ASYMPTOMATIC CAROTID RECONSTRUCTION BEFORE CABG – NO
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The optimal management of patients with multisite artery disease is difficult because these patients are not involved in randomized trials. The frequency of patients with ≥70% carotid stenosis and concomitant coronary diseases requiring coronary artery bypass ranges from 0.2% (younger than 50 years) to 3.1% in men (≥80 years) and 0.1% and 0.9% in women (≥80 years). Other investigators found a 4-10% frequency of carotid stenosis (≥80%) among patients screened for CABS.

Complications, risk factors for stroke, the impact of symptomatic and asymptomatic stenosis

The overall incidence of perioperative stroke was 2.8%, in more than 13 000 CABG patients, majority of them within the first postoperative day. The incidence of perioperative stroke depends not only on the severity of stenosis (ca.50% of stroke sufferers did not have significant carotid disease) but also on the number of risk factors and concomitant diseases. The factors for increased risk of stroke are as follows: age ≥75 years, carotid stenosis, diabetes, hypertension, chronic renal insufficiency, previous MI or cardiac surgery, peripheral vascular disease, urgent operation, cardiopulmonary bypass time, moderate/severe left ventricular dysfunction, low cardiac output syndrome, atrial fibrillation, need for intraoperative hemofiltration, combination of CABG with valve surgery (7.4%) and previous stroke. A meta-analysis of patients with carotid stenosis undergoing CABS reported a risk of perioperative stroke of 8.5% in patients with previous TIA/stroke versus 2.2% in asymptomatic patients. The status of ascending aorta (as a possible source of emboli) should be also investigated. The manipulations of ascending aorta including cross-clamping, cannulation, and proximal graft anastomosis might increase the stroke risk even without carotid stenosis.

While a recent analysis demonstrated, that in symptomatic patients with a 50–99% stenosis or occlusion have a 7.4% stroke risk, increasing to 9.1% in patients with 80–99% stenosis or occlusion, the prevalence of ipsilateral stroke was only 2.0% in patients with unilateral and asymptomatic 50–99% stenosis. In this group, the risk did not appear to increase with stenosis severity. But the asymptomatic patients with bilateral 50–99% stenosis or a 50–99% stenosis associated with a contralateral occlusion, have higher risk for stroke (6.5%) following cardiac surgery, whereas the risk of death/stroke was 9.1%.

The carotid plaque analysis is mandatory before any intervention. Recent observations demonstrated that the plaques on carotid ultrasound increase the risk of stroke and/or death. The 3-year risk of stroke or death was only 1.9% in asymptomatic carotid patients but 4.4% with one ulcer and 18.2% with three or more ulcers. The annual stroke risk was 1% in asymptomatic patients without echolucency and microemboli on transcranial Doppler, but 8% in the group of microemboli-echolucency patients.

The timing of carotid revascularization and cardiac surgery

The combined CEA–CABG represented 1,1% of all CABG performed in the USA (10 years period) with a stroke rate of 3.9%, a stroke or death rate of 8.6%.

It is important to mention, that the overall complications rate (mortality, stroke, cardiac, wound, respiratory complications etc.) was significantly less in synchronous CEA and CABG than in the staged one 42,6 % vs. 48,4%.

If the CEA preceded the CABG, the data reported about death, stroke or MI rate was 13% (death 4%, stroke 2%, MI 6%).

So, if a severe carotid stenosis is detected prior CABG, the indication and urgency of CABG should be reassessed:

- severity of stenosis (unilateral? bilateral stenosis or contralateral occlusion)?
- stable or unstable carotid plaque (ulceration on carotid ultrasound or MRI? microemboli on transcranial Doppler)?
- asymptomatic silent ipsilateral brain infarct on MRI?
- estimated complication rate for the carotid intervention?
- stable or unstable coronary disease?

If asymptomatic but hemodynamically relevant stenosis found:

- with stable unilateral carotid plaque and no silent ipsilateral infarct in the brain CABG
without carotid reconstruction. (If the estimated death/stroke risk associated to the carotid procedure exceeds 3%, then the carotid stenosis should not be treated).

- if the unilateral carotid plaque stable, but silent ipsilateral brain infarct was detected on the MRI (CAS) followed by CABG (synchronous if instable CABG).
- if the unilateral carotid plaque instable (ulcerations, microemboli and silent ipsilateral brain infarct) (CEA) followed by CABG (synchronous if instable CABG).
- if bilateral carotid stenosis (≥80%) or contralateral occlusion and stable carotid plaque CAS followed by CABG (synchronous if instable CABG).
- if bilateral carotid stenosis (≥80%) or contralateral occlusion is associated with instable carotid plaque (silent ipsilateral infarct or plaque ulceration with or without microemboli) CEA followed by CABG (synchronous if instable CABG).

Summary: CEA in asymptomatic carotis stenosis should not preceed CABG routinely except a small group of patients (instable carotid plaque and silent infarcts in unilateral patients and the group of bilateral stenosis (or contralateral occlusion) patients with instable plaque. Irrespective of the revascularization strategy, lifestyle modification and pharmacologic intervention should be also the part of long-term strategy.

References
ESC Guidelines on the diagnosis and treatment of peripheral artery diseases European Heart Journal 2011:32. 2851–2906