The Natural History of Patients With Bilateral ICA Occlusion is Bad: How Can It Be Treated

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Speaker Disclosure:
Nothing to Disclose

Background

• Natural history of pts. with bilateral ICA occlusion (BICA) secondary to atherosclerosis is usually influenced by occurrence of stroke around time of occlusion
• Despite the fact that relatively low incidence of acute stroke reported with ICA occlusion, long-term M,M continues through the years

Background

• Pts. w/cerebral infarcts secondary to carotid thrombosis have subsequent stroke risk of 8-12% per yr.
• Long-term outcome of symptom free pts. w/ICA occlusion is no worse than pts. w/stenotic lesions
  (Cote & Barnett et al, Stroke 1983)
  (Nicholls et al, JVS 1986)

Background

• Studies with BICA are lacking in English literature
• We will analyze natural history & surgical alternatives for pts. w/BICA in two periods:
  – 1986 to 1995 (10 yrs.)
  – 2008 to 2017 (last 10 yrs./VCOE)
Demographics (1st Period)

- 21 pts.
- Smoking in 100% of pts
- Hyperlipidemia in 67% (14 pts.)
- Hypertension in 81% (17 pts.)
- Coronary artery disease in 71% (15 pts.)
- Diabetes mellitus in 33% (7 pts.)
- Mean age was 61 yrs. (range 48-73 yrs.)

Clinical Presentations

<table>
<thead>
<tr>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemispheric TIs</td>
<td>8</td>
</tr>
<tr>
<td>Amaurosis fugax</td>
<td>3</td>
</tr>
<tr>
<td>Strokes</td>
<td>5</td>
</tr>
<tr>
<td>Global Sx/Asx</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
</tr>
</tbody>
</table>

Surgical Treatment & Results

<table>
<thead>
<tr>
<th>Indications (no.)</th>
<th>Symptom resolution</th>
<th>Late neuro events (mean f/u 6 yrs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex.CEA (8)</td>
<td>Hemispheric TIA (4) All resolved</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Amaurosis fugax (2) All resolved</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Strokes (1)         Resolved</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Non-hemispheric TIA (1) Resolved</td>
<td>None</td>
</tr>
<tr>
<td>CSBF (4)</td>
<td>Hemispheric TIA (1) Resolved</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Amaurosis fugax (1) Resolved</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Stroke (1)           Resolved</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Non-hemispheric TIA (1) Resolved</td>
<td>None</td>
</tr>
<tr>
<td>Ascending Aorto IBP (1)</td>
<td>Hemispheric TIA (1) Resolved</td>
<td>None</td>
</tr>
</tbody>
</table>

Clinical Presentations in Pts. w/Medical Treatment/Outcome

<table>
<thead>
<tr>
<th>Presentation</th>
<th>No.</th>
<th>Symptom resolution</th>
<th>Late neuro events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemispheric TIA</td>
<td>2</td>
<td>1 resolved</td>
<td>1 pt. had a stroke</td>
</tr>
<tr>
<td>Stroke</td>
<td>2</td>
<td>2 had some improvement</td>
<td>2 pts. had strokes &amp; 1 pt. had a TIA</td>
</tr>
<tr>
<td>Non-hemispheric TIA</td>
<td>1</td>
<td>1 resolved</td>
<td>2 pts. had TIs</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Late Mortality

- Mean f/u 6 yrs. (range 1-11 yrs.)
- Overall mortality rate 11/21 (52%); 5/13 (38%) in surgical group & 6/8 (75%) in medical group
- Cause of death included:
  - 7 MIs (4 in surgical group & 3 in medical group)
  - 4 strokes (1 in surgical group & 3 in medical group)

Recent Group Demographics (15 pts.)

- Mean age – 68 yrs.
- Smoking: 12/15 (80%)
- Hyperlipidemia: 11/15 (73%)
- Hypertension: 13/15 (87%)
- CAD: 9/15 (60%)
- DM: 6/15 (40%)
- Statin Rx: 13/15 (87%)
- Antiplatelet Rx: 14/15 (93%)
**Clinical Presentation**

- Hemispheric TIA: 4 (27%)
- Amaurosis fugax: 2 (13%)
- Strokes: 4 (27%)
- Global Sx/Asx: 5 (33%)
- Total: 15 (100%)

**Surgical Treatment & Outcome**

<table>
<thead>
<tr>
<th>Indications (no.)</th>
<th>Symptom resolution</th>
<th>Late neuro events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex.CEA (5)</td>
<td>Hemispheric TIA (2) Stroke (2)</td>
<td>None None 1 Minor stroke</td>
</tr>
<tr>
<td>CSBP (2)</td>
<td>Hemispheric TIA (1) Global TIA (1)</td>
<td>None None Hemispheric TIA</td>
</tr>
<tr>
<td>CSBP w/Ex.CEA (1)</td>
<td>Stroke (1)</td>
<td>Improved Hemispheric TIA</td>
</tr>
</tbody>
</table>

**Medical Therapy & Outcome**

- 7 patients
- Global Sx (4) Stroke (1) Aox (2)
- 2 resolved None Same
- 2 TIA Major stroke/death 1 minor stroke

- All had statin therapy, antiplatelet (DAT) in 6, & 1 had anticoagulant therapy

**Late F/U – Recent Group**

- Mean f/u 52 mos.
- Overall death rate: 5/15 (33%)
  - Surgical group: 2/8 (25%)
  - Medical group: 3/7 (43%)
- Cause of death:
  - MI (3)
  - Stroke (1) (med. gr.)
  - Unknown (1)

**Bilateral Occlusion of ICA Presenting Sx in 74 pts. & Prospective Study of 34 Medically Treated Patients**

- 34 pts. treated conservatively & followed prospectively for 42 mos.
- 18 (53%) suffered further cerebrovascular events (ischemic event rate of 15% per pt. per yr.)
- TIAs in 7 & stroke in 11 (latter suffered total of 15 strokes during f/u of 42 mos.)
- Annual stroke rate 13% per pt. yr.
- Deaths were 8% per yr.

(Wade et al, Brain 1987)

**Bilateral Carotid Artery Occlusion w/Transient or Moderately Disabling Ischemic Stroke: Clinical Features & Long-Term Outcome**

- Studied 57 consecutive pts. w/bilateral ICA occlu.
- Presented w/unilateral transient/moderately disabling cerebral/retinal ischemic sympotms
- 4 pts. had recurrent ischemic stroke during mean f/u of 5.9 yrs., annual stroke rate of 1.2%
- 18 pts. suffered stroke/MI/vascular death→annual rate for major vascular events of 5.3%
- Favorable outcome suggests policy of medical Tx & control of risk factors may be justified

(Persoon et al, J Neurol 2009)
Bilateral Carotid Artery Occlusion w/Transient or Moderately Disabling Ischemic Stroke: Clinical Features & Long-Term Outcome

- Annual stroke rate in this study was comparatively low may be partly attributed to large proportion of pts. w/retinal ischaemic symptoms included in study
- Medical Tx for secondary prevention of stroke & control of vascular risk factors currently more effective than 2 or 3 decades earlier

Conclusions

- Bilateral ICA occlusions have grave prognoses & should be considered a marker for severe systemic disease
- Various cerebrovascular reconstructive procedures may be beneficial for some of these pts.