

# After Age 70, Carotid Surgery Is Safer Than Stent

BY MITCHEL L. ZOLER

SAN ANTONIO — The largest-ever, head-to-head comparison of stenting versus surgery for treating severe carotid artery stenosis showed a marked effect of age, with patients older than 70 having fewer adverse outcomes after carotid endarterectomy and patients younger than 70 having fewer complications following carotid angioplasty and stenting.

Although the highly anticipated results from the decade-long Carotid Revascularization Endarterectomy vs. Surgery Trial (CREST) seemed, in simplest terms, to show a dead heat between carotid stenting and surgery (see table), the re-

sults reported at the International Stroke Conference actually revealed statistically significant and clinically important differences between the two treatments.

The statistically significant interaction between patient age and outcome will likely play a major role when physicians and patients now decide which intervention to favor for a specific patient.

The CREST results also showed another significant difference between carotid surgery and stenting: Surgery led to a 1.2% increased absolute rate in the incidence of periprocedural myocardial infarctions, whereas stenting produced a 1.8% increase absolute rate of periprocedural strokes, a finding that

will force patients and their physicians to ask themselves which complication they would rather risk.

The CREST findings also renewed concerns about the appropriateness of any invasive intervention, be it stenting or surgery, for patients with asymptomatic carotid stenosis. The findings raised questions about how CREST differed from another large comparison of stenting and surgery, the International Carotid Stenting Study (ICSS), the results from which also appeared online, coincidentally, on the same day as the CREST report (Lancet 2010 Feb. 26 [doi:10.1016/S0140-6736(10)60239-5]).

CREST randomized 2,502 patients with either symptomatic carotid stenosis or asymptomatic, severe carotid stenosis (at least 60% blockage) at 108 sites in the United States and 9 in Canada. The patients' average age was 69 years, a third were women, and 47% were asymptomatic. The analysis showed no significant effect from either gender or symptom status on outcomes.

The age effect produced the sharpest distinction between stenting and surgery, and confirmed evidence that began emerging a few years ago that carotid stenting poses a special problem for elderly patients.

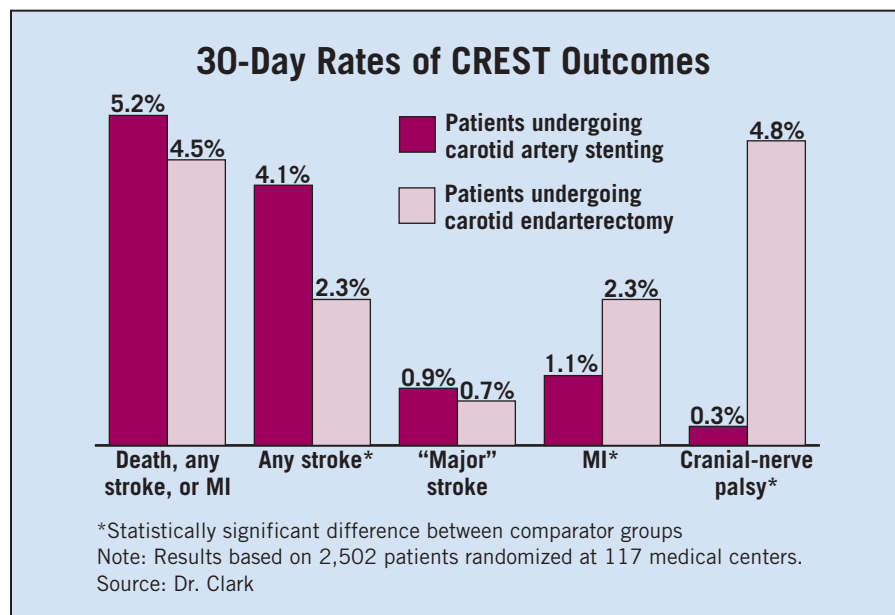
Some of the first suggestions of safety problems that can occur when stenting elderly patients came from the lead-in phase of CREST, a stage that involved nearly 1,600 patients who underwent carotid stenting in the early 2000s as operators in

the study established their stenting expertise. The problem has been attributed to the increased difficulty and danger of placing stents and embolic protection devices through elderly patients' tortuous and atherosclerotic arteries.

Dr. Wayne M. Clark, who reported the CREST results, said that patients who underwent stenting at age 65 had a roughly 20% reduced risk for an adverse perioperative or long-term outcome compared with those who underwent surgery, whereas at age 60 the relative benefit from stenting was about 35% and at age 50, the rate of adverse outcomes after stenting was less than half the rate after endarterectomy.

The primary adverse-event measure used in CREST was the composite rate of any stroke, myocardial infarction, or death during the 30 days following treatment plus the rate of any ipsilateral stroke during long-term follow-up of up to 4 years. This rate was 7.2% for stenting and 6.8% for endarterectomy, with similar rates of ipsilateral strokes occurring from 31 days to 4 years (2.0% vs. 2.4%, respectively).

In contrast to younger patients, at age 75, the rate of adverse outcomes after stenting rose by about 35% compared with surgery; at age 80, the adverse-outcome rate was more than 50% higher with stenting than with surgery; and at age 85, the adverse event rate was roughly doubled by stenting in comparison with endarterectomy. Dr. Clark reported no disclosures relevant to the study. ■



## Patients Under Age 45 Account for 7.3% of Stroke Cases

BY KERRI WACHTER

SAN ANTONIO — Not only is the average age of stroke patients getting significantly younger, but the proportion of young stroke patients—those younger than 45 years—is going up significantly, according to a population-based study of more than 1 million people over a 12-year period.

The average age at the time of stroke dropped from 71.3 years in 1993-1994 to 70.9 years in 1999 to 68.4 years in 2005. Dr. Brett Kissela reported at the annual International Stroke Conference. Over the same period, the percentage of stroke patients younger than 45 years went up, from 4.5% in 1993-1994 to 5.5% in 1999 and to 7.3% in 2005. (See graph for rates.)

"In the converse, in the oldest age groups ... there were statistically significant declines in incidence rates," said Dr. Kissela, professor of neurology at the University of Cincinnati.

Dr. Kissela and his coinvestigators examined data from the Greater Cincinnati/Northern Kentucky stroke study, which includes 1.3 million people in a five-county region. The region is representative of the United States in terms of age, median income, educational level, and percentage of blacks in the population.

The investigators identified patients retrospectively

by using ICD-9 discharge diagnosis codes and symptom-based screening of admission logs. Potential stroke cases were identified in local hospitals, hospital-based clinics, or coroner's offices. In addition, there was a sampling of nursing homes and physician offices.

The medical record abstract for each potential case was reviewed by a study physician to determine whether to include it as a stroke, to identify the subtype of stroke, and to review imaging if necessary and available.

The same clinical case definition was used for comparisons across study periods. For the incidence rates, the numerator was the number of incident cas-

es and the denominator was the at-risk population. The linear function of the at-risk population was calculated using U.S. Census population data for 1980, 1990, and 2000. All rates were standardized to the U.S. 2000 population.

There were 1,907 strokes in 1993-1994, 1,955 in 1999, and 1,888 in 2005. In each period, more than half (55%-58%) of the individuals who had a stroke were women. Blacks accounted for 18%-20% of the population, Dr. Kissela reported at the confer-

ence sponsored by the American Heart Association.

They looked at the prevalence of risk factors using data from population-based telephone surveys. Among those aged 20-44, both diabetes and coronary heart disease significantly increased between 1995 and 2005. The prevalence of diabetes increased from 0% to 5% and CHD increased from 0.4% to 7%. There were similar trends for hypertension and high cholesterol, although these were not significant. In contrast, there were no significant changes in these risk factors among those aged 45-54 years. ■

### VITALS

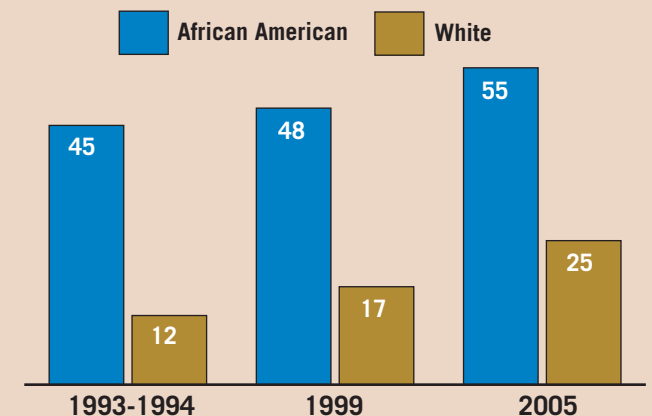
**Major Finding:** The mean age of stroke patients significantly dropped, from 71.3 years in 1993-1994 to 68.4 years in 2005.

**Data Source:** Population-based study of 1.3 million people in the Cincinnati/Northern Kentucky region.

**Disclosures:** The study is funded by the National Institute for Neurological Disorders and Stroke. The authors reported that they have no relevant financial relationships.

### Stroke Incidence on the Rise in Younger People

(Incidence per 100,000 people aged 20-45 years)



Note: Data are from a population-based study of 1.3 million people in the Cincinnati/Northern Kentucky region.

Source: Dr. Kissela