Patients With Transient Ischemic Attack With ABCD\(^2\) < 4 Can Have Similar 90-Day Stroke Risk as Patients With Transient Ischemic Attack With ABCD\(^2\) ≥ 4

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Background and Purpose—It is unclear whether patients with transient ischemic attack with an ABCD\(^2\) score < 4 can be safely evaluated within the following week as recommended by some national guidelines rather than in emergency.

Methods—A total of 1679 patients in the SOS-TIA prospective cohort had a definite or possible transient ischemic attack and had complete information on ABCD\(^2\) score components. They were evaluated and treated as soon as possible in a transient ischemic attack clinic with round-the-clock access, 87% of them within 24 hours of the first call to medical attention. Criteria for emergency treatment were internal carotid or intracranial artery stenosis ≥ 50% or major cardiac source of embolism.

Results—Primary end point was stroke at 90 days. The 90-day stroke rate (number of events/number of patients) was 3.4% (24/701) in patients with ABCD\(^2\) score ≥ 4, 3.9% (7/180) in patients with ABCD\(^2\) score < 4 and criteria for emergency treatment, and 0.4% (3/798) in patients with ABCD\(^2\) score < 4 and no criteria for emergency treatment (P for between-group comparison < 0.0001).

Conclusions—When possible, patients with transient ischemic attack should be evaluated without delay regardless of ABCD\(^2\) score because some with lower scores have treatable causes associated with higher short-term risks of stroke. (Stroke. 2012;43:00-00.)

Key Words: emergency medical services ■ transient ischemic attack
with or without spontaneous echo contrast or left atrial thrombus; sick sinus syndrome; dilated left atrial thrombus; endocarditis; intracardiac mass; patent foramen ovale plus in situ thrombosis; patent foramen ovale plus concomitant pulmonary embolism or deep vein thrombosis preceding the brain infarction). The risk of stroke was determined as the percentage of patients with this event during the 90-day period. The risk of stroke was compared between the key subgroups using the Fisher exact test. Because a significant difference was found, post hoc comparisons were done using patients with ABCD2 score ≥4 as a reference group. Statistical testing was done at the 2-tailed α level of 0.05. Data were analyzed with the SAS software package, Version 9.1 (SAS Institute, Cary, NC).

Results
Among the 2398 patients seen at the TIA clinic between January 2003 and December 2008, 1713 had a definite or possible TIA and had complete information on ABCD2 score components. Of these, 1679 have 90-day follow-up information and were included in the present analysis.

The mean age (SD) was 64 (16) years and 52% were men. Hypertension (history of treated hypertension or admission blood pressure values ≥140/90 mm Hg) was present in 68%, dyslipidemia (history of treated dyslipidemia or admission low-density lipoprotein cholesterol ≥160 mg/dL) in 41%, diabetes (medical history) in 11%, and current smoking in 21%. Seven hundred one patients (42%) had an ABCD2 score ≥4 and 377 (22%) had at least 1 criteria for emergency treatment, defined as the presence of symptomatic internal carotid stenosis ≥50% (n=157), symptomatic intracranial stenosis ≥50% (n=85), or a major cardiac source of embolism (n=169). Criteria for emergency treatment was found in 18% (n=180) of patients with an ABCD2 score <4 and in 28% of patients with an ABCD2 score ≥4 (n=197).

Stroke occurred in 34 patients at 90 days; 3 were fatal. Four nonstroke deaths also occurred within 90 days of presentation at the TIA clinic (all had an ABCD2 score ≥4). According to the key subgroups, the 90-day stroke rate (number of events/number of patients) was 3.4% (24/701) in patients with ABCD2 score ≥4, 3.9% (7/180) in patients with ABCD2 score <4 and criteria for emergency treatment and 0.4% (3/798) in patients with ABCD2 score <4 and no criteria for emergency treatment (Figure; *P* for between-group comparison <0.0001). Using patients with ABCD2 score ≥4 as a reference group, the 90-day stroke rate was significantly lower in patients with ABCD2 score <4 and no criteria for emergency treatment (*P*<0.0001) but was similar in patients with ABCD2 score <4 and criteria for emergency treatment (*P*=0.82). Exploring the 90-day stroke rate in patients with ABCD2 score ≥4, those with criteria of emergency treatment had a risk of 4.6% (9/197) and those without such criteria had a risk of 3% (15/504). When the 4 nonstroke deaths were included in 90-day outcome, the 90-day rate in patients with ABCD2 score ≥4 was 4.0% and remained not different from that in patients with ABCD2 score <4 and criteria for emergency treatment (*P*=1.00). Similar results were found in sensitivity analysis restricted to the patients seen within 24 hours of symptom onset (Figure).

Discussion
We found that among patients with TIA with an ABCD2 score <4, those having symptomatic internal carotid artery origin or intracranial artery stenosis >50% or a major cardiac source of embolism (1 patients in 5 having an ABCD2 score <4) had a 90-day stroke risk similar to patients with TIA with an ABCD2 score ≥4. Therefore, there should be no delay to complete investigations in these patients. We believe the National Institute for Clinical Excellence criteria should be revised to not recommend that patients with an ABCD2 score <4 be evaluated within the next week.

There are 2 different uses of the ABCD2 score. One is a prehospital triage tool that can be viewed as a “surrogate” for investigations to predict the risk in countries or places where emergent evaluation (within hours after the TIA onset or the first call to medical attention) is not possible. However, when TIA clinics are available, triage based on actual findings of immediate investigations should be preferred.

Some use ABCD2 score after complete initial evaluation as a triage tool to determine who should be observed in hospital ≥24 hours, which is probably a safer use of the ABCD2 score that has to be evaluated. We could then recommend that, when possible, all patients with TIA be evaluated as early as possible within 24 hours of first call to medical attention regardless of ABCD2 score to detect all patients needing immediate medical decision-making and that among the remaining patients, those with an ABCD2 score ≥4 can be observed in hospital ≥24 hours.
a strategy that has also to be evaluated against immediate discharge.

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**Disclosures**

None.

**References**


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