What Other Than Emboli from Carotid Lesions Can Cause Strokes:
what % of strokes are caused by bifurcation disease

Thomas G. Brott, MD
Veith Symposium Session 10 (8:10AM-8:15AM)
November 13, 2018

Disclosures

▶ None

Atherosclerosis and Risk

Decline in the Severity of Carotid Atherosclerosis and Associated Risk Factors From 2002 to 2014
Daniel G. Hackam, MD, PhD, FRCP.C. J. David Spence, MD, MSc, FRCP.C

Background and Purpose: Several recent studies suggest declining rates of carotid atherosclerosis for patients with cardiac arrest. We investigated whether carotid atherosclerosis severity has declined in recent years.

Methods: We conducted a 10-year retrospective cohort study of 997 patients presenting to vascular medicine clinics in 7 years: 2002 to 2008, 2009 to 2010, and 2010 to 2014. Results: The rate of progression in the severity of carotid atherosclerosis declined by 77.5% between 2002 and 2014, with the percentage of patients presenting with carotid lesions 99.5% declined by 24.5%, and the number presenting with >95% stenosis declined by 30%. There were significant reductions in plasma lipids and blood pressure during the same interval.

Conclusion: Atherosclerosis severity rates in the declining over time. Better treatment of risk factors in the community may be responsible. (Stroke. 2018;49:2784-2789. DOI:10.1161/STROKEAHA.118.021435)

Editors’ Choice
From the New England Society for Vascular Surgery

Risk factor profile and anatomic features of previously asymptomatic patients presenting with carotid-related stroke
Derek Klein, MD,1 Richard P. Cambria, MD,1 Geral A. Enge, MD1 Scott S. Silberman, MD1 Vendela I. Patel, MD, MPH1 Claire M. LaMarre, MD1 Mark F. Corrigan, MD, MSc1 and W. Carin Clouse, MD2 Boston and Brigham, Mass. and New York, NY

(J Vasc Surg 2018;68:1390-5.)

Type of Research

▶ Retrospective review of 3382 patients with stroke
▶ Single-center – Mass General
▶ Cohort Study
In 3382 patients presenting with stroke, 219 strokes (7%) occurred in previously asymptomatic patients with ipsilateral carotid artery stenosis. 43% had internal carotid artery occlusion. Only 50% were receiving antiplatelet therapy. 55% were receiving statins, and 35% were receiving both therapies.

Stroke Severity Lower in Patients on anti-platelet and lipid lowering therapy
### Treatments received in 219 previously asymptomatic patients admitted with carotid-mediated stroke

<table>
<thead>
<tr>
<th>Treatment/outcome</th>
<th>N (No.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lytic therapy given in emergency room</td>
<td>25 (54)</td>
</tr>
<tr>
<td>CEA</td>
<td>37 (81)</td>
</tr>
<tr>
<td>CAS</td>
<td>16 (36)</td>
</tr>
<tr>
<td>Medical therapy alone</td>
<td>47 (102)</td>
</tr>
<tr>
<td>Discharge to rehabilitation facility</td>
<td>51 (110)</td>
</tr>
<tr>
<td>Discharge to home</td>
<td>40 (87)</td>
</tr>
<tr>
<td>Infarct-related death</td>
<td>9 (22)</td>
</tr>
</tbody>
</table>

CAS, Carotid artery stenting; CEA carotid endarterectomy.

#### Recommendation

"The results of the present study question whether medical therapy is a sufficient stroke risk-reduction strategy for asymptomatic patients with carotid disease."

---

### ACST Post-perioperative Strokes by Subtype

- 605 Medical-only patients with 625 more to come
- 3T plaque imaging — how does new technology help?
- Baseline perfusion imaging with MRI or CT on up to 500 (CREST-H) — what type of strokes occur in patients with hemodynamic compromise?

### Robust Data will come from CREST-2

- MRI on any suspected strokes or TIAs — what is size and type (how many "lacunes" are really lacunes?)
- End of study Brain MRI — how many silent strokes and what do they look like?
- Adjudication of all by skilled physicians

---

**Carotid Artery Wall Imaging: Perspective and Guidelines from the ASNR Vessel Wall Imaging Study Group and Expert Consensus Recommendations of the American Society of Neuroradiology**


AJNR Am J Neuroradiol 39:29-121 Feb 2018
Conclusions:

The results of this study show that patients with SMI-detected blood flow will tend to have plaque enhancement using CEUS. This suggests that SMI, as a simpler, safer, and noninvasive technique, can facilitate the visualization of carotid artery IPN without the use of a contrast agent, as well as in the clinical evaluation of plaque instability.

Journal of Stroke and Cerebrovascular Diseases, Vol. 27, No. 9 (September), 2018; pp 2348-2353
**Transcarotid Artery Revascularization With Flow Reversal: The PROOF Study**

Alper Alpaslan, MD, Max Wintermark, MD, László Pintér, MD, Sumaira Macdonald, MD, Richard Ruedy, BA, and Ralf Kolvenbach, MD

*Journal of Endovascular Therapy* 2017, Vol. 24(2) 265–270

---

**VQI Results**

637 TCAR vs 12,049 CEA

<table>
<thead>
<tr>
<th>Univariate Analysis</th>
<th>Multivariate Logistic Regression</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEA (n=12,049)</td>
<td>TCAR (n=637)</td>
</tr>
<tr>
<td>N(N)</td>
<td>p (%)(%)</td>
</tr>
<tr>
<td>Total Stroke</td>
<td>149 (1.3)</td>
</tr>
<tr>
<td>Stroke or Death</td>
<td>252 (2.3)</td>
</tr>
<tr>
<td>Any Neurological Event</td>
<td>241 (2.0)</td>
</tr>
</tbody>
</table>

---

**Table 1. Demographics, Clinical Data, and Lesion Characteristics of the 75 Study Patients.**

<table>
<thead>
<tr>
<th>Patient Characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y</td>
<td>72.6</td>
</tr>
<tr>
<td>Men</td>
<td>45 (60.0)</td>
</tr>
<tr>
<td>Contralateral carotid stenosis</td>
<td>30 (40.0)</td>
</tr>
</tbody>
</table>

Lesion length, mm      14.4±7.6
CCA diameter, mm       8.1±0.9
ICA diameter, mm       5.7±1.2
ICA stenosis, %        85.0±8.8
Severely calcified     33 (45.2)
Severe tortuosity      3 (4.2)
Clavicle to bifurcation, cm  7.2±1.2
PROOF Results
75 with pre- and post MRI

- 5 patients had transient intolerance of flow reversal (TCAR completed)
- Mean time on flow reversal was 19.1 minutes
- **10** (18%) of 56 patients with ipsilateral OWL-MRI had new infarcts, mean volume **0.17 ml** (about \( \frac{1}{30} \text{ of 5 cc [one teaspoon]} \))
- One patient with minor stroke; "20% decrease in vision after the procedure."

Treatment: medical

Alirocumab and Cardiovascular Outcomes after Acute Coronary Syndrome


New Gizmos

Wearable Ultrasound Patch Monitors Blood Pressure

Thans for your attention