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Ethical Challenges in Acute Evaluation of Suspected Psychogenic Stroke Mimics

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ABSTRACT

Tissue plasminogen activator (tPA) is administered to patients with suspected ischemic stroke to improve blood flow to the brain. In rare cases, patients present with complaints of stroke symptoms that appear to be non-organic due to malingering, factitious disorder, or conversion disorder (psychogenic stroke mimics). Deciding whether or not to administer tPA to these patients can be challenging. The risk of hemorrhage after administration of tPA is low, but not zero. The ethical principles of beneficence and non-maleficence need to be weighed carefully in these situations. We present two cases of patients with suspected psychogenic stroke mimics to illustrate the ethical challenges faced in identifying and managing psychogenic stroke mimics. Further research is needed to demonstrate effective treatment strategies for patients with acute stroke symptoms of psychogenic etiology.

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INTRODUCTION

When faced with an acute medical management decision, such as the decision whether or not to administer tissue plasminogen activator (tPA) to a patient with suspected ischemic stroke, physicians are sometimes confronted by an ethical dilemma. On the one hand, we are guided by the principle of beneficence to do what we can to help our patients. As such, unless a patient is at increased risk of bleeding, it is the standard of care to give tPA to a patient with suspected ischemic stroke in an effort to ameliorate his or her symptoms if the patient presents within four and one-half hours of onset of symptoms.¹ However, we are also guided by the principle of nonmaleficence, to avoid causing unnecessary harm to our patients. When a patient presents with stroke symptoms that are thought to potentially be psychogenic (that is, symptoms that are the result of psychopathology rather than the result of poor blood flow to the brain), these principles can come into conflict, forcing the physician to quickly decide whether the potential to help the patient if her or his symptoms are in fact due to stroke is greater than the potential to harm the patient if her or his symptoms are psychogenic.

In the outpatient setting, one-third of neurology patients have a non-organic etiology of their symp-

toms,² but psychogenic acute stroke is much rarer, with an estimated prevalence of five cases out of 100,000. However, unlike conditions such as psychogenic movement disorders, psychogenic stroke mimics present a unique challenge because of the acuity in which a treatment decision needs to be made, and because of the high stakes associated with making the wrong decision.³

While the risks of treating stroke mimics with tPA are very low, they are not zero. Treatment with tPA carries the risk of potentially fatal hemorrhage, both into the brain and at other sites of the body. Because of this risk, patients treated with tPA need to be admitted to a high level of clinical care such as an intensive care unit, where they can be monitored by nurses with subspecialty training in neurological disorders. Additionally, patients treated with tPA need to undergo advanced radiological imaging and other specialized diagnostic tests.⁴ Therefore, treatment with tPA requires hospitalization in a high-acuity setting and significant use of healthcare resources (see further discussion of this below). Although tPA administration has medical and financial implications, the consequences of withholding tPA from a patient who is having an ischemic event could be grievous.

In patients with suspected psychogenic stroke mimics, do the risks of potentially devastating clinical deficits from a missed stroke outweigh the risks of administering tPA? How should beneficence and nonmaleficence be balanced when making treatment decisions for these patients? Herein, we present two cases of patients with suspected psychogenic stroke mimics to illustrate the challenges physicians face in managing these scenarios.

CASE 1

A 47-year-old man presented to our hospital complaining of 30 minutes of left-sided weakness. He endorsed cocaine use the day prior to presentation. His National Institute of Health Stroke Scale (NIHSS)—a standardized measure of stroke severity—was 13 due to hemiplegia (complete inability to move the left side) and hemisensory loss (lack of sensation on the left side).⁵ However, his deficits were inconsistent: on direct examination, he appeared to be hemiplegic, but on passive observation, he was seen moving his left side. This raised the question of a psychogenic stroke mimic. Despite this, after obtaining a computed tomography (CT) scan of his brain, the decision was made to administer tPA, given that cocaine use is a risk factor for stroke and his NIHSS score was high. The following day,

he continued to report hemiplegia, but he was seen walking to the bathroom unattended. Magnetic resonance imaging (MRI) showed no infarct. He was discharged 48 hours later, with a plan for outpatient psychiatric referral and physical therapy.

CASE 2

A 70-year-old undomiciled man with recently diagnosed leukemia was admitted to the hospital for chemotherapy. Three weeks later, he was told that he would be discharged and chemotherapy would be continued as an outpatient. The following morning, he was found unresponsive. He did not open his eyes or react to sternal rub, suggesting that he was unconscious, but he forcefully resisted passive eyelid-opening, which an unconscious patient would be unable to do. When his arms were lifted, they drifted down, but never hit his face, suggesting that he was able to control them. Twenty minutes later, he was observed being assisted out of bed to urinate, but when he was led back to bed and formally examined, he became unresponsive again. Because of these inconsistencies in his presentation, his symptoms were felt to be psychogenic, and tPA was not offered. Nonetheless, a CT scan of his brain and a CT angiogram of the blood vessels in his head were obtained. The CT angiogram revealed that while there was no arterial blood clot, as one would expect to see in the traditional presentation of stroke, there was a sinus thrombosis—a blood clot in the deep veins of the brain, explaining his unusual presentation. Anticoagulation was started. An MRI showed acute infarction of the pons, midbrain, and thalami, and he died the following day. While this case turned out to be a venous clot, which is not treated with tPA, it demonstrates that symptoms that appear to be psychogenic can in fact be due to devastating neurological injury.

DISCUSSION

The Clinical Approach to Suspected Psychogenic Stroke Mimics

tPA is the standard of care for all patients presenting with symptoms compatible with acute ischemic stroke within four and one-half hours, provided there are no contraindications. In the best case scenario, patients become asymptomatic after receiving tPA and are able to be discharged home 24 to 48 hours later. More than one-third of patients treated with tPA are able to walk independently after discharge from the hospital.⁶ The earlier that tPA is given, the better the outcome.

The pressure to make tPA decisions quickly poses a challenge when there is clinical uncertainty about whether a patient's symptoms are due to stroke. There are limited data on psychogenic stroke mimics. This may be due to underreporting or mischaracterization of psychogenic stroke mimics as real strokes. Despite this, the most common mimics of stroke are known to be seizure, migraine, and psychogenic disorders. Seizures can masquerade as stroke because patients are often weak on one side of their body after a seizure. Similarly, some patients develop weakness on one side of their body before, during, or after migraines. As discussed in case 1 and detailed further below, patients may also have unilateral weakness due to a psychogenic etiology.⁷ Notably, the latest tPA administration guidelines from the American Heart Association do not view suspicion of a stroke mimic as an exclusion criterion for treatment because the complication rate associated with giving tPA to patients with stroke mimics is very low (less than 1 percent across two large cohort studies).⁸

The Ethical Approach to Suspected Psychogenic Stroke Mimics

Because the potential to cause harm by not giving tPA to a patient who is having a true stroke is so high and the potential of giving tPA to a patient with a psychogenic stroke mimic is so low, the ethical principle that should guide tPA administration is the principle of beneficence. This is illustrated in case 1, in which, given the patient's presentation and his vascular risk factor of recent cocaine use,

the potential benefits of giving tPA were thought to outweigh the risks, and the potential harm of not treating was felt to be greater than the potential risk of giving tPA. It can be challenging for physicians to convince themselves with 100 percent certainty that a patient who appears to have symptoms due to a psychogenic etiology is not having a real stroke. Patients who are having strokes may embellish their true neurological symptoms, making it difficult for careproviders to distinguish real symptoms from psychogenic symptoms. In addition, genuine stroke symptoms often fluctuate. While there are some helpful examination findings that support the conclusion that symptoms are psychogenic, these can often be misleading and falsely reassuring (see table 1).⁹ Because these findings are not 100 percent sensitive or specific for psychogenic stroke mimics, it could be maleficent to deny a patient with stroke symptoms tPA based on these findings. For example, in case 2, there were inconsistencies in the neurological examination that suggested that this was a psychogenic stroke mimic, but the patient ended up having a stroke. Although the stroke turned out to involve a venous clot that would not be treated with tPA, this presentation, which was presumed to be psychogenic, could just as easily have been that of a basilar clot, and the delay of tPA would have been devastating.

In some circumstances, however, it is clearly so unlikely that a patient's symptoms are due to a true stroke that a decision about tPA administration should be based not on the principle of beneficence, but rather on the principle of nonmaleficence. For

TABLE 1. Findings suggestive of psychogenic neurological symptoms

| Finding | Comments |
|----------------------------------|---|
| Inconsistencies on examination | <ol style="list-style-type: none"> 1. Presence of motor deficits that are seen only during formal observation, but abate in other circumstances 2. Complaint of a weak upper limb, but observation that when the limb is raised above the patient's face, it never falls and hits the face 3. A positive Hoover sign in which there is less pressure under the good leg than under the weak leg when asked to raise each leg separately 4. Fluctuation of sensory deficits that do not follow a clear neurologic distribution |
| No objective evidence of disease | <ol style="list-style-type: none"> 1. Normal neuro-imaging 2. Subjective weakness but full power on direct confrontation |
| Distractibility | <ol style="list-style-type: none"> 1. Complaint of hemiplegia despite ability to utilize the purportedly plegic limbs during conversation or portions of the examination not designed to focus on strength evaluation |
| La Belle Indifference | <ol style="list-style-type: none"> 1. Absence of concern about symptoms (caution, this can be confused with cortical deficits such as anosognosia or abulia) |

example, if a young woman being treated for an asthma attack suddenly develops severe hemiparesis, it would be reasonable to consider acute stroke as a potential diagnosis. But if she experiences these symptoms a few times each month prior to developing a migraine, and says she is starting to develop her typical headache, then although stroke is a possible diagnosis, it is so unlikely that it would not be in her best interests to give her tPA. In this case, the potential risks of giving tPA outweigh the potential benefits, so offering treatment under the ethical construct of beneficence would run counter to the principle of nonmaleficence. In essence, there needs to be an ongoing assessment of proportionality, or analysis of benefit to burden, when making these acute decisions.

Diagnosis and Treatment of Patients with Known Psychogenic Stroke Mimics

When a patient presents with symptoms that are determined to be non-organic, it is still necessary to explore the etiology for their presentation. According to the American Psychiatric Association *Diagnostic and Statistical Manual of Mental Disorders*, there are three forms of psychogenic symptoms: malingering, factitious, and functional (conversion) disorders (see table 2).¹⁰ Clinicians should be aware that sexual abuse and physical abuse are risk factors for these disorders, and while it can be frustrating to manage patients with non-organic symptoms, it is important to treat them with compassion.

Both acute management and long-term management of patients who present with psychogenic stroke mimics are challenging. Reassuring a patient that a stroke did not occur, and providing a possible explanation for the cause of her or his symptoms in

an honest and nonconfrontational manner can be of therapeutic value. However, some psychiatrists believe therapy is of little benefit due to the nonchronic nature of pseudostroke. This is a controversial topic, and further research in the area is warranted.¹¹

As highlighted in case 1, patients with suspected psychogenic strokes are sometimes discharged to an inpatient rehabilitation facility for further treatment. It is important to note that although physical rehabilitation has been shown to be effective in some functional neurological disorders including functional motor symptoms,¹² it does not address the underlying pathology, adds additional costs, and may reinforce the belief that the symptoms have organic causes. The optimal management of psychogenic stroke is uncertain, and appropriate resources can be difficult to arrange, since in most communities mental health resources are scarce and underfunded. Ideally, outpatient psychiatric follow up should be arranged for these patients, but this can be challenging due to limited resources and long wait times.

Although the recurrence rate of psychogenic stroke is unknown, it is not zero. The patient in case 1 later presented to a sister hospital and again complained of hemiplegia and numbness. Because the neurology residents were familiar with him, they were careful to evaluate for discrepancies between exam findings and behavior when the patient did not know he was being observed. Based on prior experience with him and inconsistencies in his exam, the team confidently withheld tPA and attributed his symptoms to a psychiatric condition, most likely malingering or factitious disorder. In so doing, they prevented another hospital admission for a redundant stroke workup, thereby avoiding misallocation of resources and a high-acuity hospital

TABLE 2. Potential *DSM V* diagnoses of psychogenic neurological symptoms

| Diagnosis | Features |
|---------------------|--|
| Conversion disorder | <ol style="list-style-type: none"> 1. Motor or sensory deficits not explained by neurologic disease 2. No evidence of intentional production of deficits 3. Often associated with physical or emotional abuse or neglect |
| Factitious disorder | <ol style="list-style-type: none"> 1. Intentional feigning of symptoms or self-infliction of injury for primary gain (desire to be a patient) 2. Often associated with antisocial or borderline personality disorder |
| Malingering | <ol style="list-style-type: none"> 1. Intentional feigning of symptoms or self-infliction of injury for secondary gain (shelter, disability payments, medications, etc.) leading to a marked discrepancy between complaints and exam findings and poor cooperation with diagnostic testing 2. Often associated with antisocial personality disorder and/or history of prior lawsuits |

Source: American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. (Arlington, Va.: APA, 2013).

bed to a patient with a psychogenic stroke mimic. Notably, the cost of a hospitalization after administration of tPA is high, and insurance companies often decline reimbursement for hospitalizations of patients who are found to have psychogenic syndromes, a stance that strikes us as unethical and discriminatory, but that is nonetheless a reality at present.¹³ Goyal and colleagues found that the median excess hospital cost associated with administration of tPA to patients with stroke mimics was \$5,401 per admission.¹⁴ While it would be a mistake to allow these economic considerations to play a significant role in a decision about providing acute treatment (even in terms of pure economic calculus, since the long-term cost of managing permanent disability from untreated stroke would vastly exceed \$5,401), they do add to the overall picture of potential harm caused by giving tPA to a stroke mimic.

But what if our patient had a small acute infarction on his second presentation? In this case, would the residents have been too focused on being nonmaleficent and failed to be beneficent? When physicians evaluate patients with known psychiatric disease, especially in the acute setting, do we treat them differently? Are we biased against thinking the patients have real pathology? It is important to be humble and acknowledge that clinicians are not flawless and can be fooled by someone who appears to have conversion disorder and ends up having organic pathology. The absence of vascular risk factors and young age do not preclude true stroke, and when acute stroke is in the differential diagnosis and a patient is in the window for tPA, the patient should be offered treatment. Identification of symptoms as psychogenic requires appropriate workup to exclude all organic diagnoses.

CONCLUSION

This article discusses the challenging quest to find the ethical balance between beneficence and nonmaleficence when making time-sensitive decisions about administration of tPA to patients with suspected psychogenic stroke mimics. In legal, ethical, and moral respects, it is much easier to justify a misdiagnosis of stroke if a patient has a psychogenic stroke mimic than *vice versa*.¹⁵ However, while the complication rate of tPA in stroke mimics is low, it is not zero, and administration of tPA comes with a price for both the patient and the healthcare system, even when there are no complications. Effective treatment of patients with psychogenic symptoms requires a prompt and thorough physical exam and appropriate workup, honest communication,

and reassurance. We suggest a need for increased emphasis in the training of physicians about identification of psychogenic stroke mimics, the etiologies for psychogenic stroke mimics, and treatment options for these patients.

MASKING

Details in the cases have been altered to protect the identities of patients and family members.

NOTES

1. B.M. Demaerschalk et al., "Scientific Rationale for the Inclusion and Exclusion Criteria for Intravenous Alteplase in Acute Ischemic Stroke: A Statement for Healthcare Professionals From the American Heart Association/American Stroke Association," *Stroke* 47, no. 2 (2016).

2. A.J. Carson et al., "Do medically unexplained symptoms matter? A prospective cohort study of 300 new referrals to neurology outpatient clinics," *Journal of Neurology, Neurosurgery, and Psychiatry* 68, no. 2 (2000): 207-10.

3. R. Behrouz and S.R. Benbadis, "Psychogenic Pseudostroke," *Journal of Stroke and Cerebrovascular Diseases* 23, no. 4 (2014): e243-8.

4. Demaerschalk et al., "Scientific Rationale," see note 1 above.

5. NIHSS has 11 elements on which patients are rated a score from zero to four. Scores of >16 indicate a strong possibility of death. Scores of <6 indicate a strong possibility of good recovery. "What Is the NIHSS Stroke Scale?" 2017, <https://www.saebo.com/nih-stroke-scale-nihss/>.

6. J.L. Saver et al., "Time to Treatment with Intravenous Tissue Plasminogen Activator and Outcome From Acute Ischemic Stroke," *Journal of the American Medical Association* 309, no. 23 (19 June 2013): 2480-8.

7. S.M. Zinkstok et al., "Safety of thrombolysis in stroke mimics: Results from a multicenter cohort study," *Stroke* 44, no. 4 (2013): 1080-4.

8. Ibid.; O.Y. Chernyshev et al., "Safety of tPA in stroke mimics and neuroimaging-negative cerebral ischemia," *Neurology* 74, no. 17 (2010): 1340-5; D.T. Winkler et al., "Thrombolysis in stroke mimics frequency, clinical characteristics, and outcome," *Stroke* 40, no. 4 (2009): 1522-5; Demaerschalk et al., "Scientific Rationale," see note 1 above.

9. Behrouz and Benbadis, "Psychogenic Pseudostroke," see note 3 above.

10. American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. (Arlington, Va.: APA, 2013); Behrouz and Benbadis, "Psychogenic Pseudo-stroke," see note 3 above.

11. Behrouz and Benbadis, "Psychogenic Pseudostroke," see note 3 above.

12. G. Nielsen, J. Stone, and M.J. Edwards, "Physiotherapy for functional (psychogenic) motor symptoms?: A systematic review," *Journal of Psychosomatic Research* 75, no. 2 (2017): 93-102.

13. Behrouz and Benbadis, "Psychogenic Pseudo-stroke," see note 3 above.

14. N. Goyal et al., "Cost Burden of Stroke Mimics and Transient Ischemic Attack after Intravenous Tissue Plasminogen Activator Treatment," *Journal of Stroke and Cerebrovascular Diseases* 24, no. 4 (2017): 828-33.

15a. Behrouz and Benbadis, "Psychogenic Pseudo-stroke," see note 3 above.