LETTER TO THE EDITOR

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Agenesis of bilateral common carotid arteries in an adult

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Anatomist Thomas Wills provided the first description of brain circulation in 1664, and until today, clinicians have been interested in the subject. Evaluation of normal and atypical brain circulation has been simpler since the 1960s thanks to advancements in angiography technology [1].

Even nowadays, the carotid examination, in particular, is a crucial clinical technique for arterial evaluation. An examination of the carotid arteries may reveal information on the left ventricle's systolic function, systolic blood pressure, arrhythmias and various types of valvular heart disease. The carotid evaluation typically provides data that are helpful in diagnosis and care.

A 21-year-old woman presented to the cardiovascular department with headache. Her presenting normal sinus rhythm (NSR) and her neurological examination findings were normal. She complained of no dizziness, numbness, or incoordination. There was no significant medical history in the family. Bilateral absence of the carotid pulse was observed during the examination. Color Doppler ultrasonography revealed no visualized bilateral common, internal, or external carotid artery. The contrast-enhanced computed tomography (CT) and magnetic resonance angiography confirmed the findings of the ultrasonography. No common carotid artery (CCA) originating directly from the aortic arch and brachiocephalic trunk was observed (Figure 1). Cross-sectional radiology findings that were confusing were corrected using conventional angiography as an additional imaging technique.

Absence of a carotid artery is frequently accompanied by congenital aplasia, hypoplasia, and hereditary disorders such as aortic arch abnormalities, bony carotid canal, and primitive carotid-basilar anastomosis. The agenesis of the bilateral common carotid arteries (CCA) is perhaps associated with the non- creation of the bony carotid canal [2, 3]. Numerous vascular disorders have been related to metalloproteases. Their specific functional purpose in the initial stages of the embryonic vascular system is unknown. The development of the embryonic aortic arch (AOAR) and cranial neural crest cells (CNCCs) into vascular smooth muscle cells was revealed to be aberrant in the presence of a metalloproteinase deficit. Total agenesis

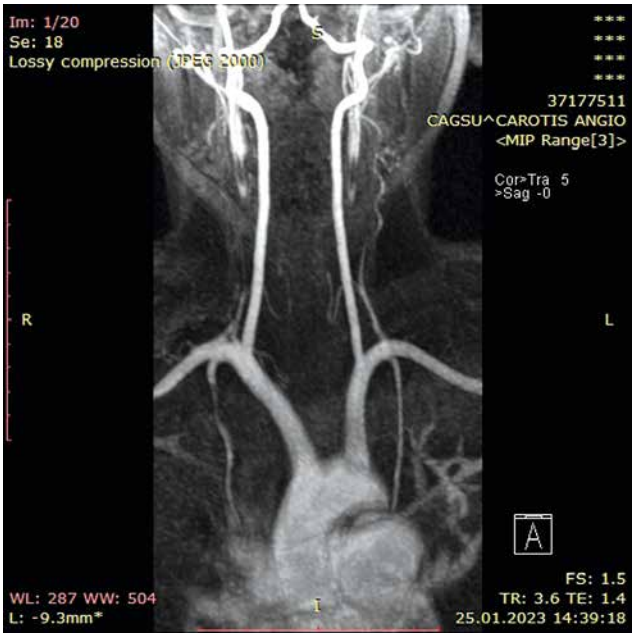

Figure 1. Magnetic resonance angiography confirmed the bilateral absence of the CCA from the aortic arch and a bilaterally large dominant vertebral artery

of common CA in adults has not been reported in the literature before, as far as we are aware [4, 5].

This case report is based on a description and explanation of agenesis of the bilateral CCA, which would be a significant contribution to the published literature on this topic, especially due to the fact that nothing similar has been published. No randomized clinical trials or consensus are available regarding primary preventive treatment for patients with bilateral common carotid agenesis. As common carotid agenesis is a congenital condition, it is not possible to reestablish the CCA by treatment. However, we believe that magnetic resonance imaging can be beneficial for evaluating brain aneurysms in people with known carotid agenesis due to the high occurrence of simultaneous intracranial aneurysms. The indications for treatment are the same as in the overall population because there are currently no standards for the treatment of CCA agenesis [6].

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Nevertheless, due to their increased risk of vascular events, these patients need to have comprehensive risk factor treatment. This includes medication for the treatment of diabetes, lipid metabolic problems, and high blood pressure, if they are present, as well as changes in lifestyle such avoiding smoking, regulating body weight, and engaging in regular exercise.

Disclosure

The authors report no conflict of interest.

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