Common Carotid Artery Dissection Caused by a Frontal Thrust in Kendo (Japanese Swordsmanship)

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A 66-year-old right-handed man suddenly developed left hemiplegia after an opponent thrust at his neck with a bamboo sword during a practice game of Kendo (Japanese swordsmanship; Figure 1). Fifty minutes later, he visited our emergency service. His blood pressure was 77/55 mm Hg in the left arm but could not be measured in the right arm; his right radial artery was initially pulseless but became palpable 1 hour later. He was somnolent and had left unilateral spatial neglect, left complete hemiplegia, and left-sided sensory disturbance. Enhanced computed tomography (CT) showed an occlusion 15 mm distal to the origin of the right common carotid artery (CCA) without any abnormal findings at the aorta and innominate and right subclavian arteries. On emergent carotid ultrasonography, an intraluminal filling defect occupied the right CCA and swung back and forth with pulsation. He was diagnosed as having ischemic stroke, possibly caused by traumatic CCA dissection, although an infarct was not identified on brain CT.

On the second day, fresh infarcts were identified in the right hemisphere on diffusion-weighted MRI, and the right internal carotid, middle cerebral, and posterior cerebral arteries were poorly demonstrated on magnetic resonance angiography (Figure 2). On the fourth day, the right CCA was recanalized, and the intimal flap was identified on ultrasonography (Figure 3 and Movie I in the online-only Data Supplement). A mobile thrombus was identified within the true lumen, but its shape changed on the follow-up ultrasonography 9 hours later. The false lumen diminished, and the thrombus disappeared with a mild aneurysmal change after day 30. The patient was diagnosed as having a definite dissection of the CCA. These dynamic changes were also identified on CT angiography (Figure 4). The right distal CCA was severely stenotic on the fourth day. The stenosis became milder with aneurysmal change on day 10. The intimal flap and double lumens in the right CCA were detected on axial CT scans. The small false lumen was also identified in the distal

Figure 1. A, A performance of tsuki in Kendo. B, A bamboo sword is thrust at the partner’s throat armor.
innominate artery, indicating the existence of the reversible innominate dissection that had caused pulselessness at the time of the initial examination. At hospital discharge on day 49, the patient still had severe hemiplegia. He did not develop recurrent stroke.

A frontal thrust of Kendo can cause cervical artery dissection and stroke,¹ although it has rarely been reported.² The strength of this report is that dynamic changes in the morphology of the dissected CCA were clarified through the use of both ultrasonography and CT angiography examinations.

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**Disclosures**
None.

**References**
**Figure 3.** Changes in a B-mode image of the right common carotid artery (CCA). A, On day 2, the distal CCA is occluded with a thrombosed false lumen (arrows). A mobile thrombus is identified proximal (Prox.) to the occlusion site (arrowhead). B through E, Longitudinal (B–D) and axial (E) B-mode images on day 4 at 10 AM (B), 7 PM (C), and 9 PM (D and E). E, Axial image of a dotted line on D. The distal (Dis.) CCA is recanalized. The mobile thrombus gradually changes in shape (arrowhead). An intimal flap (small arrowhead) and a thrombosed false lumen (asterisk) are seen at the proximal CCA. F, On day 48, the mobile thrombus and the thrombosed false lumen disappear completely. Aneurysmal formation is seen (filled arrow).

**Figure 4.** Cervical computed tomography angiography. A, On day 4, the right distal common carotid artery (CCA) is stenotic (arrow). B, On day 23, the stenotic CCA becomes wider (arrow), and aneurysmal formation is evident (arrowhead).
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