

INTERPRETIVE GUIDE: HYPERCOAGULABLE STATE TESTING

Guidelines for hypercoagulable state testing. Use in correlation with patient history, family history, exam findings and clinical consultation(s) with Hematology and Pathology, as indicated.

Who should be tested and what tests to consider?

Consider patients with DVT (Deep Vein Thrombosis) or PE (Pulmonary Embolism)

- <50 years old
 - Recurrent
 - Unusual site (upper extremity)
 - Family history of DVT/PE or identifiable abnormality
 - Spontaneous/idiopathic DVT/PE
 - Multiple miscarriages
- A. Testing regardless of anticoagulation or current clot status:
1. Factor V Leiden mutation (V G1691A), DNA analysis
 2. F II (Prothrombin G20210A) mutation, DNA analysis
 3. Lupus anticoagulant and anticardiolipin antibodies
 4. Homocysteine level
 5. HIT (Heparin Induced Thrombocytopenia) antibody if heparin exposure prior to thrombosis and clinical suspicion for HIT
 6. Consider F VIII and CRP
 7. Consider Lipoprotein (a) [Lp(a)] level
 8. Assessment for malignancy (adenocarcinoma or myeloproliferative disorder)
- B. Testing when the patient is at least 2 weeks from clot episode and at least 2 weeks off of anticoagulant (Coumadin® or Heparin) medication:
1. Antithrombin III (ATIII), functional level, if low then order antigen level
 2. Protein C, functional level, if low then order antigen level
 3. Protein S, functional level, if low then order antigen level

Women with (1) a family history of DVT/PE and consideration of OCP or HRT use or (2) who are pregnant with a family history of known thrombophilia

- A. Factor V Leiden mutation, DNA analysis
- B. F II (Prothrombin G20210) mutation, DNA analysis
- C. Antithrombin III, Protein C and Protein S functional levels

Thrombosis in hepatic, abdominal, cerebral, or subdermal veins

- A. Consider PNH (Paroxysmal Nocturnal Hemoglobinuria) workup (flow cytometry for CD55/CD59)

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Arterial thrombosis

- A. Lupus anticoagulant and anticardiolipin antibodies
- B. HIT (Heparin induced thrombocytopenia), if exposed to heparin prior to thrombosis
- C. Homocysteine level
- D. Lipoprotein (a) [Lp(a)] level

Notes:

Protein C and S are decreased by Coumadin therapy and by recent clotting/thrombosis.

Antithrombin III is decreased by heparin therapy and by recent clotting/thrombosis.

F VIII is an acute phase reactant, an increase is only significant with a normal CRP.

Factor levels have age specific and pregnancy status specific norms.

HIT testing is only relevant with at least moderate clinical suspicion.

Patients may have more than one prothrombophilic factor.

Information above distilled from multiple published articles and guidelines by Dr. Christian Hansen M.D. 12/2009