Advanced Stroke Care: Avoiding Medical-Legal Disasters in the Emergency Department

Arthur M. Pancioli, MD
Professor, Vice Chairman for Research
Department of Emergency Medicine
University of Cincinnati College of Medicine
Cincinnati, OH

Objectives:
1. Describe the danger of the young patient presenting with neurological focality.
2. Identify the pitfalls of posterior circulation ischemic strokes.
3. Describe the rare but critical diagnostic presentation of acute basilar artery occlusion.

Introduction
Emergency Department (ED) management of acute ischemic stroke has become a significant focus of medico-legal attention.\(^1\,^2\) With the advent of thrombolytic therapy for acute ischemic stroke came the potential for appropriately selected patients to benefit from such treatment. Correlative to that potential is an expectation that thrombolytic therapy would be offered to all eligible patients in all EDs. Occasionally a retrospective analysis of a patient’s care leads to the conclusion that the patient may have been a candidate for thrombolysis yet was not treated. In such circumstances the presumed loss of opportunity to benefit from the therapy becomes the subject of litigation.

Far less common are claims that the use of thrombolytic therapy for an acute ischemic stroke was inappropriate or caused a hemorrhage. In cases of thrombolytic complications, litigation may also occur. Much to the surprise of the practicing community, these cases which were so feared in the early years of thrombolytic therapy for ischemic stroke have proven to be very rare.

It is evident that there are a series of themes woven into the majority of the claims filed against physicians and hospitals alleging malpractice in the setting of acute stroke care. These will be detailed in this monograph in an attempt to aid the practicing clinician in the care of these patients and to assist in avoiding future litigation.

Common themes which recur in suits filed against physicians when the management of acute stroke care is questioned include:

1. Failure to consider stroke in the differential diagnosis of young patients
2. Failure to recognize presentations of posterior circulation strokes
3. Failure to recognize the pitfalls associated with strokes of the cerebellum
4. Failure to thoroughly document the neurological examination
5. Failure to treat with thrombolytics

Failure to Consider Stroke in the Differential Diagnosis of Young Patients
While younger patients are statistically less likely to have an acute stroke than older patients, the potential remains quite real and when missed the consequences can be devastating. Beyond the obvious clinical implications of a missed diagnosis medico-legally, young patients have more potential quality of life years to lose than older patients and therefore represent a greater potential for monetary damages in legal action. It is important for emergency physicians to realize that young age is a leading “risk factor for missing the diagnosis of stroke.”\(^3\)

There are a number of potential causes of stroke in young patients and while a comprehensive list would be extremely long, some of the more common causes include:

1. Dissection of a carotid or vertebral artery
2. Patent Foramen Ovale / Structural Cardiac anomalies
3. Hypercoagulable states
4. Pregnancy

The majority of the acute presentations to an ED of a young patient, the presence of any of the above may well be unknown. In addition, it must be noted these cases are extremely rare
While younger patients are statistically less likely to have an acute stroke than older patients, the potential remains quite real and when missed the consequences can be devastating.

and any given emergency physician may never see such a case in their entire career. However, on rare occasion there may be historical or clinical clues that such underlying conditions exist. When a young patient presents with a focal neurological complaint and an underlying condition is known or suspected then the clinician must have an increased suspicion for stroke and act accordingly. The following clinical scenarios should alert the physician to consider the diagnosis of stroke.

The patient who presents with neck, occipital or retro-orbital pain in the setting of acute (possibly transient) neurological findings may be suffering from a carotid or vertebral artery dissection leading to neurological injury. This is even more likely if there is any history of recent head or neck trauma, a recent fall or motor vehicle accident even without apparent head trauma, sudden neck pain at the time of strenuous physical activity, or a family history of arterial dissection. While such clues may not be available, aggressive history taking is warranted in the setting of a focal neurological deficit. Further, unlike patients with dissecting aortic aneurysms and neurological findings, the patient with acute ischemic stroke due to extra cranial dissection is not excluded from thrombolysis, based on the underlying pathology.

The patient with a history of a structural cardiac anomaly, a significant murmur, a history of myocardial infarction or heart failure, or a history of valvular disease, presenting with focal neurological findings may well have suffered a cardiac embolism. It is most common that structural lesions such as patent foramen ovale are found only after an “idiopathic” stroke in a younger patient.

Hypercoagulable states are also more commonly diagnosed after the first thrombotic event but may be known prior to a stroke presentation. One cause of stroke in children is sickle cell disease, which can cause stroke at any point in life. Any history in the patient or family of clotting abnormalities should be considered in the patient with neurologic focality.

Finally, few entities are more frightening than complications associated with a pregnancy. The physiological changes associated with pregnancy are vast and one rare complication is acute stroke. These patients would merit a very high level of care as the coordination of efforts between multiple disciplines is considerable.

Ultimately, focal neurological deficits in young patients may have many explanations. Stroke can present in very young patients and should remain in the differential diagnosis.

Failure to Recognize Presentations of Posterior Circulation Strokes

One of the most challenging aspects of diagnosing acute neurological complaints is deciphering the symptomatology of posterior circulation ischemia. All too often these patients present with confusing symptoms or a constellation of symptoms that are easily attributed to something other than stroke. Some examples of presentations which may be referable to posterior circulation strokes include:

Patients who present with dizziness, headache, nausea and vomiting may have a posterior circulation stroke. This constellation in isolation may represent any number of systemic illnesses and the diagnosis of stroke is rarely entertained in the acute setting. Such presentations when accompanied by any focal neurological complaint, however, should raise the alarm for possible stroke. The cases which rise to the level of medico-legal action commonly have some evidence in the record that neurological injury could have been considered but the complaint or finding was not incorporated into the medical decision making. The old adage “read the nursing notes” is excellent advice. For the patient presenting with:

Headache, nausea, vomiting, AND ...
arm weakness or dysarthria or ataxia or...

The latter complaint may be key and if ignored the diagnosis will surely be delayed or missed altogether.

Another consideration with posterior circulation ischemia is the confusing picture of crossed findings. Patients with vertebrobasilar ischemia may have cranial nerve findings on one side and motor findings of the arm/leg on the other. Here the error of “failure to understand the symptoms” leads to delay or missed diagnosis. These clinical presentations are rare but are the potential herald of a catastrophic brainstem stroke.

Finally, the patient with isolated hemianopsia is all too often missed. It is quite remarkable how often patients do not immediately recognize this loss of vision on one side. While the patient looks quite well to the casual observer they are actually suffering a rather disabling stroke. Patients with homonymous hemianopsia can’t drive, must relearn how to walk down a hallway to avoid hitting objects in their now
blind visual fields, and must relearn the management of many otherwise simple tasks as they simply cannot see in one half of their visual field. Checking for visual field defects by direct confrontation as part of your neurological examination is very valuable and adds only seconds to the process.

**Failure to Recognize The Pitfalls Associated with a Stroke of The Cerebellum**

A stroke of the cerebellar hemispheres, both ischemic and hemorrhagic, are fraught with complications which are often under-appreciated. The problem with these strokes is their presence in an area of the posterior fossa. This anatomical compartment has very little room to spare and any addition to the space, whether it is the hematoma from a bleed or the edema of an infarct, will lead to complications. One of the most feared complications occurs when the swelling from the insult leads to compression of the fourth ventricle, and subsequent rapid development of hydrocephalus. This complication can lead to herniation and death within hours. For this reason cerebellar hemorrhage is the only type of intracerebral hemorrhage where surgery and clot evacuation and/or ventriculostomy is known to be beneficial. The same is often true with large ischemic cerebellar lesions when hydrocephalus becomes an issue.

**Failure to Thoroughly Document a Complete Neurological Examination**

In most medico-legal cases the chart is a major focus of the debate. What is abundantly clear is that a chart with incomplete documentation of the neurological examination is wide open to interpretation, often years later, by attorneys from both sides of the litigation. While limited charting does not imply poor care, the physician who documents “non focal” as the neurological examination in a possible stroke case has very little to use in their defense when the myriad allegations of missed findings are made. It is important to recognize that there are no real objective data points other than the neurological examination documentation during those critical first few hours of stroke. If the examinations are not well documented then the retrospective review of the case is performed through a very blurry lens.

One common problem with stroke cases is that patients may be considered “too mild to treat” during their acute window, with a medication as potentially dangerous as t-PA. For patients who present with minimal symptoms and later progress, however, the defense of a decision not to treat will have no traction without a well documented and thorough exam. The physician who takes the time to document a complete neurological exam and details the findings will have a much easier time with any defense. This is especially true if the physician clearly describes the neurological exam at presentation and at ED disposition. While the realities of busy ED care often makes the repeat examination documentation a challenge it is well worth the time in the setting of the neurological patient.

**It is important to recognize that there are no real objective data points other than the neurological examination documentation during those critical first few hours of stroke.**

Other exam related problems are failure to check or document visual fields, lower extremity strength, gait, and ataxia. The patient reclining in a bed, who can speak intelligibly and raise both arms symmetrically, may appear “non focal” but may still be having an extremely debilitating stroke. The patient with a Posterior Cerebral Artery (PCA) stroke may only manifest with hemianopsia. As described above this is quite debilitating and may not be recognized by the patient early in their course. The patient with the Anterior Cerebral Artery (ACA) stroke may look quite well until leg strength or gait is tested. Only then is the weak leg recognized. Finally, as described above, the patient with the cerebellar stroke may look like a simple headache with nausea unless carefully examined. These findings may be missed but are sure to be found on a subsequent examination when the clinical picture becomes clearer.

**Failure to Treat with Thrombolytics**

Claims of medical negligence require all of the four following elements:

1. A Duty to treat the patient
2. A Breach of that duty
3. Injury Caused by the breach
4. Damages correlative to the injury

The duty to treat a patient in the ED is rarely questioned by either party in litigation, but in cases where a specialist was consulted and no t-PA was administered, the question of “whose duty was it?” can be asked. As we all know, roles and responsibilities blur and blend in the emergency scenario and occasionally become a contested element in a medico-legal case. Thus documentation of medical decision making is critical to a defense should a case come to litigation.
Breach and Causation are the most contentious elements for the physician. The Breach alleged in most emergency medicine stroke management cases is failure to treat a patient with t-PA. The first issue which will be examined is whether the patient was actually a candidate for t-PA therapy. The great challenge for the defense team is that there are a series of inclusion and exclusion criteria which are enumerated and indeed a patient may “meet the criteria” without truly being a good case based on clinical judgment. The patient’s actual eligibility will ultimately be judged based on the retrospective review of the record, deposition testimony and the opinions of experts. Thus it is critical for the physician caring for the acute stroke patient to document critical decision making in order to ensure that there is little room for misinterpretation later. Keep in mind that it is easy to allege that the patient “had no contraindications” retrospectively and to extrapolate that the patient was “therefore a good candidate” if there is no documentation to refute that claim.

The issue of Causation in these cases generally surrounds the concept that the patient would have received benefit if treated with t-PA and therefore would not have the same neurological insult they ultimately suffered from the stroke. This is an area where expert testimony is enormously important and where opinions about any given case may vary widely. Both the original NINDS t-PA data and the newer ECASS III data have been extensively discussed in the literature and multiple interpretations of the findings have been proposed. Because the interpretations of the actual data, superimposed on the merits of any given case, are so contentious, expert opinions in any case typically provide the primary basis for defense and prosecution of the stroke case.

References