

Transient Ischemic Attack, Minor Stroke and the Family Physician



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TIA a Neurological Emergency.

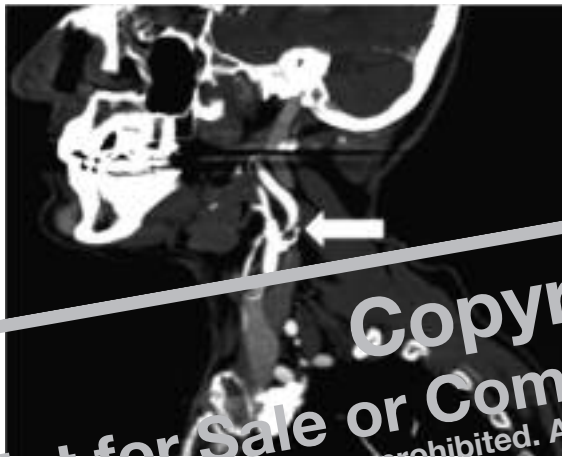


Figure 1: CTA Reformat Showing 90% Left ICA Stenosis.

Meet Sam

Sam, a 54-year-old male smoker presented after a five minute episode of having paralysis in his right hand, this morning. The episode came on suddenly. He was assessed by a neurologist in the emergency room, and his neurological examination was found to be normal. He did, however, have a left carotid bruit. A brain CT and CT Angiogram (CTA) of the neck and Circle of Willis was completed, and this showed a 90% left internal carotid artery stenosis (see Figure 1). He was started on ASA, and high dose statin and had a carotid endarterectomy completed a couple of days later with no complications.

What is a TIA / minor stroke?

A transient ischemic attack (TIA) is an acute episode (< 24 hours duration) of neurological symptoms attributed to focal ischemia that occurs in a vascular distribution of the brain or retina. A minor stroke is an episode of neurological dysfunction lasting longer than 24 hours, but with relatively minor symptoms. The risk of recurrent events is similar in TIA and minor stroke so it is reasonable to consider them as one group.

What other things mimic TIA?

TIA is often misdiagnosed in patients with non-ischemic events. Common conditions that mimic TIA include migraine, seizure, transient global amnesia, peripheral nerve lesions, and syncope to name just a few. One of the issues with diagnosing transient ischemia in particular is that the diagnosis is made based on history. The ability to make the

correct diagnosis is always harder when there is nothing or minimal abnormalities are seen upon examination. The closer you are to the event the more details the patient will remember; therefore, often family doctors or emergency room physicians who see these patients first will have the best chance of getting a full and detailed history. Don't waste this opportunity. Important questions to be asked are listed in Table 1.

What is the risk of stroke after TIA?

There have been multiple studies over the years assessing the risk of stroke after TIA, but the risk consistently appears to be around 10% with 50% of recurrent events occurring within the first 48 hours.¹

Table 1

Key History Questions for a TIA

- Was the onset sudden or gradual?
- Did all the symptoms start at once?
- What were you doing at the time?
- Describe exactly what happened and when.
- Has it happened before?
- What do you mean by weakness, numbness, dizziness?
- Did you have trouble speaking?
- How long did the symptoms last for?

Risk stratification

Studies to identify patients who are at high risk for recurrent stroke after TIA have looked at features of the patient (e.g., diabetes mellitus) and the event (e.g., motor weakness) to predict the risk of recurrent stroke. Using a combination of many of these factors, clinical stratification tools have been developed to help identify patients at high risk of recurrent events, with the aim of urgent hospitalization and investigation. The most widely used tool is the ABCD2 score.² The total ABCD2 score, ranging from zero to seven, relies on the summation of points assigned on the basis of:

- Age ≥ 60
- Blood pressure $\geq 140/90$ mmHg
- Clinical features
- Duration of symptoms and
- Diabetes mellitus (see Table 2)

In the original study this score allowed stratification of patients into high risk (score six to seven, 8.1% two day risk of stroke), moderate risk (score four to five, 4.1% two day risk of stroke), and low risk (zero to three, 1% two day risk of stroke). Validation of this score has provided some mixed results depending on the population studied.³ However, it is useful to

prompt primary care physicians to focus on the important details of the history.

Timing is everything

One issue with the ABCD2 score is that it does not include a score for when the event happened. 50% of all recurrent strokes occur within 48 hours of the TIA with a gradual decline after seven days.¹ This means that timing is everything in your assessment. In Sam's case, he has a much lower risk of stroke if he is seen at four months post his TIA (*i.e.* he has avoided the high-risk period). This means these patients need to be assessed very early if you are to prevent their stroke.

Treatment = finding out why?

Two observational studies published in 2007 indicate that early evaluation and treatment of TIA or minor stroke may significantly reduce the risk of stroke from the reported 10% to just over 2% at 90 days.^{4,5} To prevent a stroke you need to know why the TIA happened in order to implement appropriate management. The etiology at the highest risk of stroke after TIA is large artery atherosclerosis.⁶ Patients with TIA due to $\geq 50\%$ stenosis in the extracranial carotid artery should be considered for carotid revascularization with either carotid endarterectomy or carotid angioplasty and stenting, within two weeks of the presenting event.⁷ All patients should also have at least a 12 lead ECG completed to look for atrial fibrillation, and some will require echocardiography and prolonged cardiac monitoring to assess for a cause. All patients are treated with an antiplatelet agent or anticoagulant (if atrial fibrillation is identified) and statins. Other medications, such as antihypertensives, should be tailored to the patient's needs.



Table 2			
ABCD2 Score			
Risk Factors	Presentation	Yes	No
Age	• ≥ 60 years	1	0
BP	• ≥ 140 systolic or ≥ 90 diastolic	1	0
Clinical Features	• Unilateral weakness	2	0
	• Speech deficit without weakness	1	0
Duration	• > 10 minutes < 59 minutes	1	0
	• ≥ 60 minutes	2	0
Diabetes	• Presence of	1	0

* Under Clinical Features: the maximum score for this is 2. *ie.*, if motor weakness and speech disturbance it still scores 2

** The maximum potential score is 7

Emergency evaluation of a patient with TIA

A thorough and targeted history is essential, with an emphasis on the onset, symptoms, progression, and recovery. Once the diagnosis is established, risk stratification can be considered. In patients with motor or language disturbance, urgent evaluation is required to establish the cause. Those with pure sensory events or vertigo, are at a much lower risk and can frequently be discharged on ASA, and evaluated in an outpatient clinic.

A CT head scan is important for identifying past stroke and excluding other nonischemic causes, such as subdural hematoma or brain tumours. Imaging the carotids is one of the most important parts of the TIA evaluation. A great way of doing this is with computed tomography angiography (CTA), as this can easily be added to a non-contrast CT scan and gives you information about both the intracranial and extracranial vasculature.

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Take home message

TIA is an emergency, as the risk of stroke is high within the next few days to weeks following onset. These patients have a golden opportunity to prevent stroke if appropriate treatments (such as; carotid revascularization for carotid stenosis, anticoagulation for atrial fibrillation) are implemented early on. Although there are clinical features, such as motor and speech, that put certain patients at higher risk, finding out why this event occurred in the first place is the key to management once the correct diagnosis is made.

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