

Controversies in Stroke

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The Case:

A 72-year old “healthy” woman presents with a transient (>60 minutes) episode of left-sided weakness. She recovered completely; neurological examination in the emergency department is normal and plain head CT scan is unrevealing. ABCD2 score is 5.

The Questions:

- (1) Should the patient be evaluated urgently within 48 hours as an outpatient in the “TIA clinic” or admitted to the hospital for further evaluation?
- (2) Should other tests be carried out while in the emergency department? If so, what test(s)?

The Controversy:

ALL PATIENTS SHOULD BE ADMITTED TO THE HOSPITAL FOR OBSERVATION AFTER A TIA.

All Patients Should Be Admitted to the Hospital After a Transient Ischemic Attack

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Before choosing a management strategy for the patient described, the first question is a diagnostic one. What happened and why? The most probable diagnosis, but certainly not the only one, is transient ischemic attack (TIA). We might increase our diagnostic certainty with MRI; acute infarction on diffusion-weighted imaging confirms the diagnosis of an ischemic neurovascular event. However, in the short-term, this will not change our management, because the absence of a diffusion-weighted imaging lesion does not exclude TIA, and the pretest probability of TIA is high based on the patient’s age, symptoms, and negative head CT. So proceeding with a working diagnosis of TIA, the most dangerous potential cause of the patient’s symptoms is sensible. This leads directly to the next question: why might she have had a TIA? The cause might be cardioembolism (10% to 20% of patients with TIA) or large-artery stenosis (15%–20% of patients).¹ This matters because, if present, the risk of short-term recurrence is high (particularly with large-artery stenosis), and these mechanisms require specific early interventions beyond standard antiplatelet and statin therapy. Testing to evaluate whether these mechanisms caused her TIA is necessary. This should include vascular imaging and cardiac evaluation. A single normal electrocardiogram does not exclude important and common cardioembolic sources such as paroxysmal atrial fibrillation, valvular lesions, or heart failure. Thus, telemetry monitoring and echocardiography should be considered for all patients with TIA without an alternative cause.

What Are the Advantages of Hospital Admission?

In this case, one might estimate her 48-hour stroke risk at 5% based on her ABCD2 score. However, her risk may be potentially 2 to 3 times that if she has carotid stenosis. Given this, if we plan diagnostic testing and treatment at some point, why would we wait? We know that patients with TIA who receive emergency treatment by specialist stroke services have much lower stroke rates than those cared for in other settings.² We do not know precisely what it is that specialist services are doing that is achieving this (the situation is analogous to stroke units). A few evidence-based interventions likely play a role. For example, in patients with symptomatic carotid stenosis, carotid endarterectomy is most beneficial when performed early. Hospitalized patients are more likely to receive prompt endarterectomy. Are there outpatient approaches that could achieve this goal? Perhaps in some settings, but the country we practice in (the United States) is not one of them. The complex web of insurance preauthorizations and administrative referrals necessary to complete carotid imaging and arrange surgery will preclude most patients from undergoing endarterectomy in the optimal time window. There are also other biologically plausible but less evidence-based interventions that might account for better outcomes with stroke specialist care in a hospital setting. Up to one third of patients with TIA have a demonstrable perfusion defect on imaging, even after symptom resolution.³ Thus, the same measures to optimize cerebral blood flow used in patients with stroke are sensible for TIA.

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These include aggressive intravenous hydration, positioning the head of bed flat, and permissive hypertension. What if vascular imaging is “normal”? Even the most advanced noninvasive vascular imaging will not visualize distal branch occlusions, and these patients may be at significant risk of recurrent ischemia.

How Does the ABCD2 Score Fit Into the Equation?

Although use of the ABCD2 score for triage decisions is intuitively appealing, there are reasons for caution. First, the observational studies associating stroke risk with ABCD2 score are not natural history studies—patients received treatment, albeit variable and poorly defined—and this may contaminate the reported risks. Second, the ABCD2 score is reasonably predictive of disabling stroke but is not very good at predicting any stroke.⁴ We believe, and think our patients agree, that preventing all stroke is important; even minor stroke may significantly affect quality of life. Finally, there is surprisingly poor interrater agreement in ABCD2 scoring, at least among emergency physicians (almost 40% produced scores discrepant from those at a central coordinating center in one study).⁵ Despite little objective data on the impact of ABCD2 score triage strategies on patient outcome, it has somehow made its way into the InterQual criteria used by hundreds of health plans in the United States to decide on the appropriateness of hospital admission. This is alarming.

Our Bottom Line

So should we admit this patient to the hospital for observation? An emphatic “no.” We should admit this patient to the

hospital for much more than observation! We should admit her to complete a rapid diagnostic evaluation to determine the cause of her TIA, implement immediate measures to optimize potentially compromised cerebral perfusion, and start secondary prevention strategies without delay, including endarterectomy if there is carotid stenosis or anticoagulation if a cardioembolic source is identified. In the words of Ben Franklin, our university’s founder: an ounce of prevention is worth a pound of cure.

Disclosures

None.

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