

THROMBOPHILIA & ANTICOAGULATION

Joyce Zhou - Host
@joycezhou27

Dr. Jean Connors - Hematologist
@connors_md

Blake Smith - Script Writer
@_blake_smith

Primary Hemostasis

Platelets + Von Willebrand Factor

Secondary Hemostasis

Coagulation cascade >>> Fibrin Mesh Network

Hemostasis Review!

Thrombophilia

Congenital

Gain of Function

Factor V Leiden

Resistance of Factor V to enzymatic breakdown by Protein C → Pro-Coagulant

Prothrombin gene mutation (G20210A)

Increased production of prothrombin gene → Pro-Coagulant

Loss of Function

Protein C deficiency

Protein C primarily inactivates: Factors Va and VIIIa

Protein S deficiency

Cofactor for Protein C

Antithrombin III def.

Inactivates Factors Xa & IIa (thrombin)
AT-III is also the target of heparins

Acquired

Transient

Surgery

Trauma

Immobilization

Myeloproliferative neoplasms (MPNs)

- Nephrotic syndrome
- Inflammatory Bowel Disease (IBD)
- Paroxysmal nocturnal hemoglobinuria (PNH)
- Pregnancy
- Estrogen-containing oral contraceptive pills (OCPs)
- Obesity
- Smoking
- COVID-19

Medical Conditions

Cancer - paraneoplastic - metastatic

Antiphospholipid syndrome (APLS)

- both in pts with & without SLE

Heparin-induced thrombocytopenia

Inflammatory Conditions

*** EACH OF THESE ARE ADDITIVE OR SYNERGISTIC TO INCREASE RISK WHEN COMBINED***

Past Medical History

- Prior history of VTE !
- Trauma
- Surgery
- Hospitalization
- Pregnancy
- Infection
- (especially COVID-19)
- Immobilization
- international flights
- road trips

Medications

- OCPs
- Hormone-replacement therapy (HRT)
- Cancer treatments
- Anabolic steroids

Family History

- Family history of VTE in first-degree relatives
- at a young age (<45-50)

Symptoms

- Constitutional symptoms
- signs of malignancy
- Difficulty breathing
- Pleuritic chest pain
- Swollen leg

Physical Exam

- LAD
- Solid Tumors
- Hepatosplenomegaly
- Edema
- Ascites
- Vericose Veins
- Swollen leg

Workup

1. Thorough history
 2. Screening Labs
 - Complete blood count (CBC)
 - Peripheral Smear
 - Coagulation Study
 - PT, aPTT, INR
 - D-Dimer
 - Well's / Geneva score to stratify
 - ESR
- Consider inherited thrombophilia testing if:
- Recurrent Episodes
 - Atypical sites
 - Hx of warfarin-induced skin necrosis

Review on Thrombophilia Testing

Management

- **First Line : Direct Oral Anticoagulants - DOACs**

	VTE Treatment	VTE Prophylaxis
Dabigatran	Parenteral anticoagulation for 5-10 days, then 150 mg BID	110mg for 1 day, then 220mg qD
Apixaban	10mg BID x1wk, then 5mg BID	2.5mg qD
Rivaroxaban	15mg BID x3wk, then 20mg qD	10mg qD

- **Second Line: Warfarin**

Started with LMWH at a dose of **5 mg x1-2days**

Dose adjusted until: **INR = 2-3**

Clinical Pearls



Inherited thrombophilia is rarely the sole cause of a VTE!