Anatomical Variant: Ascending Pharyngeal Artery Arising from the Extracranial Internal Carotid Artery

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Abstract

Ascending pharyngeal artery (APA) is a branch of the external carotid artery. Extracranial internal carotid artery (ICA) usually does not have any branches. We present here a rare case of anomalous origin of the APA from the extracranial ICA and discuss the clinical importance of this rare anatomical variant.

Keywords: Anatomical variant, anomalous branch, ascending pharyngeal artery, cervical segment, internal carotid artery

INTRODUCTION

Branches arising from the extracranial internal carotid artery (ICA) are very rare. They are usually discovered incidentally during angiography, color-flow duplex scan, postmortem examination, or anatomic dissection.[1,2] Ascending pharyngeal artery (APA) is the smallest branch of external carotid artery (ECA) arising from its posterior wall.[1] There are reports describing the anomalous origin of ECA branches from ICA.[1] APA originating from cervical ICA is the most common variant and is seen in 2% of specimens during the surgical autopsy.[1,3]

CASE REPORT

A 70-year-old man came for a general health checkup to our institute. He was a known hypertensive on regular medication. On carotid Doppler examination, there were calcified plaques in both carotid bulbs extending into proximal ICAs causing more than 50% diameter stenosis. Hence, he was advised for a computed tomography (CT) cerebral angiogram for further evaluation.

CT cerebral angiography of the neck and brain was done in a Dual Source 64 Slice CT scan (Siemens SOMATOM Definition) using 80 ml of nonionic iodinated contrast (iohexol), 120 KV, and 133 mAs. Volume-rendered technique images [Figure 1a and b] were obtained which clearly depict right APA arising from the anteromedial wall of proximal right ICA, just 4 mm from its origin at the level of C3 vertebra.

DISCUSSION

Aorta starts developing during the 3rd week of gestation.[4] Each primitive aorta consists of a dorsal and a ventral segment that are in continuation with the first aortic arch.[4] Six paired aortic arches develop between the ventral and dorsal aortae.[4] Maxillary artery and portions of external carotids develop from the first pair, whereas the common carotids and portions of the internal carotids develop from the third arch.[4] Stapedial arteries arise from the second pair.[4] Variants arise when the first and second arch remnants are connected directly by the vascular buds to the internal carotid instead of external carotid.[5] Any branch of ECA can arise from the cervical segment of ICA.[5] Of all the branches, APA arising from the extracranial ICA is the most commonly encountered variant after occipital artery.[5,6] Frequency of occurrence of these anomalous origins is summarized in Table 1.[6]

It is important to consider these branches from the ICA in the diagnosis as well as surgical treatment of carotid occlusive disease.[5,6] A completely occluded ICA is a contraindication for carotid endarterectomy, but the patients with variants receive blood from these branches preventing complete occlusion.

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Flow from the variant branches limits the length of the occlusion, thus making the carotid endarterectomy feasible.[2] Back bleeding from these branches is problematic during carotid endarterectomy, which is the most common complication from these anomalous branches.[3] APA arising from the origin of ICA and coursing parallel to ICA can mimic double lumen seen in ICA dissection.[3]

Hence, knowledge about this variant helps in evading misdiagnosis as well as in preventing complications during carotid endarterectomy.

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Conflicts of interest
There are no conflicts of interest.

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