

Symptomatic Middle Cerebral Artery Dissection in a Young Tennis Player

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Abstract

No information has been available regarding middle cerebral artery (MCA) dissection occurring as a result of athletics. We describe a case of cerebral infarction in the right MCA region that occurred in young, right-handed tennis player while he was serving. Angiography with a contrast medium and a 3-dimensional rotational system revealed proximal M2 stenosis, and emergency superficial temporal artery-MCA anastomosis was performed. As a result, the patient showed a complete recovery and resumed all activities of daily life, including playing tennis. Because sports such as tennis, in which players vigorously swing their heads while serving, could lead to intracranial artery dissection, we advise that the possibility of MCA dissection should be considered in athletes with certain neurological symptoms, including headache.

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Key words: middle cerebral artery dissection, athletes, tennis player, anastomosis, intracranial artery dissection

Introduction

Although symptomatic axillary artery dissection has been reported in a middle-aged tennis player¹, to our knowledge no cases have been reported of middle cerebral artery (MCA) dissection in a young person as a result of athletics. We describe a case of cerebral infarction in the right MCA that occurred in a young right-handed tennis player while he was serving. Here, we report the diagnosis and treatment of this anomaly.

Case Report

A previously healthy 27-year-old, right-handed man, a recreational tennis player who played weekly matches, experienced numbness on the left side while serving. Mild headache followed. The numbness persisted even after a brief rest while his physical condition was being examined. He was transported to a nearby hospital, but the headache persisted. However, computed tomography scanning revealed no abnormalities. Because the numbness

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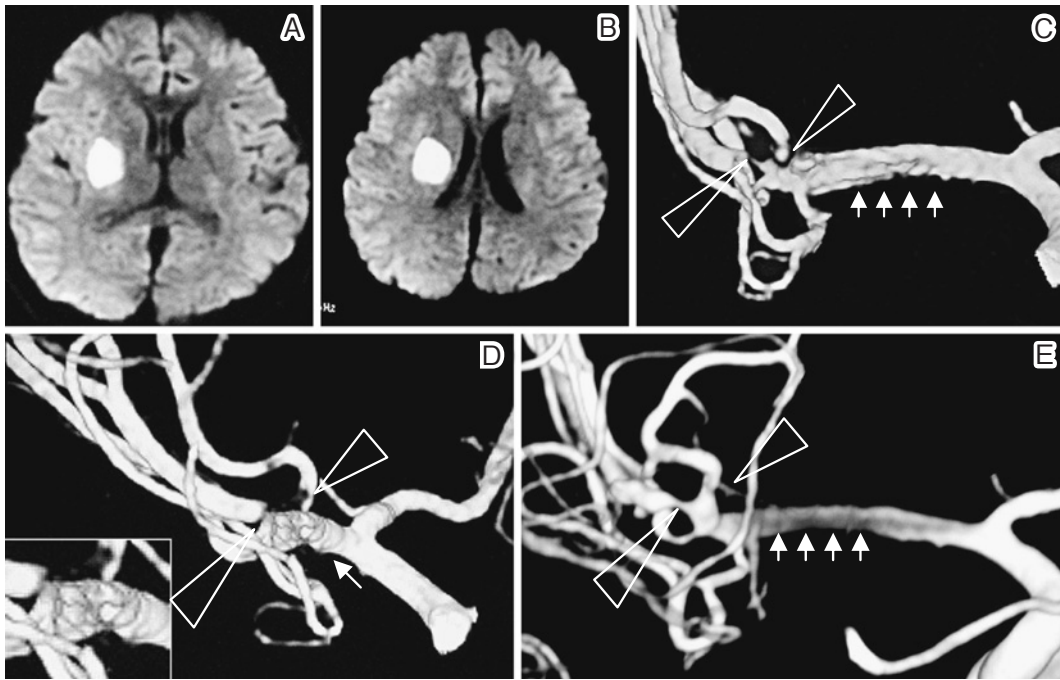


Fig. 1 Axial diffusion-weighted MR images (A and B) showing typical ischemic lesions. Carotid 3D rotational angiographies anteroposterior (C) and lateral (D) views on extensive stenosis with a double lumen from M1 (arrows) to M2 proximal segment (arrow heads). Higher magnification image of dissection in MCA is shown in the inset. Right carotid angiogram obtained 1 month after right STA-MCA anastomosis showing improvement of the stenosis in MCA M1 and M1-M2 bifurcation. Parts of stenosis and dissection are pointed out by arrows (E).

resolved shortly thereafter, he returned home. No symptoms were noted for the next 3 days. For verification purposes, he underwent more detailed examinations at Shioda Hospital. Magnetic resonance examinations revealed cerebral infarction, and he was immediately admitted to the Neurosurgery Division.

The patient had a history of cigarette smoking and had had bronchial asthma. He had no history of hypertension, dyslipidemia, diabetes, or other lifestyle-related diseases. On admission, the physical findings were as follows: height, 168.5 cm; weight, 56.3 kg; blood pressure, 124/84 mmHg; and pulse, 65/min with no palpable arrhythmia and with no carotid bruit or murmur. A neurological examination revealed decreased pinprick sensation in the left upper extremity. Electrocardiography showed normal sinus rhythm. Duplex sonography revealed dissection of the common carotid artery with double lumen distance. The pseudolumen, 10 mm long and 2 mm thick, was thrombosed.

Angiography was performed with a contrast

medium and a 3-dimensional rotational angiography system (Allura Xper FD20; Philips Medical Systems, Eindhoven, The Netherlands) for the right MCA region and for the dissection of the right common carotid artery (Fig. 1A–D). It may appear that the proximal-M2 stenosis was more severe after superficial temporal artery (STA)-MCA anastomosis (D) than before it (B). This appearance is because, whereas 1 or 2 of the 3 vessels branching from M1 are not well depicted (B), these vessels are, despite some remaining stenosis, more clearly depicted (D).

The patient underwent conservative treatment, but 3 days after admission the left facial palsy and hemiparesis progressed from mildness to moderate severity. Emergency STA-MCA anastomosis was performed, and the patient showed a complete recovery. The patient resumed all activities of daily life, including playing tennis. During 18 months of follow-up, the patient has remained asymptomatic. Postoperative noninvasive flow studies with magnetic resonance angiography have confirmed collateral flow from the STA to the MCA (Fig. 1E).

Discussion

Spontaneous dissecting aneurysms of the internal carotid circulation are less common than those of the vertebrobasilar circulation. Dissecting aneurysms of the MCA have been reported to cause cerebral ischemic stroke in young persons²³, and recent reports have shown that such aneurysms can also cause subarachnoid hemorrhage⁴⁵. Although several cases of dissecting aneurysms in the MCA have been reported³⁻⁶, the optimal treatment remains unclear. Ohkuma et al² examined 13 patients with dissecting aneurysm of MCA; they included 4 patients who presented with cerebral ischemia and 9 patients who presented with subarachnoid hemorrhage. Ohkuma et al also reported that, since the 4 patients had M1 sequent dissection, all of them underwent conservative treatment; after 3 months 1 patient showed a good recovery, but the other 3 patients had severe disabilities. In these 3 patients, the right hemiparesis became worse in the acute stage during conservative treatment. Progressive ischemia due to advanced dissection was diagnosed, and STA-MCA anastomosis was performed.

Leisure activities can cause craniocervical aortic dissection. Intracranial artery dissection has been reported in springboard divers⁷ and cyclists⁸. For tennis players, extracranial vertebral artery⁹ and axillary artery dissection¹ have been observed, but there is no information regarding MCA dissection, as reported in the present case. Our patient had no visible injuries of the head, but it is likely that minor trauma during serving in tennis and related cervical stretching/bending motions by swinging the head might cause dissection of both the ICA and MCA.

Intracranial artery dissection takes place at the subintimal layer in association with congenital defects, fibromuscular dysplasia, cystic medial necrosis, and migraines²³. However, the details remain unclear because we did not perform a biopsy.

Considering that the young tennis player had

numbness of the left upper extremity, which was followed by headache, it is reasonable to speculate that cerebral infarction in this case was caused by dissection of the MCA rather than by dissection of an intracranial artery.

Sports, such as tennis, in which the players vigorously swing their heads while serving, may be a risk factor for intracranial artery dissection, although the mechanical force may not be the only cause of this lesion. Nevertheless, the possibility of MCA dissection should be considered in athletes with certain neurological episodes, including headache.

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