MIDDLE CEREBRAL ARTERY FENESTRATION ACCOMPANYING STROKE

E. Abdul Rahim[1*], M. N. Mohd Yaakob[1], M. F. A. K. Kamis[1], A. S. Muda[1], M. S. F. Md Noh[1]

[1]Department of Radiology, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia*

***Corresponding author:**
E. Abdul Rahim, Department of Radiology, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia. Email: drezahar@gmail.com

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ABSTRACT:
The article briefly discusses the association of middle cerebral artery fenestration and stroke**.**

Keywords: Middle cerebral artery fenestration, stroke.

NARRATIVE

A 69-year-old patient with diabetes mellitus was admitted with acute signs of ischemic stroke. He had right-sided hemiplegia (upper and lower limb strength 0), aphasia and facial asymmetry. Neglect was also present on the affected side. The patient had a good premorbid condition; modified ranking score of 0. The left internal carotid artery was not visible on the MRI image (Figure 1).

MRI showed that the left ICA could not be visualized in its entire length. The left M1 was smaller and the left M2 upwards could not be visualized well. Mechanical thrombectomy was performed. On initial angiographic examination, we found that there was fenestration of the left M1 (Figure 2). The anterior communicating artery (ACOM) supplied the contralateral left anterior cerebral circulation. Angiography did not reveal any thrombus along the left MCA. It was likely that the clot had dissolved before angiography. This was probably due to Tenecteplase, a potent recombinant tissue plasminogen activator. This drug is relatively "new" for patients with acute stroke. The safety and efficacy doses are comparable to those of alteplase [1].

A fenestrated middle cerebral artery (MCA) is a rare anatomical variant with an angiographic and anatomical incidence of less than 5% [2]. Fenestration of a vessel means that the lumen of an arterial segment is divided into two or more distinct but parallel tubular channels. These channels are lined by endothelium.

We believe that fenestration of the left MCA may have caused a change in flow dynamics. We hypothesize that in the presence of MCA fenestration, there is a higher risk of thrombus formation, especially in an atherosclerotic diseased artery. The difference in calibre between the two legs of the fenestration could increase the risk of thrombosis in this case, as a velocity gradient is created leading to slower flow in both channels.

On angiography, we failed to recanalize the left ICA. The 0.021-inch microcatheter was unable to pass through the left ICA occlusion. The attending interventionalist noticed that the texture of the "thrombus" was quite hard. We therefore suspected that this occlusion was a chronic event rather than an acute occlusion.

Although it was not possible to recanalize the left ICA, the patient's condition improved - the NIHSS (National Institutes of Health Stroke Scale) score improved from 8 on admission to an NIHSS score of 1 at discharge. This improvement of NIHSS score is probably due to dissolved clot after Tenecteplase was given.

STATEMENT OF ETHICS:

Informed consent was obtained from the patient for the publication of this work.

CONFLICTS OF INTEREST:

The authors have no potential conflicts of interest to disclose.

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DATA AVAILABILITY STATEMENTS:

Further information regarding the data used for this work can be obtained from the corresponding author upon reasonable request.

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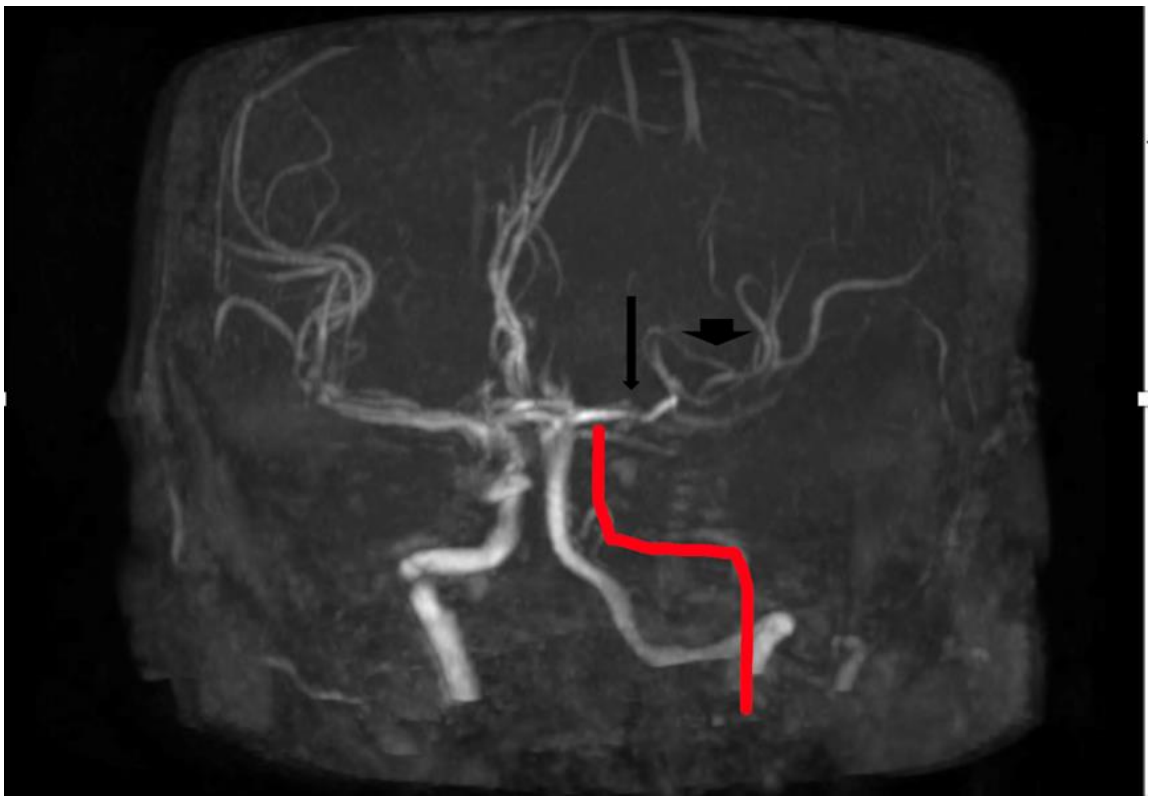

Figure 1: MRA showing smaller left M2 branches (arrowhead). The left MCA is also smaller in calibre compared with its contralateral side (thin arrow). The left ICA is not visualized (red line).

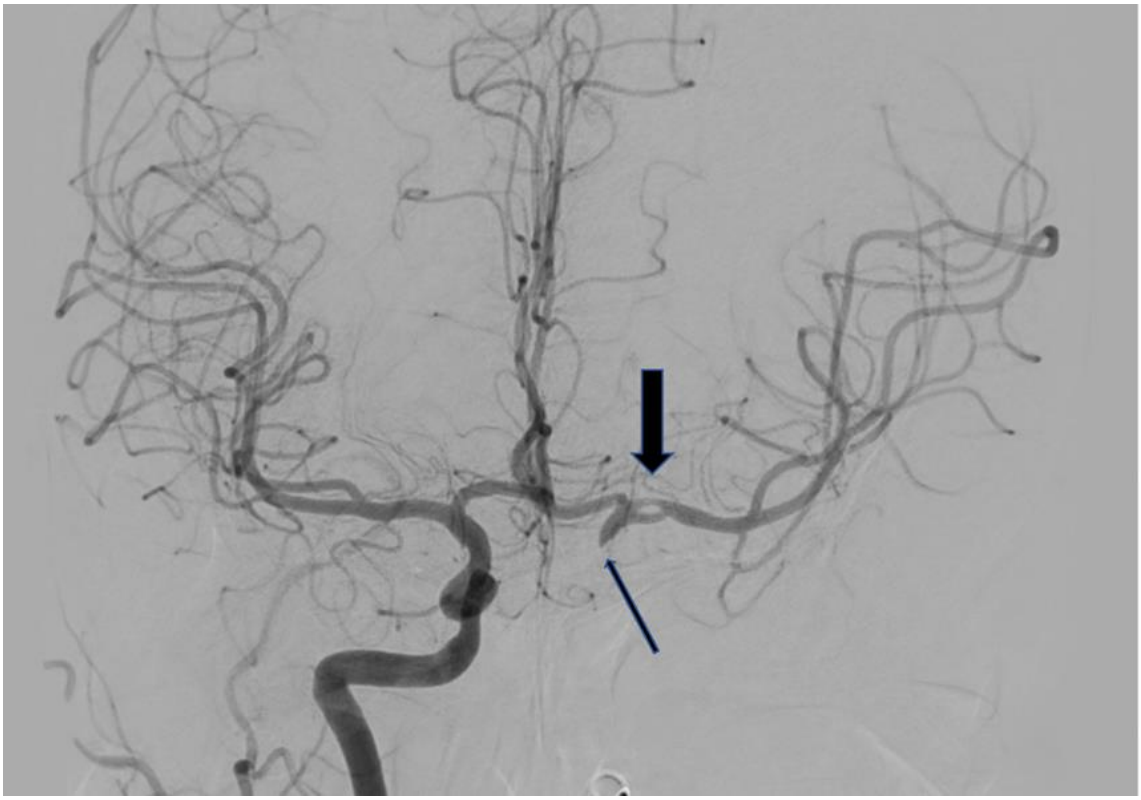

Figure 2: Angiographic image showed a fenestrated M1 segment of the left middle cerebral artery (thick black arrow). Total occlusion of the left ICA was seen; only the terminal end of left ICA is seen (thin black arrow).