

Symptoms in hurry, Investigations blurry: A Case of MRI-negative Posterior Circulation Cerebral Stroke

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ABSTRACT:

Posterior Circulation Cerebral strokes account for 20% of acute ischemic strokes(1). There have been reports citing that the diagnostic studies can remain insignificant for a much longer time (72 hours in our case), even if the patient is showing signs and symptoms of acute stroke. We report a case of a 58-year-old male, who had clear clinical features concerning acute stroke but had no positive diagnostic study on presentation to prove. His clinical presentation included difficulty in walking along with vertigo. Through this case report, we want to send out a message that clinical judgment should not be disregarded even if laboratory investigations and diagnostic scans don't point to any significant abnormality especially in cases of acute stroke.

INTRODUCTION

This report demonstrates the case of a 58-year-old male, who presented with signs and symptoms pointing towards posterior circulation stroke. A Posterior circulation stroke is classically defined as an infarction occurring within the vascular territory supplied by the vertebrobasilar arterial system. Multiple etiologies are involved including atherosclerosis, cardioembolism, cervical artery dissection, etc, which may also occur simultaneously. Risk factors include hypertension, diabetes, hyperlipidemia, smoking, etc. Mostly, symptoms associated with Posterior circulation stroke comprise of diplopia, visual field defects, vertigo and dysphagia. Posterior circulation strokes are notorious for presenting late on MRI sometimes. There is significant morbidity and mortality associated with this condition, so timely intervention is of utmost importance.

CASE DESCRIPTION

A known case of Type 2 Diabetes along with Hypertension for the past 2 years, a 58-year-old male, presented to the Emergency department on 17/01/2021 at around 1:45 pm, with the following chief complaints:-

1. Difficulty in walking since 5 am
2. Vertigo
3. Nausea and vomiting

There was no history of any fall or head trauma. He did not have any headaches. There was no difficulty in speaking or swallowing. He was non-alcoholic and non-smoker.

Vitals of the patient were stable on presentation except for mildly raised blood pressure. The patient was afebrile and had a blood pressure of 140/100mmHg, a heart rate of 82/min, sPO2 of

98% and a Respiratory rate of 20/min. General physical examination revealed no clubbing, cyanosis, pallor, edema or lymphadenopathy.

On neurologic examination, the Patient had Left Hypertropia (skew deviation towards the left side). Nystagmus was impaired in primary gaze. Left Adduction was impaired. The patient also had Gait ataxia. Based on the presentation, an MR Angiogram of the brain and neck was ordered on an urgent basis, the report of which showed no significant abnormality. The patient was admitted to ICU for further evaluation and management. Conservative treatment was started as the patient presented late.

INVESTIGATIONS

1. MRI brain was ordered on the same day (18/01/2021), 9 hours after initial symptoms began as the patient presented late, report of which showed no new infarct or bleed but only chronic small vessel disease changes involving pons, midbrain, thalami, ganglio-capsular region, the sub-cortical and para-ventricular white matter of bilateral frontoparietal lobes region.
The report did not show any significant acute changes which could have accounted for the clinical symptoms with which the patient presented.
2. MRA of brain and neck was ordered on an urgent basis (18/01/2021), a report of which showed no significant abnormality.
3. 3-Echocardiography was done on 18/01/2021 which was also non-contributory.
4. In spite of the previously negative diagnostic scan reports, 2D MRI brain was repeated on 21/01/2021 after 72 hours of symptom onset, which showed:-

Posterior circulation small vessel acute ischemic infarct in addition to pre-existing chronic changes. Only after a 72-hour scan, a confirmed diagnosis could be made.

TREATMENT

As part of the management, the patient was advised anti-platelet medication, anti-diabetic drugs, statins, anti-hypertensive medication, along with some multivitamins and multi-minerals. He was also advised to continue with his lifestyle management and routine check-ups.

The patient was kept in hospital for 7 days and then discharged on medications and advised to undergo physiotherapy. The patient's strength is now improving and vertigo is much better.

DISCUSSION

Posterior circulation strokes account for approximately 20% of ischemic strokes (1). A patient with posterior circulation stroke can present with a wide range of symptoms. These may include dizziness, headache, nausea, vomiting, unilateral limb weakness, nystagmus, ataxia, dysphagia and even dysarthria (2). Very few patients can only present with isolated vertigo. Such a clinical picture can easily be confused with cases of peripheral vertigo. This becomes even more challenging when a patient presents early with usually no obvious focal neurological signs and symptoms. Patients can also present with skew deviation, upbeat nystagmus or gaze evoked nystagmus.

Active probing questions are required to differentiate these two. Physical examination plays an equally important role. HiNTs examination can help narrow down the list of causes of vertigo by determining whether vertigo stems from a peripheral cause or a central lesion. There has been a study that demonstrated that the HiNTs test outperforms MRI obtained within the first 2 days after the symptom onset (3). Common etiologies of posterior circulation stroke include cardio-

embolic events, atherosclerosis, traumatic or spontaneous arterial dissection. Less common causes involve hypercoagulable disorders, vasculitis and drug abuse (4).

Over the course of years, more and more dependence has been put over the diffusion-weighted imaging (DWI), with Magnetic Resonance Imaging (MRI) being the most trusted scan to make a diagnosis of ischemic strokes. An article was published in 2017 to determine the prevalence of DWI-negative acute ischemic strokes. It was found that a small yet significant percentage of ischemic strokes had negative diagnostic scans, especially in the initial stage of presentation. Also, most of the DWI-negative cases were associated with posterior circulation strokes, rather than anterior circulation strokes. Patients with neurologic deficits consistent with posterior circulation ischemia have 5 times the odds of having a negative DWI scan compared to patients with anterior circulation ischemia. (5).

Our patient is yet another example of a DWI-negative posterior circulation stroke. He was leading a normal and active life for the past many years. He was diagnosed with type 2 diabetes mellitus and hypertension 2 years back but had never had any complications until now. His comorbid conditions along with atherosclerosis might have contributed to the development of his stroke. An urgent MRI was ordered, which came out negative, contrary to the expectations. He was still treated as a case of acute posterior ischemic stroke based on clinical judgment and high suspicion.

CONCLUSION

Posterior circulation is a diagnosis that can be easily missed, even by top-notch neurologists. Although MRI brain is the gold standard for detection of acute stroke, Posterior circulation stroke cannot and should not be ruled out even if MRI reports (especially the early ones) turn out to be negative. Posterior circulation stroke should always be kept in mind as part of differential diagnosis for any patient presenting with acute dizziness and HINTS should be performed in all patients with acute dizziness.

The take-away point from this case is that diagnostic studies are just there to act as an aid in reaching a final diagnosis. Although the importance of these studies cannot be ignored, Clinical judgment supersedes any investigation in making an adequate diagnosis.

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