

**Title:** The Story Behind COVID Vaccines and Brain Blood Clots

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**Summary:** The news this week has been replete with stories about increased clot risk in those who have received the AstraZeneca and Johnson & Johnson COVID-19 vaccines. In this episode, we break down: what we know so far about vaccine induced thrombotic thrombocytopenia (VITT), the research that has revealed an underlying mechanism, CDC and NHS recommendations, and a primer on cerebral venous thrombosis -- the primary clot site associated with VITT.

We Discuss:

Vaccine induced thrombotic thrombocytopenia (VITT)

- The similar mechanism of AstraZeneca's and Johnson & Johnson's COVID-19 vaccines [01:00];
- Proposed mechanism of VITT [03:20];
- Types of clots associated with VITT [04:00];
- Incidence of VITT in the US and UK [05:00];
- The CDC and NHS rallying cry to treat this differently than other causes of cerebral venous thrombosis (CVT) [06:30];
- The UK algorithm for evaluating and managing patients with suspected VITT [08:00];

A primer on CVT

- Why CVT can cause problems [10:30]
- Presenting symptoms of CVT [11:00]
- Physical exam findings and the sensitivity of papilledema [15:00]
- Using D-dimer in the evaluation of CVT [16:50];
- A new clinical score for CVT [19:00];
- Utility of spinal tap as a rule out test [21:00];
- Imaging options (CT venogram vs MR venogram) [22:00];
- CDC treatment recommendations for VITT associated CVT and how it's different than most other CVT's [25:00];
- Testing patients with VITT for heparin-PF4 antibodies and how that may guide whether or not to use IVIG [26:35].

## References

- Greinacher, Andreas, et al. "Thrombotic Thrombocytopenia after ChAdOx1 nCov-19 Vaccination." *New England Journal of Medicine* (2021). [PDF](#)
- Brief Report: Thrombosis and Thrombocytopenia after ChAdOx1 nCoV-19 Vaccination [PDF](#)

- Spadaro, Anthony, et al. "Cerebral venous thrombosis: Diagnosis and management in the emergency department setting." *The American Journal of Emergency Medicine* (2021).
- Ferro, José M., et al. "European Stroke Organization guideline for the diagnosis and treatment of cerebral venous thrombosis—endorsed by the European Academy of Neurology." *European stroke journal* 2.3 (2017): 195-221.
- Tanislav, Christian, et al. "Cerebral vein thrombosis: clinical manifestation and diagnosis." *BMC neurology* 11.1 (2011): 1-5.
- Heldner, Mirjam R., et al. "Prediction of cerebral venous thrombosis with a new clinical score and D-dimer levels." *Neurology* 95.7 (2020): e898-e909.
- Padmanabhan, Anand, et al. "IVIg for treatment of severe refractory heparin-induced thrombocytopenia." *Chest* 152.3 (2017): 478-48
- UK case breakdown [Here](#)
- CDC and FDA Statement [Here](#)
- CDC full slide deck [Here](#)
- Guy and St Thomas NHS VITT Pathway [Here](#) (Note, this is only an example of one way of approaching this issue. It is based on early data and expert opinion.)
- St. Emlyn's has a beautiful write on on VITT [Here](#)

## Tags

Infectious Disease ID, Hematology, Public Health