DEBATE: Screening for Asymptomatic Carotid Stenosis (ACS) is Justified in Some Patients: Which Ones and for What Reason

Glenn R. Jacobowitz MD
Professor of Surgery
Vice Chief, Division of Vascular Surgery
NYU Langone Medical Center

Background

- Stroke is the 4th leading cause of death in the US, and the leading cause of chronic disability and long-term institutionalization
- The treatment of acute ischemic stroke is generally unsuccessful, and many strokes are unheralded
- Stroke prevention is therefore paramount

Medical management

- Behavioral modification
- Diet, exercise, smoking
- Pharmacologic therapy for hypertension, diabetes, hypercholesterolemia, cardiac arrhythmias
- Carotid artery revascularization
  - CEA

Prevalence of stroke and carotid artery stenosis – relationship with age and gender
Does imaging of the carotid artery lead to an increased rate of carotid artery interventions?

Geographic Variation and Trends in Carotid Imaging Among Medicare Beneficiaries, 2001 to 2006

Lynsey E. Caro, PhD; Monica A. Garcia, MD; Manish R. Paul, MD; Dave W. Zalutsky, PhD; Kevin A. Schilitz, MD; David B. Mackey, MD

Background: Ultrasound imaging among Medicare beneficiaries is an important contributor to varying health-care costs. We examined trends in ultrasound and carotid angiography prevalence in the care of carotid atherosclerosis, using Medicare data from 2001 to 2006.

Methods and Results: From year to year, national samples of claims from the Centers for Medicare and Medicaid Services to 2005, we examined trends in the care of carotid atherosclerosis, using Medicare data from 2001 to 2006. In 2001, patients were older and underwent carotid angiography; carotid imaging and carotid angiography were more prevalent in the west than in the middle Atlantic and South Atlantic regions. Over time, a greater proportion of Medicare beneficiaries underwent carotid imaging and carotid angiography, and in 2006, imaging and angiography were more prevalent in the west than in the middle Atlantic and South Atlantic regions. Over time, a greater proportion of Medicare beneficiaries underwent carotid imaging and carotid angiography, and in 2006, imaging and angiography were more prevalent in the west than in the middle Atlantic and South Atlantic regions. Over time, a greater proportion of Medicare beneficiaries underwent carotid imaging and carotid angiography, and in 2006, imaging and angiography were more prevalent in the west than in the middle Atlantic and South Atlantic regions. Over time, a greater proportion of Medicare beneficiaries underwent carotid imaging and carotid angiography, and in 2006, imaging and angiography were more prevalent in the west than in the middle Atlantic and South Atlantic regions. Over time, a greater proportion of Medicare beneficiaries underwent carotid imaging and carotid angiography, and in 2006, imaging and angiography were more prevalent in the west than in the middle Atlantic and South Atlantic regions.

Conclusion: From 2001 through 2006, there was substantial growth and variation in the use of carotid imaging, including a marked increase in the use of MRA, and a decrease in the overall use of carotid interventions. (JAMA. 2006;295:594-586.)

Screening for Breast Cancer

- The National Cancer Institute recommends
- Women aged 40 and older have screening mammograms every 1-2 years
- It is estimated that 48 million mammograms are performed each year in the United States
- Mammograms can certainly have “false positive” results
- Leading to negative biopsies

Screening for Colon Cancer

- US Preventive Services Task Force
- “Colonoscopy is a necessary step in any screening program that seeks mortality from colorectal cancer. This reduction in mortality does come at the expense of significant morbidity associated with colonoscopy.”
Annual Incidence and Mortality in the US of Breast Cancer, Colorectal Cancer and Stroke

What are the USPSTF guidelines for stroke screening?

- The USPSTF Guidelines say NOTHING about screening for any causes of stroke!

Additionally...

- The finding of plaque at the carotid artery bifurcation is NOT only a marker which predisposes a patient towards an increased risk of stroke.
- It is a marker of disseminated atherosclerosis, and an indicator of increased risk of cardiovascular morbidity and mortality....
- The LEADING cause of death in the United States
- With improvements in medical management....
- Why would we not want to know which patients have evidence of disseminated atherosclerotic disease?

Is it true that atherosclerosis at the carotid artery bifurcation is not a particularly significant cause of stroke?

An conservatively estimate that about 41,000 strokes may be attributed to extracranial ICA stenosis annually in the United States. Large-vessel atherosclerosis is an important cause of stroke with extracranial ICA stenosis being significantly more common than extracranial ICA occlusion or intracranial atherosclerotic disease.

Is the incidence of stroke decreasing?

Published reviews on the epidemiology of stroke have not found consistent trends in the incidence of stroke over time. Some reports have indicated that incidence has decreased, while others have suggested an increase over time. A recent meta-analysis of 2014 and 2015 studies found that the incidence of stroke has remained relatively stable over the past few decades (22). This may be attributed to recent adoption of modern preventative measures such as statin therapy, aspirin, and antihypertensives, which are prescribed to at-risk patients to reduce the risk of cardiovascular and atherosclerotic disease (23, 24).
Who should be screened?

Focused screening for occult carotid artery disease: Patients with known heart disease are at high risk

Screened 610 patients ≥60 years with a history of either hypertension, heart disease, cigarette smoking or a family history of stroke

N= 610

CAS N=66
10.8%

HTN – 12.7% CS

New HTN 2.6%

CAD – 18.2% CS

New AF 0.5%

HTN + CAD 22% CS

Conclusions

Carotid screening SHOULD be done selectively

Not only to identify patients at risk of stroke, but also to identify patients with diffuse atherosclerosis who are at risk for cardiovascular morbidity and mortality

This will allow the appropriate preventative treatment of these patients, whatever you think it should be (risk factor reduction, best medical therapy……… OR CEA in appropriately selected patients.)

CEA continues to play a role in stroke reduction for patients with severe asymptomatic carotid artery stenosis in my opinion, as we do not yet have the eagerly anticipated results of trials (CREST 2) comparing current medical with surgical treatment.

Who should we screen? Let’s start conservatively and say subjects over the age of 60 with at least two risk factors for cardiovascular disease.