Ischemic stroke subtypes had different short- and long-term functional outcomes, mortality, and recurrence rates

QUESTION

In patients who have had a first ischemic stroke, are short- and long-term functional outcomes, mortality rates, and recurrence rates different for subtypes of stroke (large-vessel cervical or intracranial atherosclerosis with stenosis, cardioembolic, lacunar, and unknown cause)?

DESIGN

Inception cohort followed for up to 5 years (mean 3.2 y).

SETTING

A community study in Rochester, Minnesota, United States.

PATIENTS

454 patients with a first ischemic stroke from 1985 to 1989. {Mean patient age was 72 years for atherosclerotic stroke, 80 for cardioembolic stroke, 73 for lacunar stroke, and 76 for stroke of unknown cause. Women had 32% of the atherosclerotic strokes, 67% of the cardioembolic strokes, 57% of the lacunar strokes, and 67% of the strokes of unknown cause.}*

ASSESSMENT OF PROGNOSTIC FACTORS

Stroke subtype, severity, age, sex, and predefined risk factors {previous transient ischemic attack, hypertension, diabetes, smoking, congestive heart failure, myocardial infarction, angina, mitral valve disease, and atrial fibrillation}*.

MAIN OUTCOME MEASURES

Functional outcome using the Rankin disability score (from grade 1 [no significant disability] to grade 5 [severe disability, bedridden, incontinent, and requiring constant nursing care and attention]), mortality, and recurrent stroke.

MAIN RESULTS

Patients with different subtypes of ischemic stroke had different functional status before the stroke and at maximal deficit, 90 days after stroke onset, and 1 year (Table). Stroke subtype did not predict 30-day mortality but did predict 5-year mortality. Stroke subtype predicted 30-day but not 5-year recurrence (Table). Early recurrence was highest in patients with atherosclerotic stroke. Cardioembolic stroke had the lowest rate of good function and the highest rate of 5-year mortality.

CONCLUSION

Patients had varying rates of function, mortality, and recurrence depending on the subtype of ischemic stroke.

* Petty GW, Brown RD, Whisnant JP, et al. Ischemic stroke subtypes: a population-based study of incidence and risk factors. Stroke. 1999;30:2513-6.

Outcomes for patients with a first ischemic stroke by subtype

Outcomes	Atherosclerotic	Cardioembolic	Lacunar	Unknown cause
Mortality at 30 d	8.1%	30.3%	1.4%	14.0%†
Mortality at 5 y	32.2%	80.4%	35.1%	48.6%
Recurrent stroke at 30 d	18.5%	5.3%	1.4%	3.3%
Recurrent stroke at 5 y	40.2%	31.7%	24.8%	33.2%†
Good function at 1 y	53.4%	26.7%	81.9%	50.3%

†Not significant; all other categories statistically different across subtype of stroke.

COMMENTARY

The study by Petty and colleagues confirms what other studies have shown: Patients with small-vessel strokes generally function well, and patients with large-vessel strokes, either from atherosclerosis or cardiac embolism, do not. What is surprising about the study is the high 30-day recurrence rates (18%) for patients with atherosclerosis, a rate higher than that in other prospective studies, although the registries used in the studies were not population based (1, 2).

The early stroke recurrence data need to be confirmed in other studies. If they are confirmed, what are possible explanations of this high rate? The authors point toward iatrogenesis as a potentially preventable cause of early stroke; 4 of the 13 strokes in the atherosclerosis group were related to iatrogenesis. This finding stresses the need for hospitals and physicians to track and study their own complication rates to reduce medical error and improve patient safety. A residual noniatrogenic increased risk for early recurrence in the atherosclerosis group still exists and needs to be reduced. In addition to the increased rate of early recurrence, patients with atherosclerotic stroke also had a higher long-term rate of stroke recurrence, a finding that reinforces the need to promptly evaluate patients, identify the most likely stroke mechanism, and provide targeted treatment.

Finally, the investigators have good data to develop a patient-outcome prediction model based on stroke subtype, age, and sex that could be useful for clinicians and patients.

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References

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