Factors Determining Periprocedural and Long-term Complications of High Risk Carotid Artery Stenting

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Purpose:
Carotid artery stenting (CAS) has been, historically, an alternative to open endarterectomy for stroke prevention in high risk patients with carotid atherosclerosis. We sought to determine the rates of periprocedural and long-term stroke or death and the risk factors for complications after CAS in our high risk patient population.

Methods:
Clinical and treatment variables of consecutive CAS procedures performed between 2002 and 2011 were analyzed. Using univariate and multivariate logistic regression analyses we examined how patient characteristics influenced outcomes and changes in modified Rankin Score (mRS).

Results:
In 152 patients, the composite total of periprocedural death, stroke, transient ischemic attack (TIA) and myocardial infarction (MI) rate was 3.95% (6/152). Chronic kidney disease (CKD) was strongly associated with periprocedural complications (p<0.001). Coronary artery disease/peripheral vascular disease (CAD/PVD) (p=0.03), dyslipidemia (p=0.02), CKD (p=0.01), and contralateral internal carotid artery (ICA) stenosis (p=0.02) were non-modifiable risk factors for mRS increase. There were 25 deaths, 8 strokes, 11 TIAs, and 1 MI (mean follow-up 38.4 months, range 0-116 months). The presence of CAD/PVD (p=0.009) and dyslipidemia (p=0.002) were significantly associated with long-term complications.

Conclusions:
CAS was performed with low periprocedural complications in high-risk patients. Our rates compare very favorably to large-scale trials that have ideal patients. This data encourages the consideration of CAS in patients who need therapy for carotid atherosclerotic burden and provides possible patient characteristics (CKD) to help with periprocedural risk stratification.