Ruptured Vertebral Artery Dissecting Aneurysm Associated With Parent Artery Occlusion

—Case Report—

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Abstract

A 63-year-old hypertensive man presented with vertebral artery (VA) dissection manifesting as subarachnoid hemorrhage located mainly in the posterior fossa. Left vertebral angiography on the day of hemorrhage showed complete occlusion of the left VA. Right vertebral angiography showed retrograde filling of the distal portion of the left VA and the left posterior inferior cerebellar artery, and a “double lumen”-like finding in the left VA. He was managed conservatively. Follow-up angiography on Day 29 showed spontaneous recanalization of the occlusive lesion and an almost normal arterial configuration. T₂-weighted magnetic resonance (MR) imaging on Day 45 revealed multiple infarctions in the brainstem. T₁-weighted MR imaging showed a high intensity area, suggestive of intramural hematoma, in the left VA. He was transferred to another hospital in a persistent vegetative state.

Key words: dissecting aneurysm, vertebral artery, subarachnoid hemorrhage, occlusion

Introduction

Intracranial arterial dissections or dissecting aneurysms are relatively uncommon lesions, but the number of reported cases has increased in recent years. These dissections are located more frequently in the posterior circulation than in the anterior circulation. The natural course of dissection of the vertebral artery (VA) is not fully understood. The optimum treatment for this disease is still controversial. We treated a patient with VA dissection manifesting as subarachnoid hemorrhage (SAH) which appeared as proximal VA occlusion on the initial angiography.

Case Report

A 63-year-old man with hypertension suffered sudden onset of severe headache and was transferred to our hospital on April 10, 2001. On admission, the patient was somnolent but otherwise neurologically normal. His blood pressure was 167/80 mmHg. His medical history included a diagnosis of chronic renal failure and hemodialysis therapy three times a week for the previous 3 years. Wassermann reaction was negative. There was no evidence of head

Fig. 1 Axial computed tomography scan on admission showing diffuse subarachnoid hemorrhage, mainly in the posterior fossa.
Computed tomography (CT) without contrast enhancement showed diffuse SAH, mainly in the posterior fossa, and ventricular dilation (Fig. 1). Continuous intravenous administration of nicardipine hydrochloride was started to maintain a systolic blood pressure of <120 mmHg during the acute stage of SAH. Left vertebral angiography on the day of admission showed complete occlusion of the left VA (Fig. 2). Right vertebral angiography showed retrograde filling of the distal portion of the left VA and the left posterior inferior cerebellar artery, and a “double lumen”-like finding in the left VA (Fig. 3). No carotid angiography was performed because his consciousness deteriorated to a comatose state and respiratory distress developed. Repeat CT showed progression of the hydrocephalus and rebleeding. The patient underwent ventricular drainage.

Second angiography on Day 29 showed recanalization of the occlusive lesion and an almost normal arterial configuration with antegrade flow into the basilar artery (Fig. 4). T2-weighted magnetic resonance (MR) imaging on Day 45 showed multiple, diffuse infarctions in the brainstem (Fig. 5 upper). T1-weighted MR imaging showed a high intensity area, suggestive of intramural hematoma, in the left VA (Fig. 5 lower). There was no recurrent bleeding after the initial angiography. Two months later, he was transferred to another hospital in a persistent vegetative state.

**Discussion**

Arterial dissection is characterized by well-known angiographic findings of “pearl-and-string sign,” “rosette sign,” and “double lumen.” The presence of a double lumen is a reliable sign of dissection but is rarely confirmed angiographically. MR imaging has high sensitivity for detecting the dissecting aneurysm in the vertebrobasilar circulation. A high intensity area within the arterial wall on T1-weight-
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Fig. 5 upper: T₂-weighted magnetic resonance (MR) image on Day 45 showing multiple infarctions in the brainstem. lower: T₁-weighted MR image on Day 45 showing a high intensity area (arrow), suggestive of intramural hematoma, in the left vertebral artery.

ed MR imaging corresponds to the intramural hematoma. In the present case, a "double lumen"-like finding was seen in the left VA filled through the right VA. T₁-weighted MR imaging on Day 45 showed a high intensity area in the affected VA.

Spontaneous occlusion of the dissected VA has been demonstrated by serial angiography in two patients presenting with SAH. Thrombosis could easily develop in the pseudolumen, resulting in stenosis and further occlusion of the affected artery. On the contrary, two patients with ruptured dissecting aneurysm, one in the middle cerebral artery and another in the VA, were reported to rebleed on Day 8 and Day 18, respectively, although the initial angiography showed that the affected arteries were occluded. In the latter case, the initial angiography on Day 2 revealed complete occlusion of the VA just distal to the dissecting aneurysm, whereas the second angiography on Day 15 revealed growth of the dissecting aneurysm and recanalization of the affected VA.

In the present case, the left VA was found to be spontaneously recanalized on Day 29. Careful angiographical follow up of the dissecting aneurysm is essential even in cases with the affected artery spontaneously occluded in the initial period of the course.

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References


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