Case Report

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A Rare Case of Postpartum Carotid Dissection

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ABSTRACT

Cervicocranial arterial dissection is not a common disease (2.5% of total brain infarction), and its pathogenesis is still not fully understood. However, it appears to be multifactorial and is rarely seen in the postpartum period. A 40-year-old woman presented to the emergency department with sudden right lower limb paresis 10 days after vaginal delivery. She had no history of DM, HTN, preeclampsia, or underlying cerebrovascular disease. Upon evaluation, left extracranial carotid artery dissection was found on cervical MRA.

The likelihood of postpartum dissection is rare, but it could be due to vascular damage associated with the Valsalva maneuver during labor; hemodynamic and hormonal changes due to pregnancy may also play a role.

Introduction

Cervicocephalic arterial dissection is not a common disease (2.5% of total brain infarction) [1], and its pathogenesis is still not fully understood. However, it appears to be multifactorial [2] and can occur after predisposing conditions [3] (e.g., hereditary diseases and infections) or minor trauma [4-7]. Dissection may occur spontaneously; however, minor trauma and strenuous efforts, such as labor, are frequently implicated as causes of arterial dissections [1,4,8,9], whereas truly spontaneous dissection is very uncommon [10].

Case Presentation

The patient was a 40-year-old female whose vaginal delivery was not prolonged. She experienced pain in the anterior neck on the right side and numbness in the right lower limb 10 days after vaginal delivery. After 24 hours, she developed progressive paralysis on that side, such that after 48 hours, she was unable to walk. At this time, she was referred to the emergency department. According to her report, she had experienced sudden loss of vision in the left eye and numbness in the right limb for less than a minute on the third day after delivery. She had no history of HTN, DM, abortion, or preeclampsia.

On examination, her vital signs were normal. General examination was unremarkable. Cranial nerve assessment revealed right homonymous hemianopia; however, other cranial nerve examinations, including fundoscopy and pupil size and reaction to light, were normal. Her right lower limb exhibited dense hemiplegia, along with numbness on the right side of

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the body, hyperreflexia, and a positive Babinski sign on the right side.

On evaluaton, laboratory tests—including complete blood count (CBC), sodium (Na), potassium (K), urea, creatinine (Cr), urinalysis (U/A) for protein, erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), antinuclear antibody (ANA), anti-double-stranded DNA (anti-dsDNA), anticardiolipin antibody, antiphospholipid antibody, protein S, protein C, factor V Leiden (FVL), antithrombin III, and homocysteine level—were normal.

Cardiac evaluations, including electrocardiogram (ECG) and transthoracic echocardiography (TTE), were normal.

Brain computed tomography (CT) scan revealed hypodense lesions in the left centroparietal region. Magnetic resonance imaging (MRI) showed an acute left middle cerebral artery (MCA) territory infarction (Figure 1).

Dissection of the left carotid artery was detected on cervical magnetic resonance angiography (MRA); however, no evidence of fibromuscular dysplasia (FMD), Takayasu arteritis, or other underlying cardiovascular abnormalities was observed (Figure 2).

The patient was diagnosed with carotid artery dissection and treated with anticoagulation therapy. After adjusting the INR and achieving relative improvement, she was discharged. Three months after disease onset, she was able to walk without assistance.

Discussion

Postpartum cervical dissections are rare occurrences that require prompt diagnosis to prevent long-term neurologic deficits [11]. The majority (60–90%) of patients with internal carotid artery and vertebral artery dissections present with headache, neck pain, or both headache and neck pain [1–4,12], which typically precede neurologic symptoms by hours to days. The pathophysiology of cervical artery dissection appears multifactorial, with evidence suggesting environmental and genetic contributions. Intimal injury related to the Valsalva maneuver during labor, as well as hemodynamic and hormonal changes related to pregnancy, are presumed causes of postpartum spontaneous carotid artery dissection [13]. Pain is a presenting symptom in carotid dissection (57%–92%) [14–17]; 57% of patients report frontal headache, and 97% report anterior neck pain. The pain location is neither sensitive nor specific to the artery of dissection [18]. Stroke can occur in 73% to 85% of patients and may be the presenting symptom in 72% of cases [18–21]. Detected dissections will be complicated by stroke within minutes to 24 hours in 36% to 56% of patients, and 78% to 82% of cases will experience a stroke within the first 7 days of dissection warning symptoms [20,21]. Given that the average age of patients who experience stroke is 45.9 years, which is relatively young, managing cervical arterial dissection as one of the causes of stroke in younger patients is important [21]. The most common signs of stroke related to cervical arterial dissection consist of hemiparesis (87%–100%), hemisensory loss (37%–72%) [14,21], dysarthria (45%) [10], aphasia (35%) [14], and monocular vision loss (6%–25%) [14,22,16].

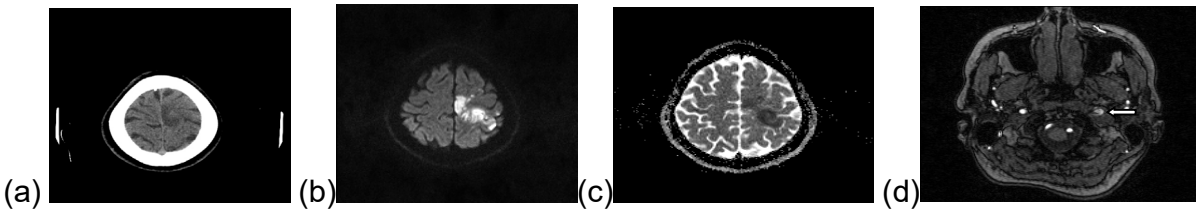

Fig. 1. (a) Axial CT image shows cortical infarction in the left parietal lobe, (b&c) Axial diffusion-perffusion weighted MR imags show restricted diffusion involving the left parietal lobe due to acut infarction,(d) axial T1-weighted with fat suppression image shows crescent sign in the left carotid artery (white arrow).

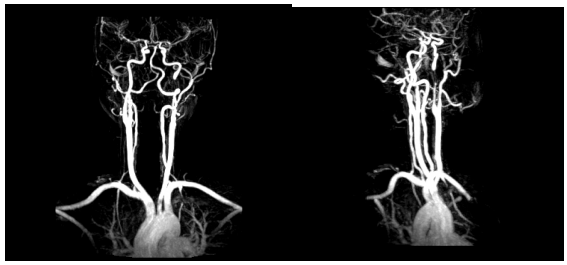

Fig. 2. Cervical MRA: The string sign and occlusion is visible in the left internal carotid artery.

Although Horner's syndrome is observed in 20% to 48% [18,19,22,23] of cases with cervical arterial dissection, the classic triad of Horner's syndrome, hemispherical stroke symptoms, and headaches is present in only 8% of cervical arterial dissections [18]. The prognosis of dissection depends on several factors. A high NIHSS score, advanced age, complete occlusion of the arteries, involvement of intracranial arteries, subarachnoid hemorrhage (SAH), and aneurysm are associated with poor prognosis. Conversely, the presence of collateral circulation within 12 hours and involvement of extracranial vessels are associated with a better prognosis [12,19,24–26]. For treatment, antithrombotic therapy for at least 3 to 6 months after dissection and follow-up neuroimaging are recommended [27].

Our patient was affected by one-sided carotid dissection following a vaginal delivery that did not last long. Her first symptom was a transient ischemic attack (TIA), which occurred three days after delivery. Seven days later, stroke symptoms appeared, and the patient experienced constant progression of these symptoms over 72 hours. Pain was a presenting symptom, experienced in the anterior neck on the side opposite to the dissected artery. Given that the patient's vaginal delivery was relatively brief, it seems that the dissection was not solely due to strenuous effort. This observation underscores the role of pregnancy-induced hormonal and hemodynamic changes in the occurrence of the dissection.

Conclusion

Cervicocephalic arterial dissection in postpartum acute paralysis represents a critical neurological emergency. Prompt recognition and diagnosis are essential, as delays can result in severe outcomes, including death or permanent morbidity. Although rare, this condition requires heightened clinical awareness due to its association with ischemic strokes and other life-threatening complications in postpartum patients. Early imaging and appropriate management strategies significantly enhance prognosis, underscoring the importance of considering this diagnosis in postpartum neurological emergencies.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this article.

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Conflict of Interests

The authors have no conflict of interest to declare.

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