were seeing a heparin-independent PF4-dependent syndrome in the setting of the AstraZeneca vaccine. They caution that this syndrome needs to be identified quickly if present, because the treatment needs to be very different to how blood clots and low platelet counts are normally treated.

Co-author Professor Tom Solomon commented: "Although it is a very rare side effect, this issue of clots in the brain and elsewhere combined with blood abnormalities following COVID-19 immunization is extremely important. It is critical we understand the disease mechanisms so we can provide the best treatment for patients. Here at the University we are part of a national program collecting information on such patients."

More information: Marie Scully et al. Pathologic Antibodies to Platelet Factor 4 after ChAdOx1 nCoV-19 Vaccination, *New England Journal of Medicine* (2021). DOI: 10.1056/NEJMoa2105385

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