Platelet factor 4

Neutrophil extracellular traps (NET) generation was mediated by PF4 from neutrophils and neutrophil-platelet aggregates through autophagy and contributed to thrombosis in cerebral venous sinus thrombosis (CVST) patients [1)]

Cerebral venous sinus thrombosis (CVT) prior to the COVID pandemic was rare, responsible for 0.5 of all strokes, at the onset of the pandemic on the East Coast, overall cross-sectional imaging volumes declined due to maintaining ventilation, high levels of care and limiting disease spread, although COVID-19 patients have a 30-60 times greater risk of CVT compared to the general population, and vaccination is currently the best option to mitigate severe disease. In early 2021, reports of adenoviral vector COVID vaccines causing CTV and Vaccine-induced Immune Thrombotic Thrombocytopenia (VITT), led to a 39.65% increase in cross-sectional venography, however, in this study unvaccinated patients in 2021 had a higher incidence of CVT (10.1%), compared to the vaccinated patients (4.5%). Clinicians should be aware that VITT CVT may present with a headache 5-30 days post-vaccination with thrombosis best diagnosed on CTV or MRV. If thrombosis is present with thrombocytopenia, platelets <150 × 109, elevated D-Dimer >4000 FEU, and positive anti-PF4 ELISA assay, the diagnosis is definitive. VITT CVT resembles spontaneous autoimmune heparin-induced thrombocytopenia (HIT) and is postulated to occur from platelet factor 4 (PF4) binding to vaccine adenoviral vectors forming a novel antigen, anti-PF4 memory B-cells, and anti-PF4 (VITT) antibodies. [2)].

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