CAROTID ENDARTERECTOMY VERSUS CAROTID STENTING IN SYMPTOMATIC PATIENTS: EARLY RESULTS AND RESTENOTIC RATES

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Disclosure

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☒ I do not have any potential conflict of interest
INTRODUCTION

- Carotid artery stenosis causes up to 10% of all ischemic strokes

- Carotid endarterectomy (CEA) has been established as effective treatment in carotid stenosis for both, symptomatic and asymptomatic patients.

- Carotid artery stenting (CAS) has emerged as an alternative to endarterectomy, but long-term efficiency is uncertain.

- We think it is necessary to assess the durability of both treatments with respect to restenosis after a revascularization procedure.
OBJECTIVES

- To compare 30-day stroke/Myocardial infarction (MI) and death after treatment.

- To compare the incidence of severe restenosis (>70%) between both treatments during the follow-up.
MATERIAL AND METHODS

- Retrospective cohort
- N=147 patients with **symptomatic** carotid stenosis
- 2008-2015

Median follow-up:

21 months (9-44) in CEA
22.5 months (15-41) in CAS

CEA 59.86%
CAS 40.14%
• Symptomatic patients:
  - Transient ischemic attack
  - Amaurosis fugax
  - Minor non disabling stroke

  180 days earlier
  Carotid artery stenosis >50%
MATERIAL AND METHODS

We analyze:
• Basics demographics
• 30-day stroke/myocardial infarction and death
• Restenosis during follow-up
• Global mortality
MATERIAL AND METHODS

- STATISTICS:
  - SPSS
  - Chi square test
  - T-student test/ Mann-Whitney Test
  - Kaplan Meier curve
MATERIAL AND METHODS

Ischemic stroke

Carotid ultrasound

Moderate stenosis (50-70%) and severe stenosis (>70%)

Carotid endarterectomy  

Carotid stenting

Arteriography

Carotid ultrasound  1, 3, 6 and 12 months
MATERIAL AND METHODS

- CEA was performed with conventional technique with patching, under general anesthesia with electroencephalographic monitoring.
- CAS, in most cases, was performed under general anesthesia through the femoral artery.
- Aspirin 100 mg daily were given and continued indefinitely thereafter in both groups.
- CAS group also included clopidogrel 75 mg/daily 3 months after the procedure.
RESULTS

Basics demographics:

<table>
<thead>
<tr>
<th></th>
<th>CEA Group (n=88)</th>
<th>CAS Group (n=59)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension (%)</td>
<td>73.86</td>
<td>71.19</td>
<td>P=0.72</td>
</tr>
<tr>
<td>Diabetes (%)</td>
<td>20.45</td>
<td>33.90</td>
<td>P=0.07</td>
</tr>
<tr>
<td>Dyslipemia (%)</td>
<td>52.27</td>
<td>57.63</td>
<td>P=0.52</td>
</tr>
<tr>
<td>Smoking (%)</td>
<td>35.23</td>
<td>32.20</td>
<td>P=0.70</td>
</tr>
<tr>
<td>Renal failure (%)</td>
<td>26.14</td>
<td>20.34</td>
<td>P=0.42</td>
</tr>
<tr>
<td>Coronary artery disease (%)</td>
<td>17.05</td>
<td>25.42</td>
<td>P=0.22</td>
</tr>
<tr>
<td>Sex (% male)</td>
<td>77.53</td>
<td>74.58</td>
<td>P=0.59</td>
</tr>
<tr>
<td>Age (years)</td>
<td>70.86</td>
<td>70.54</td>
<td>P=0.85</td>
</tr>
</tbody>
</table>

We didn’t find any significant differences between the two groups.
## RESULTS

<table>
<thead>
<tr>
<th></th>
<th>CEA</th>
<th>CAS</th>
<th>RR (CI 95%)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke 30-days</td>
<td>3</td>
<td>4</td>
<td>1,99</td>
<td>0,35</td>
</tr>
<tr>
<td>MI 30-days</td>
<td>1</td>
<td>0</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Death 30-days</td>
<td>2</td>
<td>1</td>
<td>0,75</td>
<td>0,81</td>
</tr>
<tr>
<td>Composite endpoint</td>
<td>9</td>
<td>9</td>
<td>1,49</td>
<td>0,36</td>
</tr>
<tr>
<td>Restenosis</td>
<td>1</td>
<td>10</td>
<td><strong>13,75</strong></td>
<td><strong>0,0006</strong></td>
</tr>
</tbody>
</table>

RR=Risk Ratios  CI 95%  CI= Confidence Interval 95%  NE=Not estimated
RESULTS

Kaplan-Meier restenosis curve

Number at risk

analysis time
RESULTS

The restenosis Kaplan Meier curve shown below displays differences between restenosis in both groups.

All the restenosis cases in both groups were asymptomatic.
RESULTS

Kaplan-Meier survival curve

Number at risk

| tto = 0 | 64 | 53 | 41 | 35 |
| tto = 1 | 52 | 43 | 40 | 27 |

- **tto=0 CEA**
- **tto=1 Stenting**
Limitations to this study:

– Retrospective study
– Sample size
– Probable selection bias
– Cannot be generalized
CONCLUSIONS

• No significant differences in the composite endpoint (stroke/MI and death 30-day post-treatment) were found between the CEA and CAS patient groups.

• The CAS group had a greater risk of severe restenosis (>70%) after revascularization compared to CEA in our study.

• We concluded that CEA should remain the gold-standard treatment of carotid stenosis for symptomatic patients.
thank you
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