

Is an outpatient workup safe for patients with a transient ischemic attack?

■ EVIDENCE-BASED ANSWER

There is no compelling evidence that outpatient diagnostic workup of patients with transient ischemic attack (TIA) is less safe than inpatient workup, or that hospitalization prevents stroke or improves stroke outcomes after TIA (strength of recommendation [SOR]: **C**, based on case series studies). Because the risk of stroke is substantial in the week following a TIA (SOR: **A**, based on a prospective cohort study), evaluation and treatment for reversible stroke risk factors should be initiated urgently and completed within a week of initial presentation (SOR: **C**, based on expert consensus opinion).

Risk factors for patients at highest risk for stroke or other cardiovascular events after TIA include age >60 years, diabetes, TIA lasting longer than 10 minutes, and a TIA associated with weakness or speech impairment (SOR: **B**, based on retrospective cohort study). Hospitalization may be prudent for patients at high risk for cardiovascular events or for those with mental status changes, an inadequate home situation, or the physician's inability to obtain expedient evaluation (SOR: **C**, based on case series studies).

■ EVIDENCE SUMMARY

Transient ischemic attack (**Figure**) is a temporary, focal brain or retinal deficit caused by vascular disease that clears completely in less than 24 hours.¹ A large prospective cohort study recently estimated the risk of stroke after a TIA or minor stroke to be 8% to 12% at 7 days and 11% to 15% at 1 month.²

In a large retrospective cohort study, 5% of TIA patients returned to the emergency department with a stroke within the first 2 days after TIA.³ Another 6% returned with a stroke within 90 days. Five independent risk factors were identified: age >60 years, diabetes mellitus, duration of TIA longer than 10 minutes, signs or symptoms of weakness, and speech impairment. Thirty-four percent of patients with all 5 risk factors, and none of the patients without any risk factors, had a stroke within 90 days. Of note, 13% of the TIA patients had an arrhythmia, congestive heart failure, unstable angina, myocardial infarction, stroke, or recurrent TIA within 4 days of initial presenting with a TIA. Twenty-five percent of the patients experienced 1 of these cardiovascular events during the 3 months of follow-up.

In a retrospective case review of TIA and stroke patients, the hospital admissions of 4 of 21

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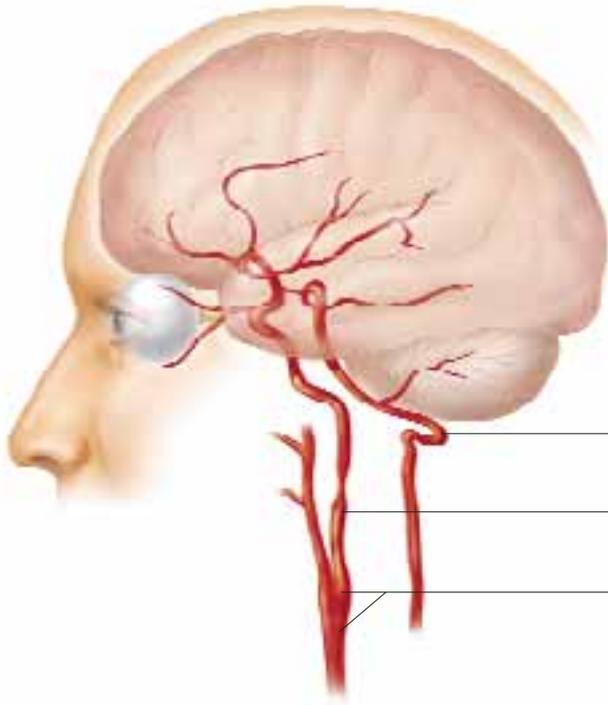
FIGURE Expedient evaluation of TIA is imperative

ILLUSTRATION BY ROBERT MARGULIES

Risk of stroke is greatest in the week following a TIA, particularly if the event lasted more than 10 minutes or caused weakness or speech impairment, or if the person is older than 60 years or has diabetes.

Hospitalization is probably most important for patients at risk for cardiovascular events, exhibiting changes of mental status, or unable to receive adequate work-up in the outpatient setting.

Symptoms vary with the arterial system involved.

Vertebral involvement usually leads to confusion or dizziness, or affects vision in both eyes.

Carotid involvement may cause unilateral blindness or weakness.

Internal carotid at the bifurcation or common carotid are frequently affected.

Atherosclerotic plaque, emboli, or arterial spasm may precipitate the event.

TIA patients were retrospectively categorized as medically justified.⁴ Admission was categorized as medically justified if the patient had 1 or more of the following criteria: another diagnosis that warranted admission, inadequate home situation, altered mental status, an adverse event during hospitalization including worsening of the deficit, and if the patient underwent some hospital-based treatment that could not be provided on an outpatient basis. Ease and rapidity of evaluation was not considered medically justifiable and outcome improvement (stroke prevention) was not studied.

Two retrospective chart reviews of TIA found considerable practice variability in the evaluation of TIA patient. In 1 study of TIA patients presenting to an emergency department, 81% had a computed tomography scan, 75% had electrocardiogram, and 74% had a complete blood count.⁵ Carotid Doppler imaging was performed in the emergency department in 16%, and 26% were referred for outpatient Doppler studies. One percent had an ECG in the emergency department,

and 16% were given ECGs as outpatients. Seventy-five percent of patients were discharged home. Those hospitalized had a median length of stay of 1 day. In the second study, 31% of the TIA patients had no diagnostic studies performed during the first month after presenting to their primary care physician.⁶

RECOMMENDATIONS FROM OTHERS

The American Heart Association (AHA) recommends that physicians use a stepwise approach to TIA evaluation as outlined in the **Table**. The AHA also recommends that the diagnostic evaluation of patients seen within 7 days of a TIA should be completed within 1 week or less. The AHA leaves the decision whether to hospitalize a patient up to the physician based on a patient's circumstances. The goals of diagnostic testing are to identify or exclude causes of TIA requiring specific therapy, to assess modifiable risk factors, and to determine prognosis.⁷

The National Stroke Association recommends that patients with known high-grade stenosis in a

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vascular territory appropriate to the symptoms, and patients with recurrent symptoms, undergo urgent evaluation. Evaluation includes imaging and ruling out other causes of TIA. Patients should be admitted to the hospital if imaging is not immediately available. If indicated, carotid endarterectomy should be performed without delay.⁸

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■ CLINICAL COMMENTARY:

Make the patient aware of the risks of TIA and quickly complete the work-up

It is important to remember that a diagnosis of TIA can only be made retrospectively. All patients with ongoing focal neurologic signs must be evaluated immediately and (if the symptom duration is less than 3 hours) considered potential candidates for emergent thrombolytic therapy.

The vast majority of TIA patients are asymptomatic during their evaluation. Because they feel well and may have a considerable element of denial, it can be hard to get them to rapidly complete their evaluation in either the inpatient or outpatient setting. It is therefore critical that the patient be made aware that the highest risk period is soon after the TIA and that failure to quickly complete the work-up could have serious negative consequences.

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TABLE

Stepwise diagnostic evaluation for patients with transient ischemic attack

Initial Evaluation

1. Complete blood count with platelet count
2. Chemistry profile (including fasting lipids and glucose)
3. Prothrombin time, activated partial thromboplastin time
4. Syphilis serology
5. Electrocardiogram
6. Noncontrast cranial computed tomography scan
7. Noninvasive arterial imaging (carotid Dopplers, magnetic resonance angiography)

Second step (to resolve persistent diagnostic uncertainty as appropriate)

1. Transthoracic or transesophageal echocardiogram
2. Antiphospholipid antibodies
3. Further screening for prothrombotic states
4. Cerebrospinal fluid examination (if subarachnoid hemorrhage is suspected)
5. Ambulatory electrocardiographic monitoring
6. Testing for silent myocardial ischemia (ETT or thallium perfusion)

Adapted from Feinberg et al 1994.⁷

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