

## Middle cerebral artery branch occlusion mimicking an aneurysm

Sir,

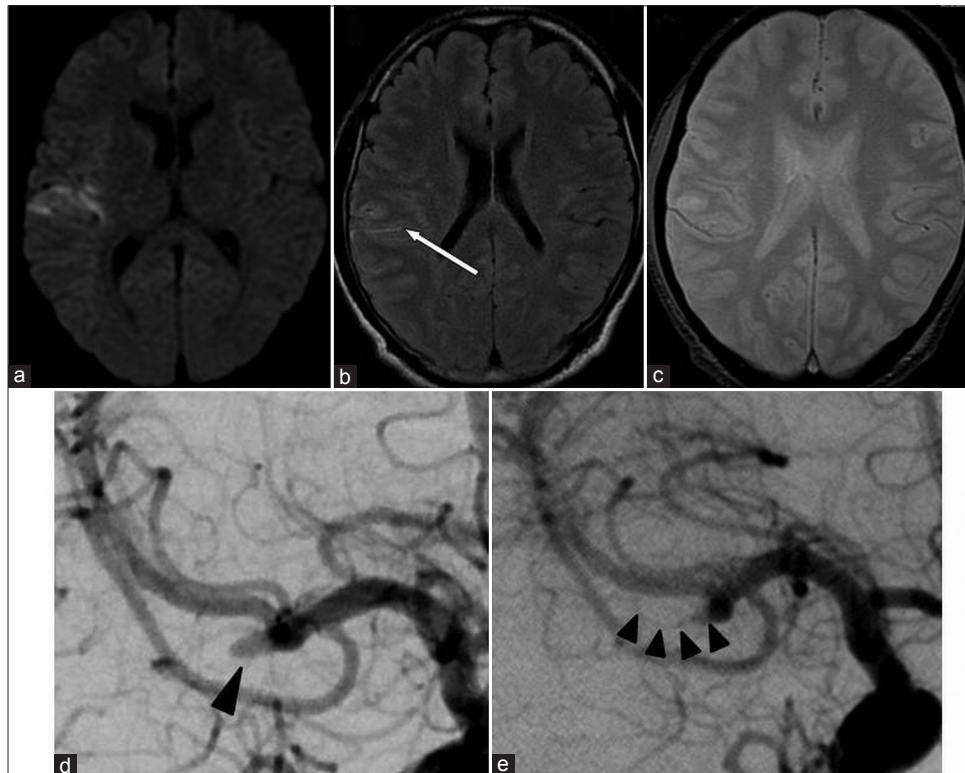
The proximal stump of an occluded cerebral artery can mimic an aneurysm on various angiograms.<sup>[1]</sup> We report a unique case of the occluded branch of middle cerebral artery (MCA) trifurcation mimicking an aneurysm.

A 27-year-old, previously healthy male presented with left-sided hemiparesis. Medical history revealed that he had experienced a sudden severe headache six days before. On examination, he had left-sided weakness of the arm. Diffusion-weighted magnetic resonance imaging (MRI) showed a hyperintense signal in the right temporal lobe [Figure 1a]. Fluid-attenuated inversion recovery (FLAIR) MRI showed a hyperintense signal in the subarachnoid space [Figure 1b]; however, gradient echo T2\*-weighted MRI demonstrated normal findings [Figure 1c]. Cerebral angiography revealed an aneurysm-like appearance in

the right MCA bifurcation [Figure 1d]. We diagnosed the patient as follows: (1) The patient had an MCA aneurysm which ruptured, leading to subarachnoid hemorrhage (SAH) and (2) The SAH caused subsequent cerebral vasospasms, resulting in cerebral ischemia. We performed lumbar puncture to confirm the diagnosis, and obtained clear cerebrospinal fluid. Thus, his diagnosis was cerebral ischemia due to occlusion from dissection at the M2 trunk, which was consistent with his history of a sudden severe headache. He was treated conservatively, and his symptoms disappeared. Two months later, angiography showed a slight recanalization of the occluded trunk [Figure 1e].

There were two major pitfalls for our patient: (1) There are many differential diagnoses for a hyperintense signal in the subarachnoid space on FLAIR MRI<sup>[2,3]</sup> and (2) the occluded vessel may be misinterpreted as an aneurysm on cerebral angiogram.<sup>[1]</sup> Furthermore, several factors led us to pay more attention to the SAH: His history of a sudden severe headache, the high frequency of MCA bifurcation aneurysm, and the high-risk nature of the SAH.

It has been reported widely that the sensitivities of FLAIR and T2\*-weighted MRI are very high in the detection of SAH.<sup>[3,4]</sup> However, hyperintense signals in the subarachnoid space



**Figure 1:** (a) Fluid-attenuated inversion recovery MRI showing hyperintense signal in not only the right temporal lobe but also subarachnoid space (arrow); (b) T2\*-weighted image demonstrating normal findings; (c) Diffusion-weighted brain MRI showing signs of recent cerebral ischemia in the right temporal lobe; (d) Initial right carotid angiogram demonstrating aneurysm-like lesion (arrow head) at the right M1 bifurcation; (e) Follow-up right carotid angiogram two months later demonstrating a dissection at the branch of trifurcation (arrow head)

on FLAIR MRI can be also observed in other lesions such as meningitis, leptomenigeal metastasis, or acute/hyperacute infarction.<sup>[2-4]</sup> In cases of infarction, these are indicative of slow arterial flow associated with stenosis and occlusion of vessels.<sup>[2,3]</sup> Despite negative T2\*-weighted MRI, the SAH could not be excluded in our case and, therefore initially, we misinterpreted that the cerebral ischemia was due to cerebral vasospasm.

Cerebral artery dissection causes cerebral ischemia as well as SAH. They occasionally involve MCA which accounts for 7.4% of ischemic dissections.<sup>[5]</sup> Severe headache is one of the characteristic symptoms, and occlusions of vessels account for approximately 15% of angiographical findings of ischemic dissections. Our patient had trifurcation of the right MCA and, therefore initially, occlusion from dissection of the proximal M2 portion was misinterpreted as an aneurysm.

The present case teaches all clinicians that preconceived ideas can mislead. Multiple pitfalls may confront us one after another. We should bear in mind that there are potential pitfalls in all diagnostic tools.

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