

Common origin of the brachiocephalic arterial trunk and the left common carotid artery: two cases and review of the literature

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Abstract

The modal branching pattern of the aortic arch in humans consists of three large vessels arising from the aorta, which are: the brachiocephalic arterial trunk, the left common carotid artery, and the left subclavian artery. Birth defects of the supra-aortic vessels are usually asymptomatic and incidental. We report two cases of this variant of the normal.

Keywords: Aortic arch; bovine arch; brachiocephalic arterial trunk; left common carotid artery.

Introduction

The incidence of aortic arch anomalies ranges from 2.6% to 35.1%¹.

In some patients the innominate trunk and the left common carotid artery may have a common origin from the aorta.

Objectives

The aim of this work is to demonstrate the origin of the left common carotid artery from the TABC.

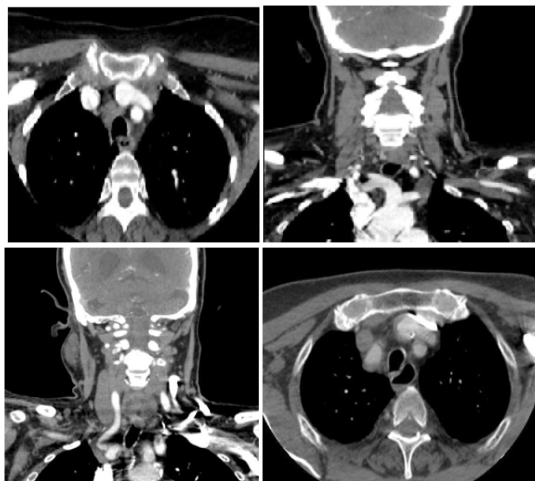


Figure 1: Axial CT sections and coronal reconstructions showing the origin of the left common carotid artery from brachiocephalic arterial trunk.

Observation

We report the cases of two patients, a 62-year-old woman followed for hypertension under treatment who presented an episode of TIA with paresthesia of the left hemisphere, and a 74 year old man with right hemiparesis and central facial palsy, both patients were referred to our training for supra-aortic angioscan. A CT scan with helical acquisition after injection of contrast medium at the cervico-thoracic level with fine reconstructions revealing in both patients the presence of an unusual origin of the left common carotid artery in the TABC.

Discussion

Abnormalities of the supra-aortic vessels are usually asymptomatic and clinically unremarkable and often discovered incidentally on routine CT scans [2]. The term “bovine arch” is widely used to describe a common anatomical variant of the human aortic arch branching. While this bovine aortic arch bears no resemblance to the bovine aortic arch [3]. The most common branching pattern of the aortic arch in humans consists of three major vessels arising from the aorta. The first branch is the brachiocephalic arterial trunk which gives rise to the right subclavian artery and the right common carotid artery.

The second branch is the left common carotid artery, and the last branch is the left subclavian artery. The final configuration of the aortic arch and its branches is probably related to different growth rates in the various arteries and the associated “migration” and “fusion” processes. The second most

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common variant of aortic arch branching occurs when the left common carotid artery has a common origin with the TABC. Instead of arising directly from the aortic arch as a separate branch, the origin of the left common carotid artery is shifted to the right and merges with the origin of the brachiocephalic artery trunk. This variant is most often referred to as the “bovine aortic arch” [5,6]. Another similar but less common variant is a left common carotid artery arising directly from the innominate artery rather than from a common trunk. Common origin of the innominate artery and the left common carotid artery. This configuration replaces the misnomer of bovine arch.

Both variants of the origin of the left common carotid artery have been referred to in various medical textbooks as the “bovine-type arch”, although this term is most often attributed to the common trunk variety [1,2,4]. This variant is also more common in blacks (10%) than in whites (5%), with an overall rate of 9% in the general population (3.5)

Conclusion

The term “bovine arch” is widely used to describe this anatomical variant, and “common origin of the innominate artery and the left common carotid artery”. This configuration replaces the misnomer of bovine arch.

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