

Managing Patients With Transient Ischemic Attack

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Editor's Note: *The Expert Clinical Management series consists of shorter, practical review articles focused on the optimal approach to a specific sign, symptom, disease, procedure, technology, or other emergency department challenge. These articles—typically solicited from recognized experts in the subject area—will summarize the best available evidence relating to the topic while including practical recommendations where the evidence is incomplete or conflicting.*

INTRODUCTION

Approximately 300,000 patients are treated annually in US emergency departments (EDs) for cerebral transient ischemic attack.¹ Their management is variable.^{1,2} Created in 1975, the historical definition³—focal neurologic symptoms with a vascular cause, lasting less than 24 hours—no longer makes sense in a world of magnetic resonance imaging (MRI), fibrinolytic treatment for ischemic stroke, and a better understanding of the ultraearly stroke risk after transient ischemic attack. The new definition of transient ischemic attack is “a transient episode of neurological dysfunction caused by focal brain, spinal cord, or retinal ischemia without acute infarction.”⁴

The last 2 decades have witnessed an explosion of important research about transient ischemic attack. Most studies on transient ischemic attack use the historical definition, and many combine patients with transient ischemic attack and minor ischemic stroke (usually defined as a stroke that leaves a patient without a significant, disabling deficit) because the clinical approach to diagnosis and treatment in both groups is identical.

Although most patients are asymptomatic at presentation and have normal physical examination results, transient ischemic attack is a neurologic emergency. The incidence of acute ischemic stroke within 48 hours of an ED visit for transient ischemic attack is 4.8% (182/3,814 patients; 95% confidence interval [CI] 4.0% to 5.6%).⁵ Accumulating evidence shows that secondary stroke prevention—the rapid implementation of multiple interventions—reduces the outcome of stroke by as much as 80%.⁶⁻⁹

Because accurate diagnosis, rapid testing, and implementation of treatments can prevent disabling and fatal strokes, transient ischemic attack has enormous public health importance and risk-management significance. This article reviews the management of neurologically normal patients who receive a clinical diagnosis of a transient ischemic attack in the ED.

CLINICAL DIAGNOSIS

Patients with transient ischemic attack usually present with the abrupt onset of focal neurologic symptoms lasting less than 1 hour. In a study of 1,328 transient ischemic attack patients, the median duration was 14 minutes for carotid events and 8 minutes for vertebrobasilar events.¹⁰ In another study of 382 patients, 60% of patients' symptoms resolved within 1 hour.¹¹ The diagnosis of transient ischemic attack is usually based entirely on the patient's history. Neurologic examination result is normal and no useful biomarkers exist. If neurologic findings persist, treat as stroke (Figure 1). Other conditions such as migraine, seizure, and peripheral vestibular conditions can mimic transient ischemic attack (Figure 2).¹²⁻¹⁵

Misdiagnosis in the ED is reportedly as high as 60%.¹⁵ Factors associated with misdiagnosis are gradual onset, previous unexplained attacks of neurologic symptoms, and “nonspecific” symptoms.¹⁵ In an ED study of 429 “transient ischemic attack” patients later evaluated by a neurologist, 41% received a discordant diagnosis, which was associated with presence of headache, involuntary movement, and dizziness.¹⁶

These studies are problematic for several reasons. First, the criterion standard in both was the final neurologist's diagnosis after incremental testing beyond the initial ED evaluation.^{15,16} Second, interobserver agreement about transient ischemic attack diagnosis is poor even among stroke-trained neurologists.¹⁷ Finally, some factors associated with misdiagnosis can be due to a transient ischemic attack. For example, involuntary movements are typical of limb-shaking transient ischemic attack, an uncommon but important variant that is almost always due to a high-grade internal carotid stenosis.¹⁸ This is an

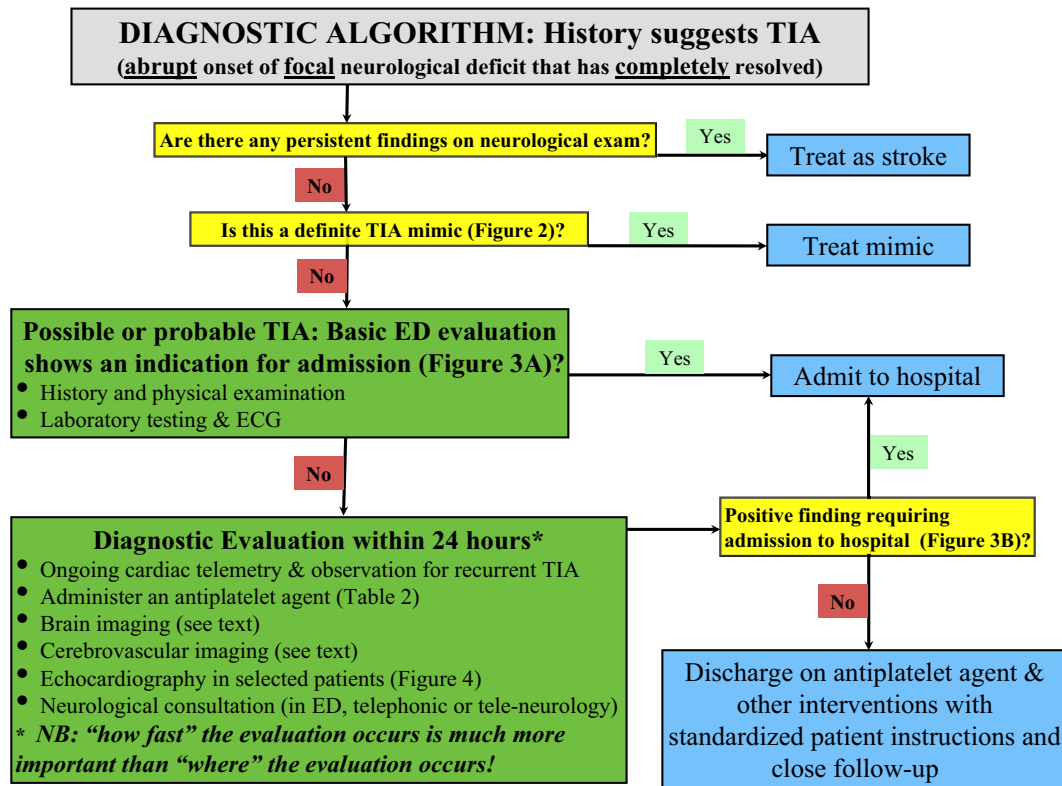


Figure 1. Diagnostic algorithm for patients with possible TIA. Patients discharged after having a TIA should be receiving an antiplatelet agent (unless clear contraindication), a statin, and antihypertensive medication if indicated. They should be given standardized instructions that address smoking cessation, weight loss, and the importance of close follow-up with their neurologist or primary care physician. If possible, arrange for application of long-term ambulatory cardiac monitoring. The timing of the follow-up will be determined in part by how much of the diagnostic evaluation was conducted in the ED or ED-based observation unit. TIA, Transient ischemic attack.

exception to the otherwise useful maxim that transient ischemic attack (and stroke) generally present with "negative" symptoms, whereas diagnostic mimics (migraine and seizure) usually present with "positive" symptoms (Table 1).

Discounting episodic dizziness is also problematic.¹⁹ Isolated episodes of vertigo accounted for half of the transient neurologic events that occurred in the 2 days preceding posterior circulation strokes,²⁰ often caused by vertebral stenosis.²¹ Nonrotatory dizziness is the most common nonfocal symptom.²² In another study of 1,850 patients with probable or definite transient ischemic attack, 177 (9.6%) had isolated atypical symptoms (eg, isolated diplopia, dysarthria, dizziness, sensory symptoms in a single limb or one side of the face).²³ Of the 177 patients, 18.1% had a major embolic source and 5.6% had high-grade arterial stenosis.²³ Posterior circulation transient ischemic attacks may have worse outcomes than anterior circulation ones.²⁴

Alternatively, nonspecific symptoms of global cerebral hypoperfusion (eg, syncope, loss of consciousness), generalized weakness, vague lightheadedness, or altered

mental status are rarely due to transient ischemic attack.²⁵ As a general rule, patients with abrupt onset and rapid offset of new localizable (to a specific artery) neurologic symptoms are considered to have experienced transient ischemic attack until proven otherwise. Symptoms that localize to the posterior circulation (eg, dizziness) often do not usually lateralize to one side of the body.

RISK STRATIFICATION

The first step in risk stratification is the initial evaluation. History, physical examination, and basic tests such as blood glucose level and ECG may identify high-risk patients (Figures 1 and 3).

The most commonly used formal risk-stratification tool, the ABCD2 scale, has been incorporated into American Heart Association guidelines for hospitalization of transient ischemic attack patients.⁴ An American College of Emergency Physicians clinical policy recommends against using this score to identify safe-for-discharge patients.²⁶ This makes sense; although higher ABCD2 scores track with increasing stroke risk globally,⁶ it has serious flaws when used for individual patients.

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