Rapid Transport for Acute Aortic Syndrome Patients: When Should It Be Used and When Not

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Disclosures
None

Acute Aortic Syndromes (AAS)
• Aortic Aneurysms
• Aortic Dissections
• Penetrating Aortic Ulcers (PAU)/Intramural Hematomas (IMH)

Regionalization of Care for Acute Aortic Syndromes
• Appropriate Hospital Infrastructure
• Surgical expertise and team
• Higher volumes, better outcomes
• Proven concept for trauma care
• Logistics
  – Time, distance
  – Transfer mortality
  – Cost

Endovascular treatment of ruptured abdominal aortic aneurysms in the United States (2001-2006): A significant survival benefit over open repair is independently associated with increased institutional volume.

Regionalization of Emergent Vascular Surgery for Patients With Ruptured AAA Improves Outcomes

Transfer = more EVAR, lower mortality
Interfacility transfer and mortality for patients with ruptured abdominal aortic aneurysm

Matthew W. Holt, BS, MS, Nancy E. Wang, MD, Dong E. Moonves, MD, and Tina Hernandez Bouzaid, PhD, MTH. Los Angeles, Calif. J Vasc Surg 2014;60:553-7

- HCUP+Inpatient/Emergency Department CA, FL, NY databases
- 4439 ruptured AAA
- 3562 non-transfer, 847 transferred
- 17% of patients died during transfer
- Factors negatively effecting survival
  - Increasing age
  - Female sex

Transfers vs Non-Transfers

Mortality

- Operative transferred patients (35% vs 43%)
- Transfer vs non transfer (45% vs 43%)
- Transport time did not effect mortality

Regional Aortic Management

- Access to specialized centers with aortic expertise and advanced aortic technology; increase use of EVAR
- Decreased overall mortality and morbidity in patients with Acute Aortic Syndromes
- Transfer mortality a factor, transport time is not


Regional Aortic Management

Keck Rapid Transport System

24/7 within 2 hours

Aortic Emergency Transfers

- 215
- 242
- 249
- 253

Results

- 1106 Transfers from Dec 2013 - Jul 2015 for Neurologic, Cardiac and Acute Aortic emergencies
- AAS transfer accepted and initiated N=183
- Expired on route N=2
- Ruptured AAA
- Non AAS N=0
- Type A Dissection N=6 (35%)
- Type B Dissection N=1 (50%)
- Aneurysm N=6 (35%)
- MI/PEU N=11 (61%)
Transfer Data

- 81% transferred via ambulance (N=148)
- 19% transferred via helicopter (N=35)
- Median distance traveled 24 miles (3.6-315 miles)
- Median transport time of 42 minutes (10-144 minutes)

Mortality

Overall mortality: 15% (27/180)

Univariate/Multivariate Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Adjusted OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age greater ≥65</td>
<td>2.43</td>
<td>0.51-11.5</td>
</tr>
<tr>
<td>Coronary artery Disease</td>
<td>0.51</td>
<td>0.06-3.89</td>
</tr>
<tr>
<td>Previous CABG</td>
<td>5.31</td>
<td>0.51-55.5</td>
</tr>
<tr>
<td>SVS Score &gt; 8</td>
<td>7.37</td>
<td>1.91-28.5</td>
</tr>
<tr>
<td>Diagnosis of Aneurysm</td>
<td>1.88</td>
<td>0.42-8.40</td>
</tr>
</tbody>
</table>

SVS Score > 8

- No Hypertension at OSH
- No Pulmonary at OSH
- No Renal at presentation to ICU
- Systolic BP ≤90 on presentation to ICU
- Occurrence of Complication

Society for Vascular Surgery (SVS) Comorbidity Severity Score

= 4x(Cardiac)+2x(Pulmonary)+2x(Renal)+1x(HTN)+1x(Age)

*Cardiac
*Pulmonary
*Renal
*HTN
*Age

Preoperative risk score for the prediction of mortality after repair of ruptured abdominal aortic aneurysms

- Age > 76 years
- Creatinine > 2mg/dl
- BPsys < 70 mmHg
- pH < 7.2

Mortality

1 = 22%
2 = 69%
3 = 80%
4 = 100%
Conclusions

• Rapid transport to a regional aortic center facilitates care of patients with AAS
• Transfer mortality is a factor
• Transport mode, time and distance traveled not associated with mortality
• Decision making to accept/deny transfer is evolving
• Renal, Age, Physiologic insult (BP, perfusion) determine mortality and may be helpful in the decision to transfer/not transfer