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Short communication

Ischemic symptoms induced by occlusion of the unilateral vertebral artery with head rotation together with contralateral vertebral artery dissection—case report

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Abstract

We report a 45-year-old woman whose unilateral vertebral artery (VA) was potentially occluded with head rotation at the C1–C2 level and her ischemic symptoms suddenly appeared because of contralateral VA dissection. She noticed first pain around the posterior part of her neck on the right side, and then dizziness when turning the head to the right side. The dizziness disappeared immediately after her head returned to the natural position. Digital subtraction angiography (DSA) showed a string sign of the right VA. DSA and computed tomography angiography (CTA) showed high grade extrinsic compression of the left VA at the C1–C2 level with head rotation more than 90° to the right. Three-dimensional (3D) CTA also showed clearly kinking of the left VA at the C2 neuroforamina. Her symptoms disappeared completely with conservative therapy, and recanalization of the right VA was also confirmed by 3D-CTA. 3D-CTA was thought to be valuable to diagnose and manage the rotational compression of the artery. VA dissection must be remembered to differentially diagnose the etiology of transient attacks of posterior circulation ischemia due to rotational contralateral VA occlusion.

Keywords: Vertebral artery; Dissection; Rotational occlusion; CT angiography

1. Introduction

Transient attacks of posterior circulation ischemia is sometimes induced by changes in head position with occlusion of vertebral artery (VA) [1]. In most reported patients who develop ischemic symptoms induced by rotational occlusion of the unilateral VA, the contralateral VA tends to be hypoplastic, stenotic or occluded by the arteriosclerotic changes [2,3]. We believe no cases have been reported of ischemic symptoms induced by rotational occlusion of the unilateral VA triggered by stenosis of the contralateral VA due to arterial dissection. We here report a 45-year-old woman whose unilateral VA was potentially occluded with head rotation and her ischemic symptoms suddenly appeared by contralateral VA dissection.

2. Case report

The 45-year-old woman noticed pain in the posterior neck on the right side which spread to the occipital region on October 20, 2003. The intensity of headache increased daily and she visited her doctor on October 28. The doctor found hypertension as the only abnormal finding in his examination. She was prescribed only the benzylhydrochlorothiazide and went home, but her headache continued thereafter. She felt dizzy when turning her head to the right side on November 10. This symptom disappeared immediately after her head returned to the natural position. Later, her neck pain slightly decreased but the dizziness continued. She visited the outpatient clinic of our department and was considered to have transient attack of posterior circulation ischemia. She was admitted on November 19.

On admission, physical examination showed she had hypertension. No neurological deficits were detected with

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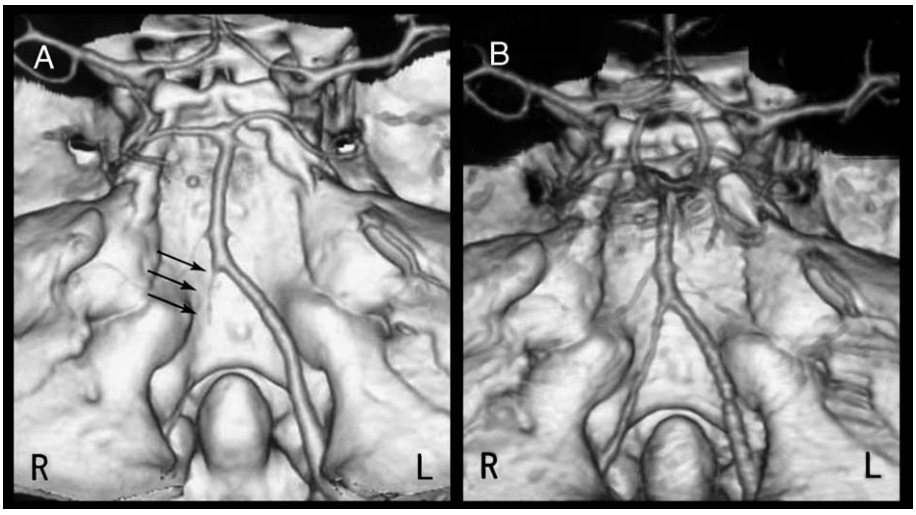

Fig. 1. Three-dimensional CT scan. (A) The left vertebral artery with high-grade stenosis(arrows); whereas the other arteries, including the right VA, were normal. (B) Apparent recanalization at the site of the stenosis of right VA 3 months after the onset of dissection.

the head in the natural position. However, when she turned her head to the right side 60° or more, she became uncomfortable and complained of dizziness, blurred vision and felt faint when keeping the position. Blood chemistry showed that total cholesterol, triglycerid and uric acid increased to 260 mg/dl (normal 150–220 mg/dl), 419 mg/dl (normal 35–170 mg/dl) and 7.1 mg/dl (normal 2.4–5.4 mg/dl), respectively. Electrocardiography and chest X-ray were normal. Cervical X-ray showed no abnormal findings. Ultrasonography of the right VA showed a marked reduction of the blood flow. Computed tomography (CT) and magnetic resonance imaging of her head showed no abnormal findings. Three-dimensional CT scan (3D-CT) showed an image of the right VA that gradually tapered off and finally occluded with roughening of the lumen (Fig. 1A). Digital subtraction angiography (DSA) on November 27 showed no abnormal findings in the left VA with her head in a natural position (Fig. 2A). However, the right VA showed a string sign and narrowing at the distal portion of the branching of the posterior inferior cerebellar artery (Fig. 2B). Therefore, her headache was considered to be caused by dissection of her right VA. Her posterior communicating arteries were nonfunctional. When her head rotated over 90° to the right, we observed high grade extrinsic compression of her left VA at the C1–C2 level (Fig. 2C) and at this time, her symptoms appeared. To evaluate the relationship between her left VA and the surrounding structures, 3D-

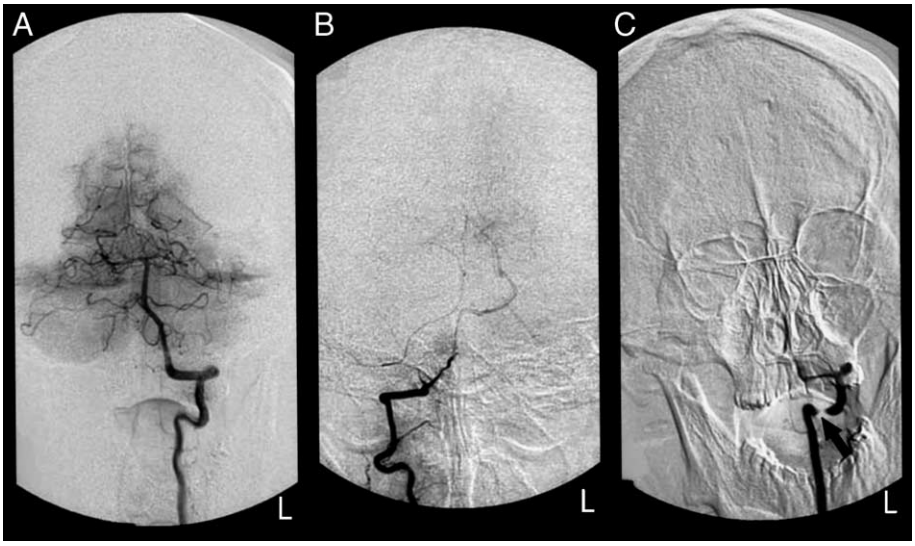

Fig. 2. Digital subtraction anteroposterior VA angiography. (A) The left side showed normal findings with the head in the natural position; (B) the right side delineated a string sign with the head in the natural position; (C) the left side with the head rotated more than 90° to the right showed high grade extrinsic compression at the C1–C2 level (arrow).