

Evaluating Stroke Symptoms



Mary-Lynn Watson, MD, CCFP(EM)

Presented at the Third Atlantic Canada Stroke Conference, 2004

Stroke is the leading cause of disability and the third leading cause of death in the U.S.¹ In Canada, it accounts for a tremendous cost to our health-care system and for much suffering of our patient population.

There are two major classes of stroke: ischemic (80% of strokes) and hemorrhagic (20% of strokes).

Transient ischemic attacks (TIAs) represent a significant warning symptom of future stroke. It has been shown in numerous studies that the risk of stroke is substantial after a TIA presentation. Johnston *et al.* demonstrated that 10.5% of the population presenting with TIAs went on to have full stroke syndromes within 90 days of presentation; 50% of those patients present within 48 hours. The accurate assessment and treatment of these patients early in their presentation is extremely important.

What's the initial assessment?

Initial assessment of the stroke patient includes a rapid assessment of:

- airway,
- breathing and
- circulation (see Tables 1 & 2).

What about the physical exam?

The recognition of stroke and TIA is dependent on the pattern of symptoms that many strokes follow. These are related to blood supply to the various areas of cortex (Table 3).

The acute control of hypotension and hypertension is very important in the management of acute stroke syndrome.

Table 1

Historical features to watch for

- Onset of symptoms
- Previous stroke or transient ischemic attack-like symptoms
- Vascular risk factors
- Trauma
- Associated symptoms
- Past medical history
- Activity at onset
- Hemorrhage vs. ischemia

Table 2

Differential diagnosis to seriously consider

- Hypoglycemia/hyperglycemia/hyperosmotic coma
- Postictal paralysis
- Bell's palsy
- Hypertensive encephalopathy
- Epidural/subdural hematoma
- Tumour/abscess
- Complicated migraine
- Infectious
- Air embolism

Table 3

Classic symptom presentation

Anterior cerebral artery

- Paralysis opposite leg and mild arm
- Sensory deficits parallel paralysis
- Altered mentation, confusion, impaired insight
- Gait apraxia
- Bowel and bladder incontinence

Middle cerebral artery

- Paralyzes of opposite side of body, arm and face worse than leg
- Sensory deficits parallel paralysis
- Hemianopsia
- Aphasia if dominant hemisphere
- Agnosia

Posterior cerebral artery

- Hemianopsia
- Third nerve palsy
- Visual agnosia
- Altered mental status with impaired memory
- Cortical blindness

Vetebrobasilar artery system

- Vertigo or nystagmus
- Dysphagia
- Facial numbness or paresthesias
- Dysarthria
- Contralateral loss of pain and temperature
- Diplopia and visual field defects
- Bilateral spasticity

Table 4

Recommendations for use of thrombolytics for acute ischemic stroke

1. Only radiologists/neurologists with demonstrated expertise in neuroradiology should interpret computed tomography (CT) scans of the head used to decide whether to administer thrombolytic agents to stroke patients.
2. Limit stroke thrombolysis to centres with appropriate neurologic and neuroimaging resources, capable of administering therapy within three hours. Emergency physicians should identify potential candidates, initiate low-risk interventions and facilitate prompt CT scanning. Neurologists should be directly involved prior to the administration of thrombolytic therapy.
3. Administration of thrombolytic agents to stroke patients should be carried out only in an approved research protocol or a formal clinical practice protocol, adhering to the National Institute of Neurological Disorders and Stroke eligibility criteria. All data on adherence to protocol and patient outcomes should be collated in a central Canadian registry for the purposes of tracking the safety and efficacy of this intervention.

Table 5

Hypertension treatment in patients with acute stroke symptoms

Not thrombolytic candidate

- Systolic < 220 mmHg or diastolic < 120 mmHg; observe unless end-organ involvement
- Systolic > 220 mmHg or diastolic 121-140 mmHg; labetalol, 10 mg to 20 mg intravenously over 1 to 2 minutes; may repeat or double every 10 minutes (max. 300 mg); aim for 10% to 15% reduction in blood pressure
- Diastolic > 140 mmHg; nitroprusside, 0.5 µ/kg/min as initial dose

Thrombolytic candidate—pretreatment

- Systolic > 185 mmHg or diastolic > 100 mmHg; labetalol, 10 mg to 20 mg intravenously over 1 to 2 minutes; may repeat once or transdermal nitroglycerine ointment, 1 inch to 2 inches. If pressure not maintained at systolic < 185 mmHg and diastolic < 110 mmHg, do not administer thrombolytic
- May start labetalol drip at 2 mg/min to 8 mg/min

Table 6

Guidelines suggest considering transfer of patients who...

- ... require emergent computed tomography (CT), if unavailable at initial institution, *i.e.*, diagnosis of a hemorrhagic stroke, intracerebral mass, *etc.*, with deterioration of the patient
- ... require surgical intervention
- ... are candidates for thrombolysis
- ... would benefit from stroke service

Dr. Watson is an assistant professor, departments of emergency medicine & family medicine, Dalhousie University, and an emergency physician, department of emergency medicine, Queen Elizabeth II Health Sciences Centre, Halifax, Nova Scotia.

Hypotension may be as significant as hypertension. A careful evaluation for the cause of hypotension may often lead to discovery of a significant comorbidity, such as acute myocardial infarction.

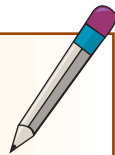
Generally, a determination of the underlying cause of the hypotensive episode may lead to the most appropriate intervention. One must remember that intravenous solutions containing high amounts of dextrose are relatively contraindicated in the patient presenting with acute stroke (Tables 4 & 5). Table 6 lists guidelines on consideration of transferring certain patients.

Which tools help evaluate?

The National Institute of Health Stroke Scale is a relatively rapid tool to assist in the evaluation of patients with acute stroke symptoms. The score on the scale allows one to describe accurately the total debility associated with this presentation and easily communicate it to a consultant (Table 7).

cme

Take-home message



- Approach to the patient presenting with acute neurologic deficit should include:
 - ABCs
 - Patient exam & early investigation
 - Plan for complications
 - Early consultation with appropriate services

References available—contact
The Canadian Journal of CME at
cme@sta.ca.

Table 7

National Institute of Health Stroke Scale

1A.	Level of consciousness	0-alert 1-drowsy 2-obtunded 3-coma/unresponsive
1B.	Orientation to questions	0-answers correct 1-one correct 2-neither correct
1C.	Response to commands	0-both correct 1-one correct 2-neither correct
2.	Gaze	0-normal horizontal 1-partial gaze palsy 2-complete gaze palsy
3.	Visual fields	0-no defect 1-partial hemianopia 2-complete hemianopia 3-bilateral hemianopia
4.	Facial movement	0-normal 1-minor facial weakness 2-partial facial weakness 3-complete unilateral paralysis
5.	Motor function arm a. Left b. Right	0-no drift 1-drift before 5 sec. 2-falls before 10 sec. 3-no effort against gravity 4-no movement
6.	Motor function leg a. Left b. Right	0-no drift 1-drift before 5 sec. 2-falls before 10 sec 3-no effort against gravity 4-no movement
7.	Limb ataxia	0-no ataxia 1-ataxia one limb 2-ataxia two limbs
8.	Sensory	0-no sensory loss 1-mild sensory loss 2-severe sensory loss
9.	Language	0-normal 1-mild aphasia 2-severe aphasia 3-global aphasia
10.	Articulation	0-normal 1-mild dysarthria 2-severe dysarthria
11.	Extinction	0-absent 1-mild - 1 sensory modality 2-severe - 2 modalities