

# Children Face 13% Recurrence Risk After Stroke

BY MITCHEL ZOLER

SAN ANTONIO — Children who have had a stroke face a 13% risk for a second stroke, based on prospective follow-up of 93 children.

Half of the recurrences occurred before the index stroke was recognized and secondary prevention treatment begun, a finding that highlights the need for improved early recognition of strokes in children, Dr. Rebecca N. Ichord said at the International Stroke Conference.

"Delays in diagnosis may adversely affect recurrence risk by delaying the start of secondary preventive treatment," said Dr. Ichord, a pediatric neurologist and director of the pediatric stroke program at The Children's Hospital of Philadelphia.

She acknowledged, however, that no proven treatments exist for secondary stroke prevention in children. "We use the same treatments in children that we use in adults, but we don't know" how

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**Major Finding:** Children who have had a stroke face a 13% risk for a recurrent stroke.

**Data Source:** Prospective, single-center study of 90 children followed after their index stroke during 2003-2009.

**Disclosures:** Dr. Ichord serves on the clinical event committee for the pivotal U.S. trial of the Berlin Heart ventricular assist device. She said that none of her associates had any disclosures.

well they work. "We use aspirin, warfarin, low-molecular-weight heparin, and we do surgical interventions, but we don't know how long we need to anticoagulate, or whether warfarin is better than aspirin. We are just beginning to get accurate and prospective data on recurrence risk, then we can start analyzing risk factors, and then we can start to test risk-stratified treatment in clinical trials."

Her study involved 93 children who came to The Children's Hospital for

stroke assessment. Their average age was 8 years; age ranged from neonatal to 18 years. Two-thirds were boys. The most common risk factors for stroke were vasculopathy in 37 followed by a cardioembolic cause in 26.

Three of the 93 patients died from their underlying disease soon after the initial stroke; follow-up data were available

for 85 of the remaining 90 for a median of 16 months, ranging from 1 to 72 months. During follow-up, 12 children had recurrent strokes (13% of the initial 93), including one child with two recurrences. Recurrent strokes were defined as episodes that occurred at least 24 hours after the index stroke and were radiologically distinct events.

Six children had their recurrence before the index stroke was identified and prophylaxis begun. The other six children

had their second stroke an average of 9 days following confirmation of the index episode and prophylaxis had begun, ranging from 4 to 96 days. Ten of the recurrences occurred in children with vasculopathy as the primary cause of their index event, and two had index events that involved a cardioembolic trigger.

In patients whose index stroke was recognized, all but two received antiplatelet treatment, anticoagulant treatment, or both. Selected patients also received surgical interventions such as revascularization or repair of a patent foramen ovale.

"The pathogenesis of recurrences is complex," with some cases involving new vessel injuries, Dr. Ichord said at the conference, which was sponsored by the American Heart Association. Her current practice is to continue prophylactic antithrombotic treatment for 1-2 years, after which she tells families that the ongoing risk of recurrence is very low and that prophylaxis can probably be stopped. ■

## Stroke Risk Factors Do Not Fully Explain Racial Disparities

BY KERRI WACHTER

SAN ANTONIO — Although large racial differences in conventional risk factors for cerebrovascular disease and socioeconomic factors exist, these differences do not fully account for the greater incidence of

chair of biostatistics at the University of Alabama at Birmingham.

The findings come from the REGARDS (Reasons for Geographic and Racial Differences in Stroke) study, which involves a national cohort of 30,239 white and black participants.

"One of the great mysteries in stroke is the huge racial disparities in stroke mortality," Dr. Howard said.

It is estimated that stroke mortality is 40% greater in blacks than in whites, he noted. "These are massive differences in mortality."

Study participants have been selected from a commercially available list and were recruited by mail and telephone. The researchers use a computer-assisted telephone interview that includes cardiovascular disease history. This is followed by a home visit for venipuncture, ECG, and physical measures.

Participants are followed at 6-month intervals for stroke surveillance. Suspected events are adjudicated centrally. Currently, there are 352 events among 26,610 participants, who were stroke and/or TIA free at baseline.

In this study, the researchers performed a proportional hazards mediation analysis, estimating the excess risk in blacks, adjusting for possible factors, and evaluating how much of the excess risk is accounted for by the inclusion of these factors.

The REGARDS population is generally reflective of the U.S. population. The assessed demographic factors included age, sex, and region. Risk factors included hypertension, diabetes, atrial fibrillation, dyslipidemia, previous MI, current smoking, alcohol use, and weekly exercise. Socioeconomic factors included education and income.

In terms of risk factors, 70% of blacks had hypertension, compared with 49% of whites. Likewise, 29% of blacks had diabetes, compared with 15% of whites.

A clear age effect has been observed as well, with a 300% stroke mortality rate for blacks younger than 65 years.

In this analysis, at age 65 the addition of risk factors accounted for 31% of the excess incidence among blacks. The addition of socioeconomic status accounts for 42% of the excess incidence in blacks.

"Depending on the age, these factors account for less than half of the racial disparity in incidence. So something else is accounting for the other half," Dr. Howard said. ■

## TPA for Stroke Based on 'Last Time Seen Normal' Appears Safe

BY MITCHEL L. ZOLER

SAN ANTONIO — The safety of intravenous thrombolytic therapy in patients with unwitnessed strokes surpassed the safety in patients with witnessed strokes when physicians based treatment decisions on the last time patients were seen in their usual state of health, a review of more than 1,500 stroke patients in Ontario shows.

The finding makes sense, because "last time seen normal" is a conservative estimate of stroke onset, Dr. Demetrios J. Sahlas said at the International Stroke Conference.

"Patients with unwitnessed symptom onset were less likely to undergo hemorrhagic transformation following treatment with intravenous TPA [tissue plasminogen activator] than patients with witnessed symptom onset, reported Dr. Sahlas, professor of stroke management at McMaster University in Hamilton, Ont.

The study results also documented the frequency of unwitnessed stroke among treated patients. Of 1,562 patients who had an out-of-hospital, first-time ischemic stroke in Ontario during July 2003–March 2008 and received intravenous TPA within 5 hours of either their witnessed symptom onset or their last time seen normal, 480 patients (31%) had unwitnessed strokes. The un-

witnessed subgroup matched the witnessed patients very closely for demographic and clinical parameters reviewed, including stroke severity, length of stay, mortality, and status at hospital discharge, Dr. Sahlas said at the meeting, sponsored by the American Heart Association.



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DR. SAHLAS

The 1,562 patients underwent treatment at any one of the 11 designated stroke centers in Ontario. Their average age was 73, and about half were men. During the period reviewed, patients received intravenous TPA if their treatment could be started within 3 hours of either their witnessed symptom onset or their last time seen normal. Patients with unwitnessed strokes had an 8% rate of hemorrhagic transformation following TPA treatment, compared with a 12% rate in patents with a witnessed stroke. In an analysis adjusted for any baseline differences, patients with unwitnessed strokes were 38% less likely to have a cerebral hemorrhage than were those with a witnessed stroke, a statistically significant difference.

Dr. Sahlas said he and his associates had no disclosures. ■

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**Major Finding:** Conventional risk factors accounted for 13% of the excess incidence of stroke among blacks, whereas the addition of socioeconomic status to the analysis accounted for 23%.

**Data Source:** A population-based study of more than 30,000 white and black participants.

**Disclosures:** The study was supported by the National Institute of Neurological Disorders and Stroke. Dr. Howard reported that he has no relevant financial relationships.

stroke that is seen in blacks.

In a proportional hazards mediation analysis, at age 45 years the addition of conventional risk factors accounted for 13% of the excess incidence among blacks, George Howard, Dr.PH., reported at the annual International Stroke Conference. The addition of socioeconomic status to the analysis accounts for 23% of the excess incidence in blacks.

"The things that we tend to think about as largely driving the black-white differences account for less than a quarter of the differences that we're observing," said Dr. Howard,