Thromboelastography (TEG) and Its “Off Label Uses”

Joe Palter, MD
Cook County Emergency Medicine Residency
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What is TEG?
Assesses: Clot Initiation/Extrinsic Pathway

Treat With: FFP
Assesses: Fibrinogen

Treat With: Cryoprecipitate
Assesses: Fibrinogen, Platelets

Treat With: Cryoprecipitate +/- Platelets
Assesses: Platelets

Treat With: Platelets
Assesses: Fibrinolysis

Treat With: TXA or Amicar
# Thromboelastogram (TEG)

<table>
<thead>
<tr>
<th>Components</th>
<th>Definition</th>
<th>Normal Values</th>
<th>Problem with...</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>R Time</td>
<td>Time to start forming clot</td>
<td>5 – 10 minutes</td>
<td>Coagulation Factors</td>
<td>FFP</td>
</tr>
<tr>
<td>K Time</td>
<td>Time until clot reaches a fixed strength</td>
<td>1 – 3 minutes</td>
<td>Fibrinogen</td>
<td>Cryoprecipitate</td>
</tr>
<tr>
<td>Alpha angle</td>
<td>Speed of fibrin accumulation</td>
<td>53 – 72 degrees</td>
<td>Fibrinogen</td>
<td>Cryoprecipitate</td>
</tr>
<tr>
<td>Maximum Amplitude (MA)</td>
<td>Highest vertical amplitude of the TEG</td>
<td>50 – 70 mm</td>
<td>Platelets</td>
<td>Platelets and/or DDAVP</td>
</tr>
<tr>
<td>Lysis at 30 Minutes (LY30)</td>
<td>Percentage of amplitude reduction 30 minutes after maximum amplitude</td>
<td>0 – 8%</td>
<td>Excess Fibrinolysis</td>
<td>Tranexamic Acid and/or Aminocaproic Acid</td>
</tr>
</tbody>
</table>
Normal

Anticoagulants/hemophilia

Platelet blockers

Fibrinolysis

Hypercoagulability
H
TRAUMA CENTER
Randomized Control Trial, intention to treat (111 patients)
TEG guided MTP vs. Traditional Guided MTP
IMPROVED Mortality (@28 days)
DECREASED Blood Products (but ↑ platelets)
DECREASED ICU days and “vented” days
On the Horizon....
Implementing Treatment Algorithms for the Correction of Trauma Induced Coagulopathy (iTACTIC)

Randomized Control Trial, 400 patients
24-hour, 28-day and 90-day mortalities
Total Time to Hemostasis
Transfusion related complications (TACO, TRALI etc)
Results 2019....
“Rebalanced Hemostasis”
Traditional Measures Don’t Help
TEG = real time guidance
Already in use for liver transplants
RIPE FOR EM STUDY!!
Bleeding from Unknown Cause?
• Treated with Vitamin K!

• Improved hemostasis!

• Also left hospital AMA...
FOAMed Resources

• emDocs:
  http://www.emdocs.net/thromboelastogram-teg-five-minute-primer-emergency-physician/

• Life in the Fastlane:
  https://lifeinthefastlane.com/ccc/thromboelastogram-teg/

• Taming the Sru:
  http://www.tamingthesru.com/blog/grand-rounds/teg

• PulmCrit:
  https://emcrit.org/pulmcrit/coagulopathy-bleeding-cirrhotic-inr/
References


(slide 6) Sourced from: http://nursingpub.com/12-lead-ekg-explained-part-1/


(Slide 14) Rezaie, S. Rebel Review #54 Thromboelastogram (TEG). http://rebelem.com/rebel-reviews/


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References


