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COMPENDIUM OF ANATOMICAL VARIANTS

Accessory Middle Cerebral Artery Originating From Callosomarginal Artery

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An accessory middle cerebral artery (AMCA) is a variation of the cranial vascular system. It usually originates from the anterior cerebral artery, particularly from its proximal part and supplies the orbitofrontal and prefrontal regions of the territory of the middle cerebral artery (MCA). It is reported in approximately 3% of dissections (Teal et al., 1973; Yasargil, 1984; Umansky et al., 1988; Tanriover et al., 2003). Whether an AMCA is a variant of Heubner's recurrent artery has been debated (Takahashi et al., 1989). An associa-

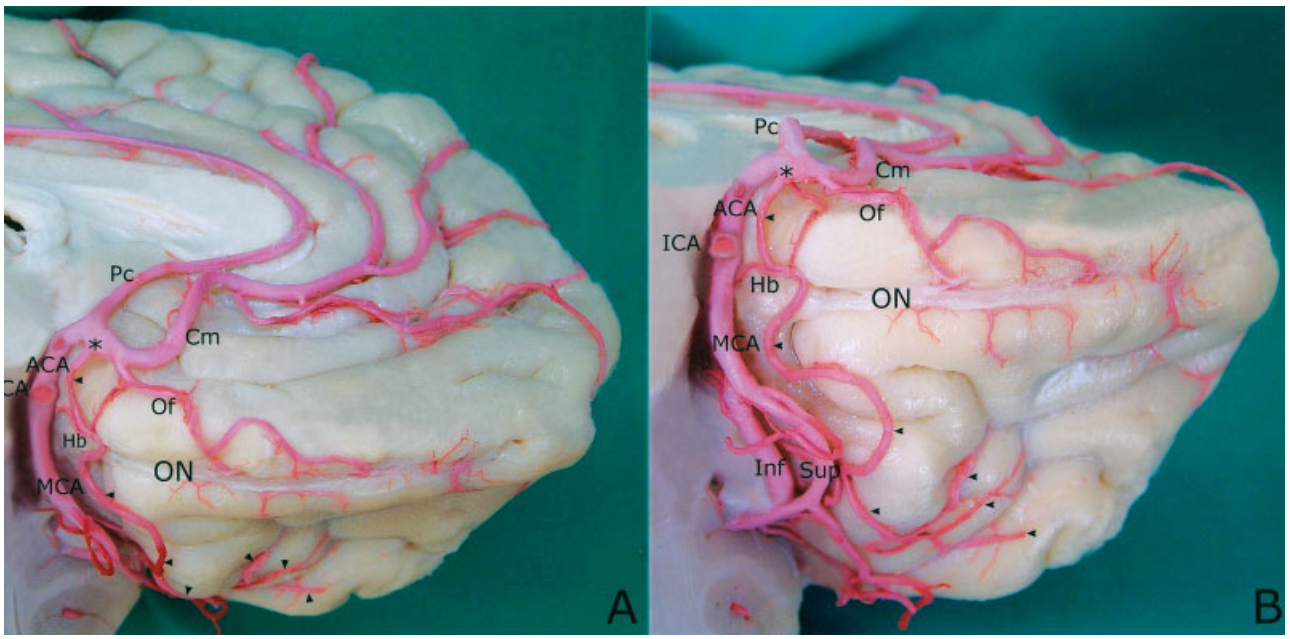

Fig. 1. Anterior temporal lobe is removed in the left hemisphere. AMCA originated from proximal callosomarginal artery (*) extended over the insula very tortuously near the middle cerebral artery, and produced cortical branches to the area of the prefrontal artery (arrows). **A**: The mediobasal view. **B**: The basal view. ICA, internal carotid artery; ACA, anterior cerebral artery; MCA, middle cerebral artery; AMCA, accessory middle cerebral artery; Pc, pericallosal artery; Cm, callosomarginal artery; Of, orbitofrontal artery; Hb, Heubner's recurrent artery; Sup, superior trunk of MCA; Inf, inferior trunk of MCA; ON, olfactory nerve. [Color figure can be viewed in the online issue, which is available at www.interscience.wiley.com.]

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tion between AMCA and aneurysms has been shown (Tacconi et al., 1995). In such cases, damage to the AMCA may lead to severe neurological deficits (Umansky et al., 1988).

A case of AMCA originating from callosomarginal artery, the first in the literature, has been presented. The study material was a fresh cadaveric cerebral hemisphere of a 47-year-old Anatolian male. The internal carotid artery (ICA) was injected with colored latex. The dissection was performed under a surgical microscope (Carl-Zeiss). The AMCA originated from proximal callosomarginal artery in the left hemisphere. It had a diameter of 1.5 mm and gave off a Heubner's recurrent artery as it coursed into the Sylvian fissure. It passed over the frontal end of the insula following a tortuous course near the MCA and gave cortical branches to the area of the prefrontal artery (arrows) (Fig. 1). Lack of awareness of this variation may result in misdiagnosis based on angiographic studies, thus hindering safe surgery, particularly of aneurysms.

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REFERENCES

Tacconi L, Johnston FG, Symon L. 1995. Accessory middle cerebral artery: Case report. J Neurosurg 83:916–918.

Takahashi S, Hoshino F, Uemura K, Takahashi A, Sakamoto K. 1989. Accessory middle cerebral artery: Is it a variant form of the recurrent artery of Heubner? AJNR Am J Neuroradiol 10:563–568.

Tanriover N, Kawashima M, Rhoton AL Jr, Ulm AJ, Mericle RA. 2003. Microsurgical anatomy of the early branches of the middle cerebral artery: Morphometric analysis and classification with angiographic correlation. J Neurosurg 98:1277–1290.

Teal JS, Rumbaugh CL, Bergeron RT, Segall HD. 1973. Anomalies of the middle cerebral artery: Accessory artery, duplication, and early bifurcation. Am J Roentgenol Radium Ther Nucl Med 118:567–575.

Umansky F, Dujovny M, Ausman JI, Diaz FG, Mirchandani HG. 1988. Anomalies and variations of the middle cerebral artery: A microanatomical study. Neurosurgery 22:1023–1027.

Yaşargil MG. 1984. Microneurosurgery. Vol. 1. Stuttgart: Thieme. p 72–91.