

Puerperal Extracranial Vertebral Artery Dissection and Nonaneurysmal Subarachnoid Hemorrhage

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Previously reported only a few times before, we present a case of extracranial vertebral dissection and spontaneous frontoparietal subarachnoid hemorrhage (SAH) in the puerperium, discussing possible mechanisms and difficulties in management. A 35-year-old woman presented 10 days postcaesarean section with neck pain and vertigo with normal initial investigations. Following recurrent vertigo, headache, and ataxia, imaging revealed a frontoparietal SAH and vertebral artery dissection. The patient was consequently treated with aspirin, and then following a return of symptoms 3 weeks later, warfarin therapy was continued for 6 months. The possible underlying mechanisms for this case are discussed, including reversible cervical vasoconstriction syndrome and posterior reversible encephalopathy syndrome, although neither was identified. The small SAH alongside recurrent posterior circulation symptoms resulted in the initiation of antithrombotic therapy. This report supports studies demonstrating higher incidence of cervicocephalic arterial dissection in the puerperium. Moreover, the heterogeneous presentation and manifestations of such cases require individualized treatment, and warrant studies into underlying mechanisms behind extracranial dissection and nonaneurysmal SAH. **Key Words:** Puerperium—vertebral artery dissection—subarachnoid hemorrhage—cervicocephalic artery dissection—stroke—reversible cervical vasoconstriction syndrome.

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Introduction

Cervicocephalic arterial dissection (CCAD) is a well-known cause of stroke in patients under 50, rarely during

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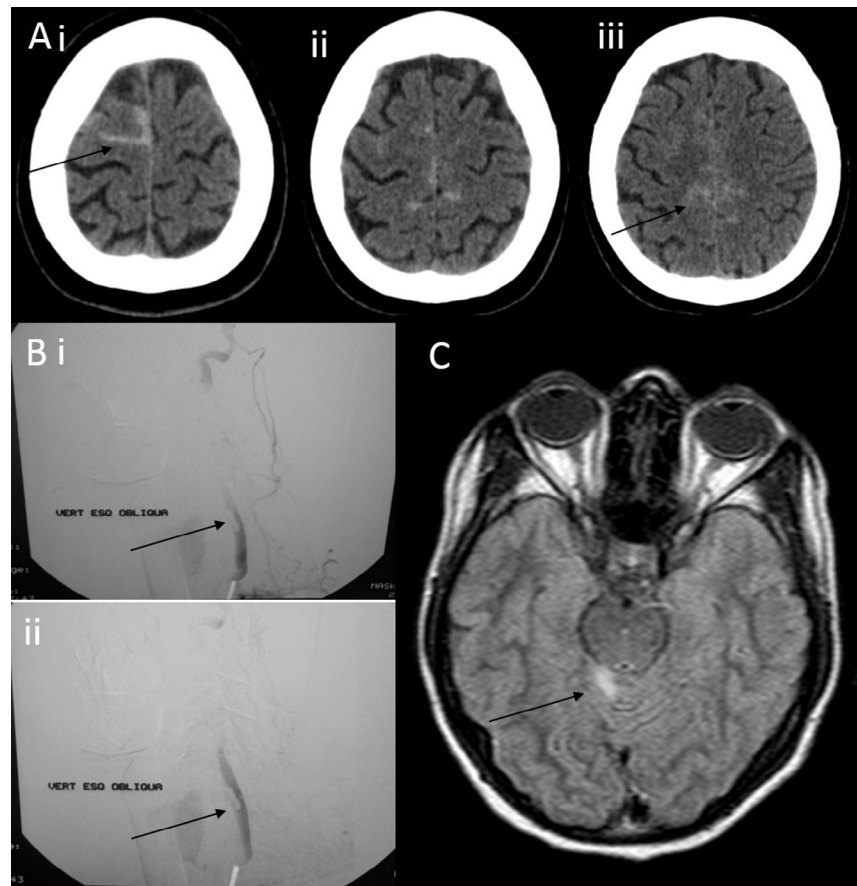
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the puerperium.¹ The occurrence of subarachnoid hemorrhage (SAH) alongside CCAD can be found as a complication of dissection, with nonaneurysmal SAH only reported a few times.² We present a case of extracranial vertebral dissection and spontaneous frontoparietal SAH, discussing possible mechanisms and difficulties in management.

Case

A 35-year-old woman presented to the emergency department 10 days postelective caesarean section with sudden-onset, severe right-sided neck pain and vertigo. Initially, neurological examination and investigations, including cranial computerized tomography, were normal.

Figure 1. Images using different modalities to show SAH, cervical dissection, and cerebellar infarct. (A, i-iii) Selected frames from cranial CT showing evidence of a small, subarachnoid hemorrhage in the frontoparietal lobe. (B, i,ii) Selected images from digital cerebral angiography showing a vertebral artery dissection in the right vertebral artery and an occlusion of V2 without the presence of any aneurysms. (C) Cranial MRI segment showing an infarcted lesion of the cerebellar vermis. Abbreviations: CT, computed tomography; MRI, magnetic resonance imaging; SAH, subarachnoid hemorrhage.



Twelve hours later, the patient was admitted to intensive care following a further episode of vertigo, thunderclap headache, and ataxia. Computerized tomography demonstrated a small frontoparietal SAH (Fig 1, A). Digital subtraction angiography (DSA) demonstrated right vertebral artery dissection at V2 (Fig 1B), excluding cerebral vasoconstriction–dilatation and aneurysms. Magnetic resonance imaging (MRI) demonstrated an ischemic lesion within the cerebellar vermis (Fig 1, C).

Repeated transcranial Doppler examination excluded embolic activity, basilar hemodynamic compromise, or cerebral vasoconstriction. The patient was discharged to an infirmary and low-dose aspirin (75 mg) was started 1 week after ictus.

Three weeks after initial presentation, the patient experienced recurrence of vertigo, although no further abnormalities were evident on investigation (MRI with angiography). Warfarin was commenced for 6 months, with no further episodes.

Discussion

The incidence of CCAD in the puerperium is rare and poorly understood; moreover, the few reports of coexistent SAH and CCAD occur in the context of an aneurysm, reversible cervical vasoconstriction syndrome (RCVS), or

posterior reversible encephalopathy syndrome.²⁻⁴ RCVS was our main hypothesis based on the location of SAH, presence of dissection, and, most importantly, recurrent thunderclap headaches. RCVS was not confirmed in this case because the DSA showed no evidence for cerebral vasoconstriction–dilatation; however, vasoconstriction is known to progress from distal to proximal arteries in RCVS and may have been missed in this case due to the early timing of the DSA. Owing to hemorrhage location, which was unlikely for an aneurysm, MRI with angiography was chosen for follow-up investigation. MRI results and a normotensive patient ruled out posterior reversible encephalopathy syndrome, and other etiologies including intracranial extension of the dissection and central venous thrombosis were considered; however, hemorrhage location and repeat imaging did not support such diagnosis.^{2,5}

Managing rare cases can be difficult in the absence of consensus. Although antithrombotic treatment is recommended in ischemic stroke secondary to CCAD,⁶ such therapy is contraindicated in SAH⁶ and surgical intervention of identified aneurysm is considered the primary management.⁷ Low-dose aspirin was initiated at day 7 once vertebral artery occlusion risk was deemed greater than that of rebleed. Although anticoagulation is not beneficial compared to aspirin in CCAD,⁸ the recurring symptoms in this case suggested ongoing transient

ischemic phenomenon and a failure of antiplatelet therapy; hence, anticoagulation was initiated.

This report supports studies demonstrating higher incidence of CCAD in the puerperium.³ Moreover, the heterogeneous presentation and manifestations of such cases require individualized treatment, and warrant studies into underlying mechanisms behind extracranial dissection and nonaneurysmal SAH.

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