



Functional stroke mimics: cultural differences and challenges to rising healthcare costs

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Functional neurological disorders mimicking stroke are described in literature from across the globe (1-4). Stroke mimics account for a significant proportion of acute stroke evaluations in emergency rooms among which functional stroke mimics (FSMs) are seen in a substantial proportion. These disorders present a diagnostic challenge as acute stroke management calls for administration of potentially high-risk therapies in a time sensitive manner.

In this issue, Wilkins *et al.* present findings from a retrospective study, performed in a large tertiary care center in Qatar (5). They studied 1,961 patients from different ethnic/cultural backgrounds evaluated in the emergency room for stroke symptoms. The hospital ran a stroke program that was certified by The Joint Commission International standards. The authors analyzed the frequency of FSM in this population; and discovered differences based on cultural backgrounds. Arabic and African patients had a prevalence of FSM at 2–3 times that of Southeast Asian, Far Eastern, Western and Qatari patients. Consistent with several previous studies of stroke mimics, females were twice as likely to have a diagnosis of FSM. Patients with FSM in the study were also less likely to arrive by ambulance and had a lower prevalence of stroke risk factors, except for smoking (5,6).

The authors have suggested cultural differences in the approach to psychological stressors as an explanation for the differences in FSM frequencies. Arabic and African cultures have higher acceptance of somatization of psychological problems (5). There is increased stigma around mental health problems and expressing psychiatric concerns.

The stigma may extend beyond the patient to the rest of the extended family also. Patient from these cultures may experience prejudice and severe discrimination because of mental health problems. Such attitudes encourage the expression of psychiatric illness as somatization (5). Functional MRI studies suggest increased functional connectivity between the right amygdala and right supplementary motor cortex among patients with FSM (7).

In addition to stigma, Arabic and African patients in Qatar are at a relative disadvantage due to an environment lacking economic stability and the potential of psychological trauma stemming from political instability in the Middle East. The relatively wealthy local Qatari population is not exposed to either of these conditions. Therefore, the authors presume a higher prevalence of psychiatric disorders in the Arabic and African population in Qatar (5). They acknowledge the fact that this was a retrospective study that did not allow for details on psychological stressors to be collected from individual patients (5).

FSMs can result in a significant economic burden on the healthcare system. In the current study, 9.9% of these patients received intravenous tissue plasminogen activator (tPA) and would have likely needed subsequent post tPA intensive monitoring of vital signs and neurological status (5). While the percentage of patients receiving tPA was less than those with true ischemic stroke, the number is by no means insignificant, and at par with many academic centers in Western countries. In the last few years, there has been increasing evidence that the use of tPA in stroke mimics has very low incidence of hemorrhagic complications (8-11).

This could potentially decrease the threshold of using tPA in patients with FSM (12). There is a higher utilization of MRI in these patients (5), likely for diagnostic confirmation of the absence of a true ischemic stroke. This also adds to the healthcare costs. Fortunately, this group of patients also had a lower median length of stay compared to patients with true ischemic strokes.

Is there a way to consistently diagnose FSMs in the emergency room, so that they can be directed immediately towards psychiatric care rather than further neurological treatments and evaluation? In the present study, 32 out of 161 patients (19.9%) with FSM had a prior history of a stroke (5). Therefore, using the criterion of the absence of a relevant cerebrovascular history would miss 1 in 5 such patients. Certainly, if a particular patient presents repeatedly to the emergency room with somatization complaints, in the era of electronic medical records, the patient could be flagged to alert the emergency physician of the diagnosis. How should one apply the results of this study to a 40-year-old Arabic woman who presents to the emergency room with left sided weakness for 1 hour, and without any traditional cerebrovascular comorbid risk factors? Perhaps she has a history of migraines with aura and we identify a psychological stressor during the emergency evaluation. In certain centers, getting a stat MRI scan may help identify a true ischemic stroke from a FSM, although this technology may not always be readily available in all hospitals. Emergent and early neurological evaluation at either the bedside or using telemedicine technology may also help identify a patient with FSM from true ischemic stroke (3,13).

Wilkins *et al.* suggest a broader approach to the problem. They recommend improved public health education about mental health disorders can help reduce stigma around psychiatric disease. This could potentially lead to improved and earlier access of psychiatric care for common conditions such as anxiety and depressive disorders. It would be reasonable to presume that improved access to treatments such as psychiatric medications and cognitive behavioral therapy may reduce the frequency of hospitalizations with somatization complaints. In a controlled treatment study of cognitive behavioral therapy in patients with somatoform disorders, at 2 years of follow-up there was a 24.5% reduction of outpatient costs and 36.7% reduction of inpatient costs (14).

In summary, FSMs are significant public health problems that contribute to increasing healthcare costs. Public education to improve awareness and reduce stigma around mental health disorders, and improved recognition of

mimics within emergency room settings can potentially mitigate the consequences of this problem.

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