Vaccine-Induced Immune Thrombotic Thrombocytopenia (VITT)

Six cases of cerebral venous sinus thrombosis in young women (aged 18 – 48) after receiving the Johnson and Johnson/Janssen COVID-19 vaccine have prompted a pause in administrations while more data are collected and reviewed. In the meantime, we are sharing some information for clinicians to raise awareness of this possible rare side effect. Similar cases have been reported after Astra-Zeneca vaccine, but it is not authorized for use in the US.

Clinicians should consider VITT in patients with compatible clinical symptoms within 3 weeks of J&J/Janssen vaccine. While VITT has not been reported in patients following the mRNA vaccinations (i.e. Moderna and Pfizer), with the appropriate clinical presentation evaluation for VITT should also be pursued in this population. Avoid heparin products and consult Hematology for guidance. Details below.

Clinical Presentation: To date, known cases all occurred within 3 weeks of receiving the recombinant adenovirus vaccination (i.e. Johnson & Johnson Janssen Vaccine; AstraZeneca Vaccine) in patients < 50 years of age with a Female:Male predominance (8:1). Commonly reported clinical symptoms include:

- Intense Headache
- Abdominal Pain
- Back Pain
- Leg Swelling
- Shortness of Breath/Dyspnea on Exertion
- New Neurologic Symptoms
- Bleeding
- Petechiae/Bruising
- Females >>> Males

Laboratory Findings:

- Thrombocytopenia (Platelet Count < 150,000)
  - Mean platelet count in published reports 20,000; range 9,000-107,000
  - Post-Vaccination Immune Thrombocytopenia (ITP) has also been reported following use of all available COVID vaccines (AstraZeneca, Johnson & Johnson/Janssen, Moderna, and Pfizer). These cases typically present with platelet count < 10,000 and in the ABSENCE of thrombosis.
- Elevated D-dimer
- Low Fibrinogen
- Positive PF4 HIT ELISA Assay
  - Non-ELISA HIT assays have NOT been validated in VITT and thus a negative result on this assay does not rule out VITT. BJH uses a HIT latex immunoassay.
- Positive PF4 Functional Assay (serotonin release assay)
Imaging Findings:
- Cerebral Venous Sinus Thrombosis
- Splanchnic Vein Thrombosis: Portal, Hepatic, Splenic or Mesenteric Vein Thrombosis
- Cerebral Hemorrhage
- Deep Vein Thrombosis/Pulmonary Embolism

Initial Management:
1. Consult Hematology
   - BJC Hospitals without an available hematologist have the option to call the BJH Doctors Access Line at 800-252-DOCS (3627) and ask to talk to the hematologist on-call.
2. Send Platelet Factor 4 (PF4)-Heparin Antibody Testing AND Serotonin Release Assay
   - Call clinical laboratory customer service to inform them HIT antibody testing is being ordered on a suspected VITT patient
3. Avoid Heparin or Low-Molecular-Weight Heparin (LMWH)
4. In patients with a confirmed or suspected thrombosis, consider non-heparin anticoagulant therapy based on clinical status and patient comorbidities
   - Short-acting Direct Thrombin Inhibitor (e.g. Bivalirudin or Argatroban)
   - Direct Oral Anticoagulant (e.g. apixaban, rivaroxaban)
   - Fondaparinux
5. Avoid Platelet Transfusions if clinically feasible as platelet transfusion may potentiate additional thrombosis.
6. Intravenous Immunoglobulin (IVIG) (e.g. 1 gram/kg daily x 2 days)
Clinical Presentation Concerning For  
**Vaccine-Induced Immune Thrombotic Thrombocytopenia (VITT)**  
(i.e. thrombocytopenia or a >50% decreased from baseline, confirmed or suspected thrombosis, within 3 weeks of COVID-19 vaccination)

**Consider Hematology Consult**  
Avoid Heparin/LMWH  
Order PF4-Heparin Antibodies AND Serotonin Release Assay (SRA); PT, aPTT, D-dimer, Fibrinogen  
Call clinical laboratory customer service to notify HIT Ab testing is ordered on a suspected VITT

**Imaging for Thrombosis**

Positive, Thrombosis Diagnosed

- **Start Non-Heparin Anticoagulant Therapy**  
  IVIG 1gram/kg daily x 2  
  Avoid Heparin/LMWH  
  Avoid Platelet Transfusion

SRA Positive  
- **Confirmed VITT**  
  Anticoagulant Therapy similar to Heparin-Induced Thrombocytopenia (3 months anticoagulation)

SRA Negative  
- **Less Likely VITT**  
  Consider Hematology Consult  
  Consider Repeat SRA if high clinical suspicion

SRA Negative  
- **Consider Alternate Causes of Thrombocytopenia**  
  Consider Hematology Consult

Negative, No Thrombosis

- **Consider Alternate Cases of Thrombocytopenia**  
  Consider Hematology Consult

**SRA Positive**  
- **VITT**  
  Start Non-Heparin Anticoagulant Therapy  
  IVIG 1g/kg daily x 2  
  Avoid Heparin/LMWH  
  Anticoagulant Therapy for 4-6 weeks

**SRA Negative**  
- **Consider Alternate Causes**  
  Consider Hematology Consult