Misdiagnosis of posterior stroke

Spoon feed
Posterior circulation strokes are misdiagnosed 30-60% of the time. Patients with delayed diagnosis may do worse due to extension of the stroke, brainstem compression from posterior fossa edema, and recurrent stroke. This article teaches us how to avoid diagnostic traps that will cause us to overlook an important diagnosis.

Is your head spinning yet?
Collateral circulation and vascular anatomic variants make it hard to distinguish a lateral medullary stroke from a lateral pontine stroke. Instead, this article uses a symptoms-based approach to help you differentiate between a stroke and a non-stroke.

1. Dizzy/vertigo/lightheadedness
- Asking “What do you mean by dizzy?” isn’t very helpful or evidence based. Instead, focus on “timing and triggers.” It is especially important to recognize that dizziness caused by movement (peripheral etiology) is not the same as dizziness exacerbated by movement, which is more likely to be a central etiology.
  a) If dizziness is constant, think:
      a. vestibular neuritis, or
      b. posterior circulation stroke
  b) If dizziness is episodic but triggered, think:
      a. BPPV, or
      b. orthostatic hypotension
  c) If dizziness is episodic and spontaneous, think:
      a. vestibular migraine (most common),
      b. Meniere’s disease, or
      c. TIA

A HINTS exam has been shown to be more sensitive than MRI acutely. However, since you’re not a neuro-otologist, supplement your exam with a careful evaluation of the posterior circulation by checking visual fields, cranial nerves, and limb/trunkal/gait ataxia. If anything is abnormal, assume a central etiology.

2. Headache and neck pain
- Don’t just think hemorrhagic stroke. Headache occurs in 8-27% of ischemic strokes.
- You will usually find associated pathology on exam. However, vertebral artery dissection can occur with pain only.

3. Sensory symptoms
These are inherently subjective. So here’s some help:
- Positive sensory symptoms (tingling, pain, dysesthesia, aura) are usually due to migraines, seizure disorder, and peripheral neuropathy.
• **Negative sensory symptoms** (numbness or loss of sensation, sight, hearing) are associated with ischemia. The big exception is thalamic stroke, which can present with pain (positive sensory symptoms), hemiballismus (positive motor symptoms) and even hallucinations (positive visual symptoms).

4. **Altered mental status**
   • Symptoms can range from subtle abnormalities to coma and even neuropsychiatric disturbances.
   • Patients with basilar strokes are obviously ill and will be admitted. But a CTA to expedite timely endovascular intervention is life saving. These patients may have involuntary movements that mimic seizure.

5. **Nausea and vomiting**
   • Vomiting may be severe and distract from associated symptoms. You will usually see truncal ataxia, nystagmus, or facial palsy.

6. **Visual symptoms**
   • Look for Horner’s syndrome, nystagmus, diplopia, decreased vision (field cut or blurry vision)
   • Ptosis and anisocoria may be subtle. Turning the lights down will help make anisocoria from a Horner’s syndrome more obvious.

7. **Language and speech deficits**
   • “Pawtucket” is quick way to assess dysarthria since each syllable is formed using a different part of the mouth.
   • Have a patient speak, write, and read to fully assess for aphasia.

8. **Cranial neuropathies**
   • A lateral medullary infarct leaves light touch intact. Therefore, you need to check for loss of pain or temperature.

**Imaging**
• A good physical exam and a high index of suspicion are critical. Do not over rely on imaging acutely—either CT or MRI.
• DWI-MRI has a false negative rate of 6.8% among all ischemic strokes. This false negative rate increases among patient with posterior circulation strokes (12-18%). It is the highest in patients with small infarcts that are <10mm in diameter (53%).
• If you are considering a basilar stroke or vertebral artery dissection, CTA is more available in the ED and may be superior to MRA.