Pooled Analysis of ACT 1 & CREST in Asymptomatic Carotid Stenosis Patients under 80 years of Age: How it can help decision making

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Conflict of Interest Disclosures
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CREST & ACT 1
Carefully selected surgeons and interventionalists with lead-in phases (SMC’s & IMC’s)
Single stent and routine distal embolic protection: Acculink/Accunet for CREST & Xact/Emboshield for ACT 1
Independent neurologic assessment
Routine cardiac enzyme screening
Central clinical event adjudication committees
DSMB oversight

Background
Asymptomatic severe carotid stenosis is the most common indication for carotid intervention in the United States.
Two large randomized trials have published comparisons of carotid stenting (CAS) and carotid endarterectomy (CEA) in asymptomatic patients.
Pooled analysis may better inform decision making about these procedures.
Treatment of Carotid Stenosis in Asymptomatic Non-Octogenarian, Standard Risk Patients with Stenting Versus Endarterectomy: A Pooled Analysis of the CREST and ACT 1 Trials

Bret Hanlon, Jon Matsumura, Kenneth Rosenfield, Jennifer Voeks, George Howard, Gary Roubin, Thomas Brott, on behalf of the CREST and ACT 1 Investigators

Presented at ASA 2019

Methods

Trial leadership met and agreed to patient level, pre-specified, pooled analysis:

- Primary endpoint composite of death, stroke, or myocardial infarction in the periprocedural period, or any ipsilateral stroke within 4 years after randomization
- All randomized, non-octogenarian, asymptomatic subjects
- Analysis by university biostatisticians who replicated prior trial findings with databases in house

Results: Primary Endpoint

Composite of periprocedural death, stroke, myocardial infarction or 4 year ipsilateral stroke is similar:

CAS 5.3% vs CEA 5.1%

Hazard ratio 1.02, 95% CI 0.7 to 1.5, P=0.91

Results: Component Endpoints Periprocedural

Periprocedural component rates:

- Stroke: 2.7% vs CEA 1.5% P=0.07
- Myocardial infarction: 0.6% vs 1.7% P<0.01
- Death: 0.1% vs 0.2% P=0.62
- Stroke or death: 2.7% vs 1.6% P=0.07

Demographics

2544 (1637 CAS, 907 CEA) asymptomatic patients less than 80 years old (upper age eligibility of ACT 1) were analyzed:

CREST 1091 (548 CAS, 543 CEA)
ACT 1 1453 (1089 CAS, 364 CEA), 3:1 weighted randomization

Results: Component Endpoints

Periprocedural component rates:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS (N=4167)</th>
<th>CEA (N=1453)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years) (Mean +/- SD)</td>
<td>73.7 +/- 7.07</td>
<td>74.0 +/- 6.65</td>
<td>0.062</td>
</tr>
<tr>
<td>Age &gt;= 65 (N %)</td>
<td>1135 (69.3)</td>
<td>643 (70.9)</td>
<td>0.417</td>
</tr>
<tr>
<td>Sex: Male (N %)</td>
<td>1021 (62.4)</td>
<td>574 (63.3)</td>
<td>0.669</td>
</tr>
<tr>
<td>Race: White (N %)</td>
<td>1501 (91.8)</td>
<td>845 (93.2)</td>
<td>0.244</td>
</tr>
<tr>
<td>Hypertension (N %)</td>
<td>1470 (90.3)</td>
<td>801 (85.5)</td>
<td>0.098</td>
</tr>
<tr>
<td>Hyperlipidemia (N %)</td>
<td>1477 (90.3)</td>
<td>813 (89.9)</td>
<td>0.781</td>
</tr>
<tr>
<td>Current Cigarette Smoking (N %)</td>
<td>418 (25.6)</td>
<td>196 (21.8)</td>
<td>0.033</td>
</tr>
<tr>
<td>Diabetes Mellitus (N %)</td>
<td>573 (35)</td>
<td>305 (33.7)</td>
<td>0.244</td>
</tr>
</tbody>
</table>
Results: Component Endpoint
Non-Procedural Ipsilateral Stroke

After periprocedural period, rate of ipsilateral stroke is similar:

- CAS 2.3%
- CEA 2.2%
- P=0.97

Secondary Results: Survival from Any Stroke

Cumulative 4 year rate of stroke-free survival (ipsilateral and non-ipsilateral):

- CAS 93.2% vs CEA 95.1%
- P=0.10

Secondary Results: Survival

Cumulative 4 year survival:

- CAS 91% vs CEA 90.2%
- P=0.923

Summary

This pooled analysis is the largest of randomized standard risk asymptomatic patients in the United States. Carotid stenting and carotid endarterectomy have similar rates of composite of procedural complications and four year ipsilateral stroke in asymptomatic, standard risk, non-octogenarians.

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