Advanced age predicted risk for recurrent stroke after first-ever stroke


Question
In patients with an acute first-ever stroke, what are the risks for and the risk factors of a first recurrent stroke?

Design
An inception cohort study of patients in the Perth Community Stroke Study (PCSS) with follow-up of 5 years.

Setting
Perth, Western Australia, Australia.

Patients
343 patients (mean age 73 y, 53% men) with an acute, first-ever stroke who were living in the defined PCSS geographic area. Follow-up was 100%.

Assessment of prognostic factors
Age; sex; marital status; living arrangements; level of independence before initial stroke; smoking; alcohol use; history of hypertension, angina, myocardial infarction, or transient ischemic attack; diabetes mellitus; intermittent claudication; pathologic subtype, etiologic subtype, and clinical syndrome of initial stroke; and baseline mental state, incontinence, cardiac failure, atrial fibrillation, and clinical hypertension.

Main outcome measures
Mortality and risk for and pathologic subtype of a first recurrent stroke at 4 months, 12 months, and 5 years.

Main results
At 5 years, 199 patients (58%) had died. 52 patients (15%) had had a first recurrent stroke, of which 12 (23%) were fatal within 28 days; 37 strokes (71%) were caused by cerebral infarction, 4 (8%) were caused by primary intracerebral hemorrhage, and 11 (21%) were of an undetermined cause. The 5-year cumulative risk for a first recurrent stroke was 22.5% (95% CI 16.8% to 28.1%), and the risk was greatest in the first 6 months after stroke (8.8%, CI 5.4% to 12.1%). Multivariate analysis identified that age between 75 and 84 years predicted a first recurrent stroke within 5 years of a first stroke; however, trends existed between hemorrhagic index stroke or diabetes mellitus and an increased risk for a first recurrent stroke (Table).

Conclusion
The risk for a first recurrent stroke was increased in patients with an acute first-ever stroke who were between 75 and 84 years of age.

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Hazard ratios (HRs) of risk factors for a first recurrent stroke within 5 years of an index stroke

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>HR (95% CI)</th>
<th>P value</th>
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</thead>
<tbody>
<tr>
<td>Age 75 to 84 y</td>
<td>2.6 (1.1 to 6.2)</td>
<td>0.02</td>
</tr>
<tr>
<td>Hemorrhagic index stroke</td>
<td>2.1 (0.98 to 4.4)</td>
<td>0.06</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>2.1 (0.95 to 4.4)</td>
<td>0.07</td>
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</tbody>
</table>

Commentary
This study is an important addition to our knowledge about recurrent stroke. Hankey and colleagues found that 1 in 6 persons who survive a first-ever stroke have a recurrent stroke in 5 years. As in other studies of recurrent stroke (1-3), the Perth group found the highest rate of stroke to occur within 6 months of the initial stroke. This emphasizes the importance of initiating preventive measures as early as possible after an initial stroke.

The 15% 5-year rate of recurrent stroke is lower than the 25% to 30% rate reported in other studies (1-3). Hankey and colleagues suggest that this difference may be caused by a reduction in recurrent stroke with the recent widespread use of aspirin.

Hankey and colleagues report that age, hemorrhagic index stroke, and diabetes are risk factors for recurrent stroke, but only age (75 to 84 y) was significant. Age and diabetes are known risk factors for recurrent stroke, but hemorrhagic stroke is not. This interesting finding needs further study.

Hankey and colleagues found that the subtype of a recurrent stroke was the same as that of the initial stroke in 88% of cases. However, this may not be true of all stroke subtypes. A recent study showed that 42% of recurrent strokes are ischemic in patients with an initial cerebral hemorrhage and 52% of recurrent strokes are nonlacunar in patients with an initial lacunar stroke (4).

Mortality after a first-ever stroke is even more of a problem than the stroke itself. Other studies have found similar, but lower, 5-year mortality rates (45% to 53%) (2, 3). Comorbid cardiac conditions seem to be the major determinant of this mortality (3).