Stroke Declines in Oldest, Rises in Younger Adults

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 table 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 five counties. 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.

Ischemic strokes outnumbered hemorrhagic strokes in those aged younger than 45.

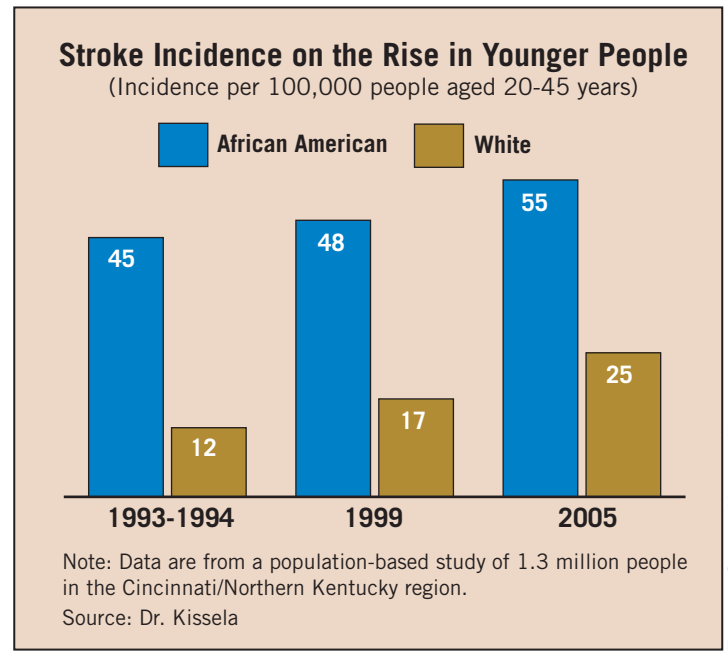
DR. KISSELA

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

The same clinical case definition was used for comparisons across study periods. Stroke was defined as a focal neurologic deficit referable to a vascular territory and lasting longer than 24 hours. For the incidence rates, the numerator was the number of incident cases and the denominator was the at-risk population. The at-risk population was calculated using U.S. Census population data for 1980, 1990, and 2000.

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 said at the conference, sponsored by the American Heart Association.

One possible explanation for increasing strokes among younger age groups might be an increase in hemorrhagic strokes. However, when the researchers looked at this, they found that ischemic strokes outnumbered hemorrhagic strokes (intracranial and subarachnoid hemorrhage) in those aged younger than 45 years in all three time periods, and even seemed to increase in 2005.



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They looked at the prevalence of risk factors using data from population-based telephone surveys of the region that were linked to the three study periods and were performed in 1995, 2000, and 2001.

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.

The study is funded by the National Institute of Neurological Disorders and Stroke. Dr. Kissela reported that he and his coinvestigators have no relevant financial relationships. ■

General Anesthesia Tied to Poor Outcomes in Acute Stroke

BY MITCHEL L. ZOLER

SAN ANTONIO — Use of general anesthesia for acute stroke patients undergoing an endovascular procedure to open a large intracerebral artery occlusion was linked to significantly worse outcomes and an increased risk of death in two retrospective analyses. Conscious sedation appeared to be the safer alternative, but the results were not definitive, cautioned the two researchers who presented the findings at the International Stroke Conference in San Antonio.

"This needs further study in a prospective manner, as operator preferences of sedation method may have impacted the clinical observations," Dr. Rishi Gupta said. The findings also showed that during 2006-2009, use of general anesthesia and conscious sedation was highly variable at several major U.S. centers.

Twelve centers contributed data on the 980 patients included in Dr. Gupta's review. At these centers, general anesthesia was used in 44% of the cases.

Dr. Gupta, a neurologist at Vanderbilt University in Nashville, was previously with the Cleveland Clinic Foundation. During 2006-2009, 65 of the 100 stroke patients who underwent an acute endovascular intervention at the Cleveland Clinic received general anesthesia. But after the new analysis was completed, "we shifted and used sedation as our primary modality," he said in an interview.

Dr. Tudor G. Jovin, a neurologist at the University of Pittsburgh, presented the second analysis at the meeting, which showed a significant risk from general anesthesia. "At our center, we used intubation [general anesthesia] routinely until about 2 years ago, and then we changed to conscious sedation," he said. The shift in Pittsburgh occurred before any findings implicated general anesthesia and intubation in causing adverse outcomes.

The analysis done by Dr. Jovin and his associates used data collected in the Merci Registry at 36 U.S. sites starting in June 2007 after the Merci embolic retriever device entered the U.S. market. It included 625 patients with an average age of 67 and a median NIH stroke scale score of 18; 52% were men. In the multivariate analysis, general anesthesia and intubation were associated with an 87% increase in 90-day mortality, compared with conscious sedation. General anesthesia was also linked to a 48% reduction in the rate of good outcomes, defined as a modified Rankin scale score of 2 or less. Both associations were statistically significant.

In the analysis by Dr. Gupta and his associates, patients had an average age of 66 and a median National Institutes of Health stroke scale score of 17. About a third of the patients also received intravenous tissue plasminogen activator. Two-thirds had successful recanalization of their occluded cerebral artery. During the 90 days following endovascular treatment, 30% of the patients died and 37% had a good outcome, defined as a score of 2 or less on the modified Rankin scale.

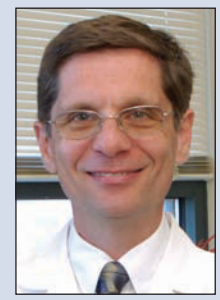
In a multivariate analysis that controlled for variables such as age, NIH stroke scale score, and time to endovascular treatment, the risk of death was 68% higher in general anesthesia patients than in conscious sedation patients. The risk for a bad outcome—a modified Rankin scale score of 3 or greater—was more than twice as high in the general anesthesia patients as in the comparator group. Both differences were statistically significant.

Dr. Gupta has financial relationships with Concentric Medical, CoAxia, and Rapid Medical. Dr. Jovin has financial relationships with Concentric Medical, CoAxia, Micrus Endovascular, and eV3. He also has been a consultant to and has an ownership position in Neurointerventions Inc. ■

MY TAKE

Reasons for Intubation Are Needed

The Interventional Management of Stroke trial showed similarly worse outcomes in patients managed with general anesthesia using prospective data.



It is important to know why patients are managed by general anesthesia instead of by conscious sedation. Some patients cannot be treated using conscious sedation.

We need to know whether patients were intubated because that's how everyone at a center was treated or because there was a specific patient need that might relate to their subsequent death or bad outcome.

My guess is that there is a relationship between use of general anesthesia and worse outcome, but I think the relationship is probably not as great as suggested in studies such as Dr. Gupta's.

JOSEPH P. BRODERICK, M.D., *is professor of neurology and director of the Neuroscience Institute at the University of Cincinnati. He has received research grants and honoraria from and has been a consultant to Genentech Inc.*