SYMPTOMATIC CAROTID STENOSIS
OPTIMAL TIMING
OF
SURGICAL TREATMENT

AKADEMISK AVHANDLING

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av

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Avhandlingen baseras på följande arbeten:

I. Strömberg S., Gelin J., Österberg T., Bergström G.M.L., Karlström L., Österberg K., for the Swedish Vascular Registry (Swedvasc) steering committee
Very urgent carotid endarterectomy confers increased procedural risk

II. Strömberg S., Nordanstig A., Bentzel T., Österberg K., Bergström G.M.L.
Risk of early recurrent stroke in symptomatic carotid stenosis
European Journal of Vascular and Endovascular Surgery 2015;49:137-144

Very urgent carotid endarterectomy is associated with an increased procedural risk: The Carotid Alarm Study
European Journal of Vascular and Endovascular Surgery 2017;54:278-286

IV. Strömberg S., Bergström G.M.L., Acosta S., Gillgren P., Karlöf E., Johansson E., Klingberg D., Österberg K., for the Swedish Vascular Registry (Swedvasc) steering committee
Procedural risk of very urgent carotid endarterectomy - A population-based study
Manuscript
SYMPTOMATIC CAROTID STENOSIS
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Abstract
In patients with symptomatic carotid artery stenosis is convincing evidence that carotid endarterectomy (CEA) confers maximum benefit if performed within 14 days from index event. Patients with TIA or minor stroke have an increased risk of early recurrent stroke in the first weeks after the index event, then declining over months. This is the rationale to perform CEA as soon as possible after an index event. However, the procedural risk within the urgent time period is unknown.

Aim
The overall aim of this thesis was to investigate the optimal timing of surgical treatment in patients with symptomatic carotid stenosis.

Methods
In study I, registry data, obtained from Swedvasc, was analyzed regarding procedural risk of CEA, stratified for delay from index event. Mortality and stroke rate was studied at four time points, 0-2 days, 3-7 days, 8-14 days and 15-180 days. A multivariable analysis was performed to find other risk factors for CEA than time from referring event.
In study II, 397 patients from WINGA, a region based registry for ultrasound investigations, were analyzed. All included patient had a significant symptomatic carotid stenosis. The risk of recurrent stroke at day 2, 7 and 30 after the index event was analyzed.
Study III, was a prospective population based study with 418 consecutive patients comparing CEA within 48 hours with CEA after 48 hours to 14 days from most recent event. Primary endpoint was 30 days stroke and/or mortality rate after CEA.
Study IV, included all CEA for symptomatic carotid stenosis registered in Swedvasc from May, 2008 to October, 2014. All medical records for CEA performed within 2 days were collected, and also a control group with CEA 3 to 7 days from index event. Analysis of validated and crude data regarding procedural risk stratified for delay was made.

Results
The overall results from the four studies in the thesis shows an early risk of recurrent stroke at 1.7-2.0% day 2, 4% at one week and 7.5% at day 30. The procedural risk was 7.3-11.5% when CEA was performed within 2 days, 2.9-3.6% in patients with CEA 3 to 7 days, and 3.0-5.0% if surgery was performed 3 to 14 days after index event.

Conclusions
In summary, the procedural risk exceeds the risk of recurrent stroke day 0 to 2 in the studies in this thesis. The procedural risk, when 48 hours have elapsed after index event are not associated with an increased risk compared to even later surgery. This advocate a more expedited intervention than today’s guidelines recommend. The exception should be day 0 and 1, where only a minority of patients benefit from surgery.

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