

AstraZeneca vaccine complications

Cases have been described highlighting atypical [thrombosis](#) associated with [COVID-19](#) infection as well as with the ChAdOx1 nCoV-19 ([AstraZeneca](#)) vaccine and [Johnson & Johnson vaccine](#)

Neurological [COVID-19](#) disease poses a considerable burden in terms of disease outcomes and use of hospital [resources](#) from prolonged [intensive care](#) and [inpatient](#) admission; preliminary data suggest these may differ according to WHO regions and [country income](#) levels. The different risk factors for [encephalopathy](#) and [stroke](#) suggest different disease mechanisms which may be amenable to intervention, especially in those who develop neurological symptoms after [hospital admission](#) ¹⁾

Increased rates of [thromboembolic events](#) were identified in recipients, and, subsequently, a syndrome of [vaccine-induced immune thrombotic thrombocytopenia](#) (VITT) was described whereby recipients presented with [cerebral venous sinus thrombosis](#), hemorrhagic [infarctions](#), and - consequently - raised [intracranial pressure](#).

Related [cerebral venous sinus thrombosis](#) and associated [infarcts](#) are rare complications of the [AstraZeneca vaccine](#). Neurosurgical management involves treating [intracranial hypertension](#) however survival outcomes in a cohort were poor. In these series, decompression was performed in deteriorating patients however prophylactic decompression, in the presence of extensive [venous sinus thrombosis](#), should be considered on a case-by-case basis. As vaccination programs accelerate across the world, neurosurgeons are likely to be increasingly involved in managing intracranial hypertension in patients with VITT-related sinus thromboses. ²⁾

[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 $<150 \times 10^9$, 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. ³⁾

Case reports

A 65-year-old man who developed cognitive deficits and memory impairments following his first dose of Oxford AstraZeneca vaccine (Covishield). The onset of acute cognitive deficits and memory impairments could be another complication of COVID-19 vaccination that physicians and neurologists need to be warned of. Monitoring the safety of COVID-19 vaccines and describing the side effects associated with them is essential to improve safety profiles and enhance public trust ⁴⁾.

1)

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2)

Eltayeb M, Jayakumar N, Coulter I, Johnson C, Crossman J. Decompressive craniectomy for intracranial hypertension in vaccine-induced immune thrombotic thrombocytopenia: a case series. *Br J Neurosurg*. 2022 Aug 25;1-4. doi: 10.1080/02688697.2022.2115007. Epub ahead of print. PMID: 36004613.

3)

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4)

Chaurasia B, Chavda V, Lu B, Garg K, Montemurro N. Cognitive deficits and memory impairments after COVID-19 (Covishield) vaccination. *Brain Behav Immun Health*. 2022 Jul;22:100463. doi: 10.1016/j.bbih.2022.100463. Epub 2022 Apr 23. PMID: 35496775; PMCID: PMC9034829.

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