Assessing Neurological Symptoms

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Case Overview

Stroke, a major cause of morbidity and long-term disability, is a diagnosis that may be delayed in women due to differences in patient presentations and/or recognition by providers. Stroke is also treated less aggressively in women. Prompt recognition and appropriate Emergency Department triage and therapy are essential in decreasing the morbidity caused by stroke.

Patient History

JS, a 36 year-old female with a history of PCOS and gastric bypass surgery, presented to the Emergency Department (ED) at 6:42 AM. having woken up at 5 am with vertigo and right sided neurologic symptoms. JS described right-sided face, arm, and leg numbness and tingling as well as mild right-sided weakness affecting both her arm and leg. She also described some difficulty walking. Review of systems, family history, and social history were not significant. She had gone to bed feeling well the night before.

Current Medications

- Albuterol
- Clonazepam
- Acetaminophen

Vital Signs

- Blood pressure: 113/68
- Pulse 79
- Respiratory Rate 18
- Oxygen saturation 98% on RA
- Temperature 97.4
- Weight/Height 127 kg, 5’5”

ED Course

As noted above, JS arrived in the ER at 6:42 AM and was noted by the triage nurse to have right arm and leg weakness as well as an unsteady gait. She was subsequently triaged as a ESI Level 2, waited for over an hour, and was placed into a treatment room just before 8:00 AM.

Physical Exam

On physical examination, JS had decreased light touch sensation and two-point discrimination on the right side of her face, her right arm, and her right leg. She also had 4/5 strength in the right upper and lower extremities compared to full strength on the left. She did not have any cranial nerve deficits.

Pertinent Labs

- WBC 9.2
- Platelets 271
- INR: 1.1
- Glucose 98

Assessment/Further Testing

JS received an emergent non-contrast of the brain that was unremarkable. Out of concern for an ischemic stroke, neurology was consulted. On exam by the neurologist, JS was found to have a NIH stroke scale of 3 including 2 points for mild weakness of both the right upper and lower extremities and 1 point for sensory changes. The patient was then given aspirin therapy and admitted to the neurology service for a presumed ischemic stroke.

Hospital Course

Inpatient MRI revealed an acute left medullary infarct. The patient was not found to have any vascular abnormalities, nor was she found to have any cardiac etiology for her stroke. She had a full hypercoagulable work-up done as well as a lipid panel, all of which were unremarkable. She was started on anti-platelet therapy with aspirin and was ultimately discharged home with physical therapy. On discharge, the patient was slightly improved, but still had neurologic deficits including decreased light touch sensation on the right as well as right upper and lower extremity weakness and was using a cane to help with her unsteady gait.

Discussion

This case illustrates several sex-specific issues surrounding the disease process, diagnosis, and treatment of stroke. In this particular case, one could argue that the triage was delayed. Looking retrospectively, it may have been more appropriate to triage this patient to a more critical area of the ED where she would have been immediately evaluated for potential eligibility for more aggressive intervention, even if it was intraarterial thrombolytics given the time course of her “wake-up” stroke.

Previous literature has addressed sex and gender differences in presentation, management, and outcomes of stroke. First, women may be less likely to recognize the symptoms of stroke. This may be a result of women presenting with different symptoms than their male counterparts.[1,2,3] In addition, providers may be less likely to recognize the diagnosis of stroke in women. Women may present with atypical or non-specific stroke symptoms, and women are

also less likely to have the risk factors that we consider “classic” for stroke. For example, women with stroke are less likely to have atherosclerosis and diabetes as risk factors but are more likely to have hypertension and atrial fibrillation.[1,2,4,5,6,7]

Even after diagnosis, the evidence suggests that women are treated less aggressively for stroke and that they are less likely to receive thrombolytics, a therapy that has been shown to reduce morbidity and improve outcomes following stroke.[8,9,10] Though women may have lower rates of mortality following stroke, they are more likely to suffer from depression, disability, and long-term functional limitations.[1,2,4,11,12,13,14]

Finally, the role of hormones in stroke is applicable in this case. It does not appear that this patient was undergoing any hormonal therapy, and it is very possible that she has a different hormonal profile as compared to a 36 year-old female not affected by PCOS. The interaction between hormones and risk for stroke is complex as estrogen has been shown to be a pro-coagulant yet is also known to be protective against atherosclerosis.[1,10]

Conclusion

Diagnosing stroke in women may be challenging if symptoms are not classic. If there is suspicion of acute stroke, however, it is essential to act promptly and to consider aggressive therapies including thrombolytics as recommended by expert guidelines in order to maximize the chances of optimal recovery and to reduce risk of long-term disability. Finally, preventive therapies should be directed towards risk factors known to be more prevalent in women, and hormonal status should be taken into consideration.

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