Radiographic and symptomatic brain ischemia in CEA and CAS: A systematic review and meta-analysis.

[Cho SM](#)¹, [Deshpande A](#)¹, [Pasupuleti V](#)¹, [Hernandez AV](#)¹, [Uchino K](#)².

Author information

1

From the Cerebrovascular Center, Neurological Institute (S.-M.C., K.U.), and Medicine Institute (A.D.), Cleveland Clinic, Cleveland, OH; Case Western Reserve University (V.P.), Cleveland, OH; School of Medicine (A.V.H.), Universidad Peruana de Ciencias Aplicadas (UPC), Lima, Peru; and University of Connecticut/Hartford Hospital Evidence-Based Practice Center (A.V.H.).

2

From the Cerebrovascular Center, Neurological Institute (S.-M.C., K.U.), and Medicine Institute (A.D.), Cleveland Clinic, Cleveland, OH; Case Western Reserve University (V.P.), Cleveland, OH; School of Medicine (A.V.H.), Universidad Peruana de Ciencias Aplicadas (UPC), Lima, Peru; and University of Connecticut/Hartford Hospital Evidence-Based Practice Center (A.V.H.). UCHINOK@ccf.org.

Abstract

OBJECTIVE:

In a systematic review, we compared ratio of new periprocedural radiographic brain ischemia (RBI) to the number of strokes and TIAs among patients undergoing carotid endarterectomy (CEA) and carotid artery stenting (CAS).

METHODS:

We searched 5 databases for entries related to brain ischemia in CEA or CAS from inception through September 2015. We included articles with CEA or CAS and systematic performance of preprocedural and postprocedural brain MRI and reporting of RBI and stroke incidence. We calculated a symptomatic risk ratio of number of strokes and TIAs to RBI. Random effects models were used.

RESULTS:

Fifty-nine studies (5,431 participants) met the inclusion criteria. There were 22 cohorts in CEA, 34 in CAS with distal protection, 8 in CAS with proximal protection, 9 in CAS without protection, and 9 in CAS with unspecified devices. Overall, 30.7% (95% confidence interval [CI] 26.6%-34.7%) had RBI, while 3.2% (95% CI 2.6%-3.8%) had clinical strokes or TIAs, with a stroke and TIA to RBI weighted ratio of 0.18 (95% CI 0.15-0.22). CEA had lower incidence of RBI compared to CAS (13.0% vs 37.4%) and also lower number of strokes and TIAs (1.8% vs 4.1%). The stroke and TIA to RBI ratio did not differ across 5 different types of carotid interventions ($p = 0.58$).

CONCLUSIONS:

One in 5 persons with periprocedural radiographic brain ischemia during CEA and CAS had strokes and TIAs. The stable ratio of stroke and TIA to radiographic ischemia suggests that MRI ischemia could serve as a surrogate measure of periprocedural risk.

© 2017 American Academy of Neurology.

PMID:29021357

DOI:[10.1212/WNL.0000000000004626](https://doi.org/10.1212/WNL.0000000000004626)