A Survey of Chemoprophylaxis Techniques in Spine Surgery Among American Neurosurgery Training Programs

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Introduction

- In the RCT on the prevention of VTE events in hospitalized medical patients, prophylactic low-molecular weight heparin (LMWH) > unfractionated heparin (UFH)

- Similar high-impact trials have validated more favorable results with prophylactic LMWH over UFH in general surgery, trauma surgery, orthopaedic surgery, urology, and cardiopulmonary specialties.
Methods

- In 2017, the Accreditation Council for Graduate Medical Education (AGME) provided the contact information for the program coordinators of all 107 ACGME-approved neurosurgery residency programs.

- Electronic survey on three pathologies: (1) degenerative/deformity, (2) trauma, (3) neoplasm.
Respondents: 69 Residency Programs
Results

Time to starting chemoprophylaxis for degenerative/deformity pathologies
North American Spine Section (NASS) Evidence-Based Clinical Guidelines

- Level IV evidence that has supported chemoprophylaxis on the day of spinal surgery

- Administering an anticoagulant, albeit a very small dose, prior to the procedure portends a higher risk of bleeding complications.
Type of Chemoprophylaxis

<table>
<thead>
<tr>
<th>Indication for Chemoprophylaxis</th>
<th>Unfractionated Heparin</th>
<th>Low-Molecular-Weight Heparin</th>
<th>None</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degenerative/Deformity</td>
<td>56.5%</td>
<td>36.2%</td>
<td>4.3%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Trauma</td>
<td>50.7%</td>
<td>43.4%</td>
<td>4.3%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Neoplasm</td>
<td>60.8%</td>
<td>36.2%</td>
<td>1.4%</td>
<td>1.4%</td>
</tr>
</tbody>
</table>

p = 0.037
Discussion

- NASS Evidence-Based Clinical Guidelines specified LMWH as a chemoprophylactic drug of choice without mention of UFH.

- But, for *therapeutic* doses of anticoagulation, guidelines take preference to intravenous UFH because LMWH is less “predictable.”
Neoplasms

- In a prospective double-blind randomized multicenter trial after elective cancer surgery, the ENOXACAN Study found that the thromboembolic complication rate of 18.2% in the heparin group did not statistically significantly differ from 14.7% in the enoxaparin group.

- The NASS Evidence-Based Clinical Guidelines determined that “Evidence [for chemoprophylaxis] is better established in higher risk patients undergoing spinal surgery for traumatic or neoplastic conditions.”
Thank You

Victor Chang, MD