

Fenestration of the Middle Cerebral Artery

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Summary. Three cases of angiographically demonstrated fenestration of the middle cerebral artery are reported. The incidence of demonstration of fenestration of the middle cerebral artery by angiography is 0.26%. Its clinical significance is discussed briefly.

Key words: Fenestration, Middle cerebral artery – Anomaly, vascular.

As anomalies of the middle cerebral artery, duplication, accessory artery and early branching are well known [1, 2, 3, 4, 5, 7, 8]. Fenestration of the basilar or vertebral artery has also been well known, but fenestration of the middle cerebral artery has rarely been reported. Three cases of angiographically demonstrated fenestration of the middle cerebral artery, are presented.

Case Reports

Case 1. Left carotid angiography was performed on a 30 year old man as part of the evaluation of a seizure of recent onset. Fenestration of the left middle cerebral artery at its origin was demonstrated (Fig. 1).

Case 2. Right carotid angiography was performed on a 64 year old man because of left hemiparesis and choked disc. Fenestration of the right middle cerebral artery at its origin was demonstrated (Fig. 2).

Case 3. Right carotid angiography was performed on a 54 year old woman because of headache, vomiting and left hemiparesis. Fenestration of the right middle cerebral artery 10 mm distal to its origin was demonstrated (Fig. 3).



Fig. 1. Fenestration of the left middle cerebral artery at its origin (arrow)

Discussion

A few reports on fenestration of the middle cerebral artery have been published. Crompton [1] found one case in 347 middle cerebral arteries examined at autopsy. The fenestration was 8 mm distal to the origin of the middle cerebral artery. The incidence of the fenestration was 0.28%. Wollschlaeger, et al. [10] did not mention fenestration of the middle cerebral artery in their text but showed it in one of the diagrams. We know of only one case of angiographically demonstrated fenestration of the middle cerebral artery, reported by Teal et al. [9], in which fenestration of the middle cerebral artery was seen at its origin.

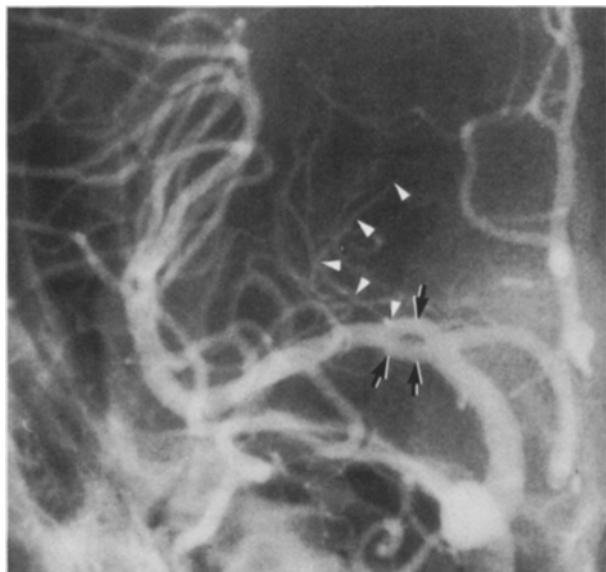


Fig. 2. Fenestration of the right middle cerebral artery at its origin (arrows). One of the lenticulostriate arteries (arrowheads) originates from a part of the fenestration



Fig. 4. Fenestration of the middle cerebral artery should be differentiated from the early branching of the middle cerebral artery which may be superimposed on another branch of the middle cerebral artery. Double contrast (arrow) indicates superimposition of vessels



Fig. 3. Fenestration of the right middle cerebral artery (arrow) 10 mm distal to its origin. One of the lenticulostriate arteries (arrowheads) originates from a part of the fenestration and the anterior temporal artery (↑) from the other part

Table 1. Incidence of fenestration of the middle cerebral artery

	No. of the MCA	No. of fenestration	Incidence (%)
Autopsy (Crompton)	347	1	0.28
Angio. (Ito)	1129	3	0.26

In the past two years 1129 cases of carotid angiography were performed by us and three cases of fenestration of the middle cerebral artery were demonstrated. The incidence of angiographically demonstrated fenestration of the middle cerebral artery was 0.26% which was equal to that in the autopsy material reported by Crompton [1] (Table 1). It might be postulated that the network of the middle cerebral artery in the early fetal stage [6] has partially persisted because of unknown reasons but the real cause of this anomaly is not known. Crompton [1] states that a medial defect is present at the proximal end of fenestration of the middle cerebral artery and that such a fenestration could give rise to an aneurysm independent of any branching.

Early branching of the middle cerebral artery should be differentiated from fenestration of the middle cerebral artery when the former is superimposed on the other artery (Fig. 4).

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