“True” accessory anterior cerebral artery: A newly reported anterior cerebral arterial anomaly and the proposal of its classification

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Abstract: If we use the same naming policy of MCA anomalies, then accessory ACA should be applied for ACA anomalies originating from the ACA. We experienced such a rare ACA anomaly, which we referred to as true accessory ACA.

Anterior cerebral arterial (ACA) anomalies include azygos ACA, bihemispheric ACA and accessory ACA. Accessory ACA is also referred to as third A2, triple A2 and median artery of the corpus callosum. The frequency of accessory ACA is reported to be 9.6% [1]. Middle cerebral arterial (MCA) anomalies include accessory MCA originating from the ACA and duplicated MCA originating from the internal carotid artery. If we use the same naming policy of MCA anomalies, then accessory ACA should be applied for ACA anomalies originating from the ACA, however, reports of such ACA anomalies are scarce.

The patient was a 64-year-old man. He visited our hospital complaining of vertigo and nausea. His

symptom gradually improved after a few days of bed rest and an intravenous infusion of extracellular fluid. He was subsequently discharged from our hospital.

Brain magnetic resonance imaging (MRI), including diffusion weighted imaging, showed nearly normal findings. Magnetic resonance angiography (MRA) showed thick right A1 and hypoplastic left A1 without anterior communicating artery (Fig.). The right thick A1 divided into two same caliber arteries at the right frontal base. These 2 arteries turned upward at the anterior interhemispheric cistern and became normal bilateral A2. The left hypoplastic A1 connected to one of the A2 at midline.

Catheter or 3D-CT angiography may provide more information, however, these examinations are invasive. MRA was enough to know arterial abnormality and recent vascular anomalies has been discussed on MR only [2, 3].

The classical naming of accessory ACA is giving for third A2, which indicates the supplementary, not main artery. In our case, a left ACA originated from the middle of the right A1 and each ACA bilaterally supply the normal brain. We believe this ACA anomaly should be referred to as accessory ACA according to the naming strategy of MCA anomalies.

In the literature search, we identified 3 reports of similar ACA anomalies [4-6], although they did not give appropriate terms for these ACA anomalies.

ACA develops in the late embryonal period [7, 8]. There are many collateral arteries during the embryonal period, however, most of them disappear before birth. Persistent primitive olfactory artery (POA) is one such remaining collateral arteries, which is occasionally found in adult MRA [3]. POA

runs along the olfactory nerve. The anomalous artery in our case did not run along the olfactory nerve, rather it ran along the normal ACA course. Therefore, the anomalous artery in our case is not POA.

Literature

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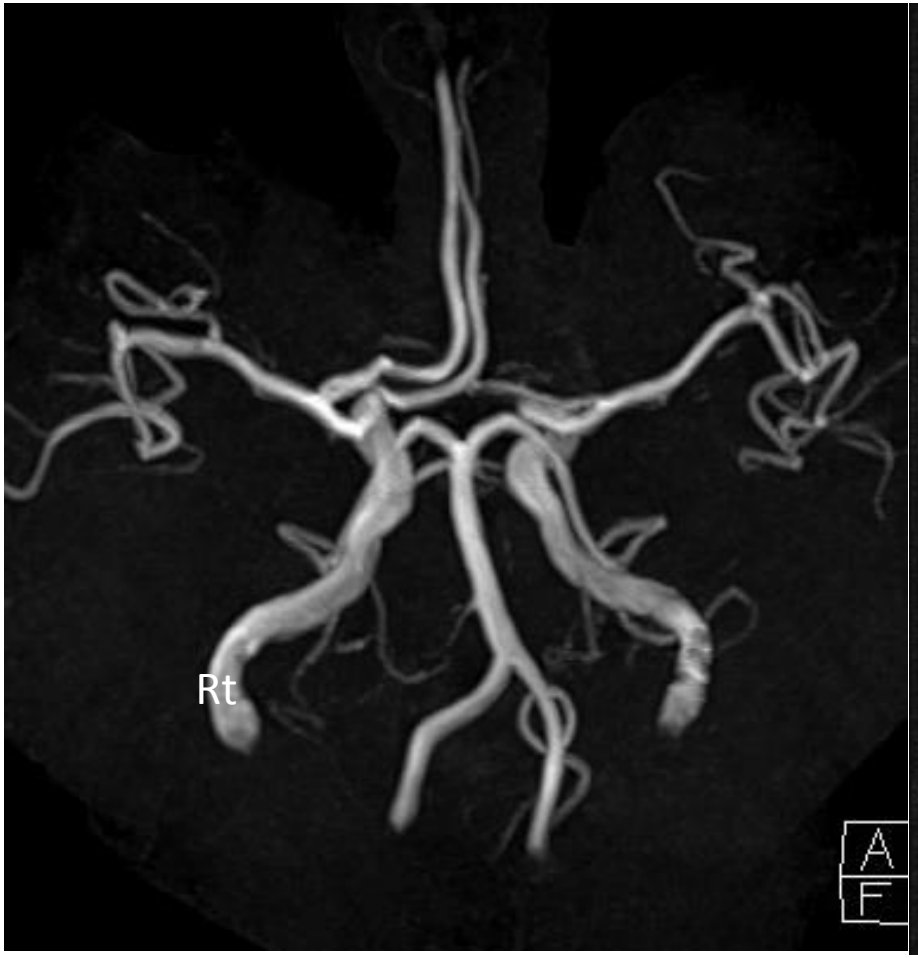
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