

# **Transient Ischemic Attack Due to Dissection of the Middle Cerebral Artery**

## **—Case Report—**

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### **Abstract**

**A 57-year-old man presented with a transient ischemic attack due to dissection of the middle cerebral artery. He suffered total aphasia and clouding of consciousness for several minutes. On admission, he was alert without neurological deficit. Magnetic resonance (MR) angiography and conventional angiography depicted irregularity and double lumen of the left middle cerebral artery. The diagnosis was dissection of the middle cerebral artery. After 1 month, he left our institute with no neurological deficit. Transient ischemic attack associated with dissection of an intracranial artery is unusual. The source images of MR angiography are useful for the essential follow up of dissection.**

Key words: transient ischemic attack, middle cerebral artery, dissection, magnetic resonance angiography

### **Introduction**

Dissection of the intracranial artery is a relatively rare cause of stroke, but has occurred more frequently in recent years.<sup>6)</sup> Most dissections of the anterior circulation are associated with cerebral ischemia,<sup>1,3,4)</sup> and result in complete stroke due to arterial stenosis or occlusion.<sup>10)</sup> The typical initial clinical symptoms are sudden appearance of headache and the disturbance of consciousness with hemispheric functional loss.<sup>9)</sup> Intracranial dissections of the anterior circulation usually occur in young people.<sup>5,10)</sup> Most patients with dissections of the posterior circulation present with subarachnoid hemorrhage. Intracranial arterial dissection associated with transient ischemic attack has never been reported. We describe a case of dissection of the middle cerebral artery, depicted by magnetic resonance (MR) angiography clearly, which occurred with transient ischemic attack.

### **Case Report**

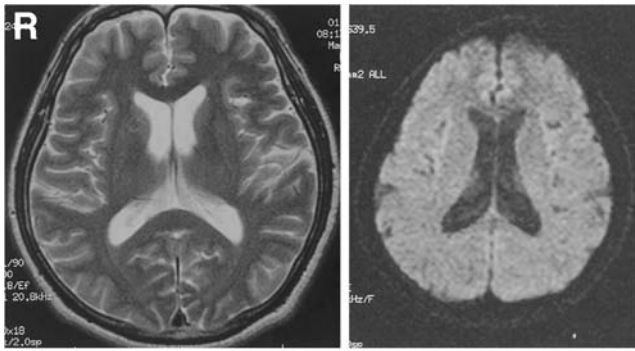
A 57-year-old previously healthy man suffered total aphasia and disturbance of consciousness for several minutes while drinking beer on September 22,

2000. He was brought by ambulance to our hospital 30 minutes after the episode. On admission, he was alert without neurological deficit. His blood pressure was 122/70 mmHg. His personal and family medical history was not contributory. Laboratory testing on admission showed normal blood and urine levels.

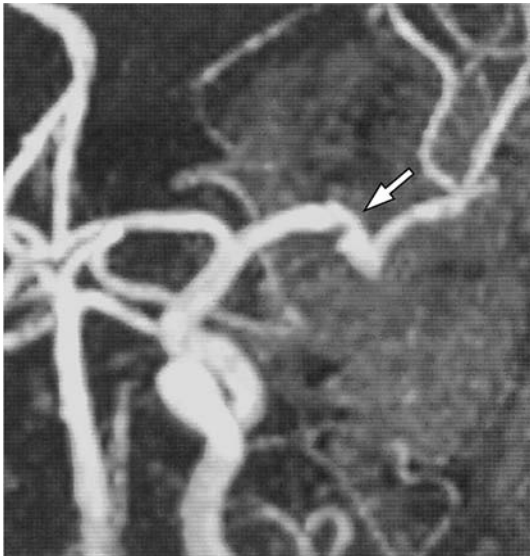
Initial computed tomography showed no abnormal finding. MR imaging also depicted no lesion (Fig. 1), but MR angiography identified a stenosis of M<sub>1</sub> portion of the left middle cerebral artery (Fig. 2). Anti-platelet therapy was began. Angiography depicted irregularity and double lumen of the left middle cerebral artery on September 28 (Fig. 3). The source image of MR angiography showed the same findings as angiography (Fig. 4). Single photon emission computed tomography showed no region with decreased cerebral blood flow. One month after the stroke, he left our institution with no neurological deficit. MR angiography has shown no change in findings 6 months after the diagnosis.

### **Discussion**

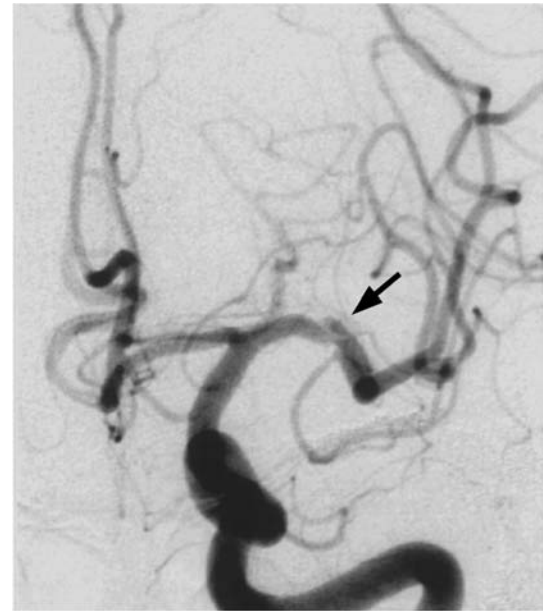
Dissections of the circle of Willis can be divided into three types according to the clinical course: Type 1, the initial ictus is severe with rapid deterioration within several days; Type 2, the initial event is of



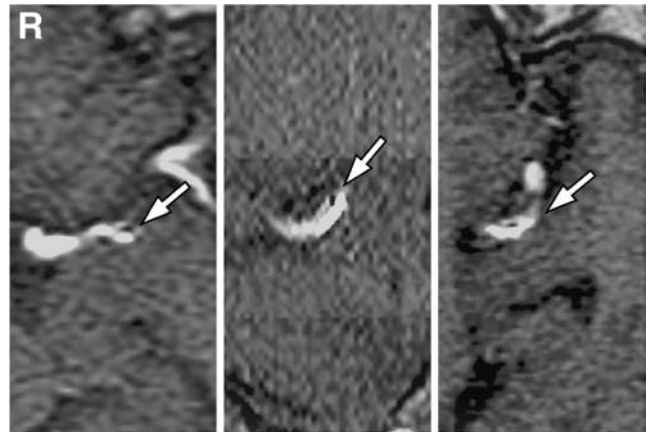
**Fig. 1** Magnetic resonance images on admission revealing no abnormal finding. *left*: T<sub>2</sub>-weighted image, *right*: diffusion-weighted image.



**Fig. 2** Magnetic resonance angiogram on admission revealing a stenosis of the M<sub>1</sub> portion of the left middle cerebral artery (arrow).



**Fig. 3** Left carotid angiogram showing a double lumen of the left middle cerebral artery (arrow).



**Fig. 4** Source images of magnetic resonance angiography revealing a double lumen of the left middle cerebral artery (arrow). *left*: axial view, *center*: sagittal view, *right*: oblique view.

moderate severity with obtundation and hemiparesis (with or without aphasia), and the patients show some improvement for several days before rapid deterioration and death; and Type 3, the patients improve gradually after the onset but some hemispheric deficits remain.<sup>5)</sup> Our patient suffered total aphasia and disturbance of consciousness, probably because the dissection caused almost complete temporary occlusion of the left middle cerebral artery, or the emboli from the dissection temporarily occluded the distal site of the artery. The characteristic angiographic findings are double lumens, narrowing and dilating, pooling, slow filling, intimal flap, and filling defect.<sup>5-8)</sup> The only reliable diagnostic

sign is the double lumen, in which both true and false lumens are seen, but the double lumen does not always appear. Angiography showed wall irregularity and double lumen in our case, which are compatible with dissection. The usefulness of MR angiography for the diagnosis of dissection is unclear, but the source image clearly showed the double lumen and wall irregularity in our case, strongly sug-

gesting dissection.

Treatment for ischemic symptoms should be selected based on the severity of the symptoms and the location of the dissection. Serial angiography can be performed with or without anti-coagulant or antiplatelet agent in mild cases. A case of middle cerebral artery occlusion caused by dissection was successfully treated by intra-arterial fibrinolysis.<sup>2)</sup> However, if follow-up angiography indicates progress of the dissection or the clinical symptoms deteriorate, surgery should be performed immediately.<sup>5)</sup> More recent studies suggest that the prognosis of intracranial arterial dissections may be significantly better than previously thought, because the previous reports were mainly autopsy cases. Transient ischemic attack associated with dissection has never been reported, but transient ischemic attack has occurred due to intracranial dissection. Our patient was discharged with no neurological deficits, but the condition of some patients rapidly deteriorates during treatment or follow up. Serial angiography and MR angiography are essential. The source image of MR angiography is useful for follow up of dissections because the method is less invasive and can depict the double lumen of the dissection.

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