An interesting case of postpartum headache

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Abstract

When severe headache in the postpartum period is not relieved by medication, it could be due to a serious underlying condition such as cerebral angiopathy or venous sinus thrombosis. This particular case of a lady presenting with thunderclap headache in the first postpartum week was diagnosed as postpartum cerebral angiopathy complicated by subarachnoid haemorrhage. Brain imaging with CT, MRI, MR angiography and venography helped to establish the diagnosis. Persistent severe postpartum headache should be evaluated and appropriately treated to prevent patient morbidity and mortality.

Key Words: angiopathy, headache, postpartum, thunderclap, vasoconstriction

Introduction

Post-partum cerebral angiopathy (PCA) is a type of reversible cerebral arterial vasoconstriction syndrome.1,2 It usually occurs within a month following delivery in normotensive women. The condition should be suspected when a normotensive woman presents with severe headache or neurological deficit in the post-partum period, which is not responding to treatment.

Case Report

A thirty-year-old lady presented to the Neurology department of our hospital with history of thunderclap headache, nausea and vomiting. Five days back, she had delivered a healthy baby at another hospital after an uneventful pregnancy. She had had a spontaneous vaginal delivery without spinal or epidural anesthesia. However, the next day after delivery (post-partum day two), she had developed severe headache, which was persistent despite treatment given there. There was no history of fever or seizure. Examination revealed that the patient was well oriented and there was no focal neurological deficit. She was normotensive. Laboratory evaluation showed normal counts and no proteinuria was detected. There was no history of prior intake of alcohol or drugs.

Initially, a non-contrast enhanced CT scan of head was done which revealed effaced sulci in right cerebral hemisphere. No infarct or parenchymal haematoma was noted. Subsequently, an MRI of the brain with angiography and venography was advised. MRI revealed right sided subarachnoid haemorrhage and MR angiography showed multifocal narrowing of arteries of the anterior circulation. No aneurysm was noted. There was no venous sinus thrombosis.

Based on these clinical and imaging findings, she was diagnosed with PCA complicated by non-aneurysmal subarachnoid haemorrhage. She was managed conservatively with nimodipine and levetiracetam. Repeat angiogram was advised after three months. The patient responded well to her treatment and the repeat angiogram was normal. She is presently doing well.

Discussion

Women often complain of headache during puerperium but it gets attributed to lack of sleep, irregular dietary pattern and decreased fluid intake. In a study of ninety-five women who presented with headache one day after delivery over a five year period, Stella et al enumerated causes of postpartum headache. These included tension-type headache in...
39% patients, 24% patients had preeclampsia/ eclampsia, 16% had spinal headache, 11% had headache due to migraine, 3% had pituitary haemorrhage / mass, 3% had cerebral venous thrombosis, 2% had cerebral vasculopathy, 1% had a thalamic lesion and another 1% had subarachnoid haemorrhage. In their series, brain imaging was done in patients who had some type of focal neurological deficit or those in whom the headache was not relieved despite treatment.

PCA is a rare cause of severe headache in puerperium, which is not well understood. It is seen in women within the first week and upto four weeks after delivery. It is considered a type of reversible cerebral vasoconstriction syndrome (RCVS) but less than 10% of the cases of RCVS are seen in the post partum period. There are two forms of PCA- idiopathic and iatrogenic. The idiopathic form is also referred to as Call-Fleming angiopathy. This reversible form is seen in the postpartum period in women with normal blood pressure. The iatrogenic form, however, occurs in puerperium after giving drugs such as bromocriptine, ergot alkaloids or sympathomimetics.

The pathophysiology of PCA involves transient changes in cerebral arterial tone leading to multifocal arterial narrowing and dilatation. The small and medium-sized arteries of the anterior circulation are involved in PCA. Alterations in levels of reproductive hormones such as decrease in estrogen and increase in progesterone are considered responsible for these changes. Complications of PCA include ischemic or haemorrhagic stroke, subarachnoid haemorrhage and vasogenic brain edema. CT and MR imaging of the brain can show intra-cranial haemorrhage and MR can additionally reveal cortical or white matter T2 hyperintense lesions. Multifocal narrowing with beaded contour of small and medium sized arteries of anterior circulation is seen in angiography images.

In our case, the patient presented with thunderclap headache on second day post-partum, which was not relieved with medication. She had delivered the baby vaginally without administration of any anaesthesia. There was no history of seizure or focal neurological deficit or visual disturbance. Neither did she give a history of intake of alcohol or other drugs prior to the headache. Laboratory evaluation ruled out proteinuria. We were thus able to exclude preeclampsia, eclampsia and spinal headache.

She underwent brain imaging which revealed non-aneurysmal subarachnoid haemorrhage and multifocal narrowing of arteries of the anterior circulation. There was no aneurysm or venous sinus thrombosis. Along with the pattern of her headache, she showed improvement both clinically and radiologically on subsequent follow-up. Thus, we were able to rule out vasculitis. High resolution MR (Magnetic resonance) vessel wall imaging (VWI) can help to differentiate between RCVS and CNS vasculitis. In both the conditions, there is thickening of the arterial walls

Figure 1: Non-contrast enhanced axial CT image showing effaced sulcal spaces along the right cerebral convexity.

Figure 2: Axial T2-weighted MR image showing no evidence of parenchymal haematoma or infarct.
but significant wall enhancement is seen only in cases of vasculitis. This is likely due to the lack of an underlying inflammatory process in RCVS.\textsuperscript{9,10}

**Conclusion**

This case emphasizes the need for considering the possibility of PCA in women presenting with severe postpartum headache. These patients should be taken seriously and cerebral imaging should be done when headache persists despite adequate medical therapy. Timely diagnosis can facilitate optimal patient management, prevent morbidity and mortality.

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