Tests for Hypercoagulable State are overused and unnecessary in most Vascular Patients: When are they needed?

Elna Masuda, Raymond Lee, Ian Okazaki, Robert Kistner
Straub Clinic & Hospital, Honolulu
Nov 18, 2015

Case of first time Venous Thrombosis in unusual site:

- 55 yo male with acute abdominal pain,
- Dx acute mesenteric venous thrombosis,
- Lupus anticoagulant
- Abnormal PTT baseline and with 1:1 mix

ANTIPHOSPHOLIPID SYNDROME

Thrombophilias:

Inherited
- Factor V Leiden
- Prothrombin gene mutation
- Anti-thrombin deficiency
- Protein C & S deficiencies
- Elevated homocysteine
- Dysfibrinogenemia
- Elevated Factor VIII levels
- Abnormal fibrinolytic system
- Sickle Cell disease

Acquired
- Antiphospholipid antibody syndrome
- Protein C & S deficiencies
- Supplemental estrogen use
- HIT
- Cancer
- Medications
- Central venous catheter
- Obesity
- Pregnancy

Who should undergo thrombophilia testing for Venous thrombosis? Arterial?

- Venous thrombosis: Most would agree that testing should not be routinely offered in the presence of transient risks or active malignancy.
- Unprovoked? 50-70% will have an abnormal finding.
- Should all unprovoked cases be tested?

Data show thrombophilia testing for UNPROVOKED DVT does not justify widespread screening

<table>
<thead>
<tr>
<th>Study</th>
<th>Type</th>
<th>No. patients</th>
<th>Risk for Recurrence</th>
<th>Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christensen, JAMA 2005</td>
<td>Prospective</td>
<td>474</td>
<td>HR 0.6-1.8</td>
<td>NS</td>
</tr>
<tr>
<td>DeStefano, Hemat 2006</td>
<td>Retrospective</td>
<td>602</td>
<td>HR 1.4-1.9</td>
<td>Overall effect small</td>
</tr>
<tr>
<td>Baglin Lancet 2003</td>
<td>Prospective</td>
<td>781</td>
<td>17.5% natural anticoag vs. 11%</td>
<td>NS</td>
</tr>
<tr>
<td>Ho, Arch int med 2006</td>
<td>Meta-analysis</td>
<td>3104</td>
<td>OR 1.4-1.7</td>
<td>NS</td>
</tr>
<tr>
<td>Coppel, J Th &amp; Hemat 2006</td>
<td>Meta-analysis</td>
<td>5051</td>
<td>OR 0.8</td>
<td>NS</td>
</tr>
</tbody>
</table>
Costs of Hypercoagulable work up for VTE

- Factor V Leiden Mutation $408
- Activated Protein C Resistance $206
- Prothrombin Gene Mutation $408
- Cardiolipin IgG/IgM $564
- Lupus Anticoagulant Screen $243
- Antithrombin Activity $122
- Protein C Activity $139
- Protein S Activity $154
- Methylene-tetrahydrofolate Reductase $899
- Factor VIII, Functional $206
- Total $3,349

When is testing NOT useful?

- MOST cases of unprovoked VTE
- Active malignancy or transient risk factor
- Central line or upper extremity VTE
- Retinal vein clot
- 2 of more VTE (reasonable to test if dx will influence management)

When is thrombophilia testing helpful?

- Warfarin necrosis (test for Protein C or S deficiency)
- Heparin resistance (test for antithrombin deficiency)
- Unusual sites: mesenteric or cerebral VTE
- Suspect antiphospholipid antibody syndrome
- Females pregnant or considering OC or HRT
- Young <45 yo or strong fam history, if info will be used for future planning

Thrombophilia testing has limited usefulness in clinical decision-making and should be used selectively

Thrombophilia testing has limited usefulness in clinical decision-making and should be used selectively