

Aberrant left subclavian artery

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[Received 24 January 2002; Accepted 6 February 2002]

This paper describes a rare case in which the left subclavian artery originates from a common stem arising from the aortic arch and splits into a brachiocephalic trunk and a left subclavian artery. The course of other large vessels of the aortic arch in this case are typical.

key words: human aortic arch, variations

INTRODUCTION

The usual pattern of branches of the aortic arch is present in approximately 65% [16] to 83% [5]. Variations in the origin of the branches of the aortic arch are fairly common and have been described in anatomical as well as clinical journals [1, 2, 4, 8–14].

The aberrant vessels arising from the aortic arch are classified into 11 [20], 17 [1] or even 25 types [17].

Nizankowski et al. [17] described 25 abnormalities in the origin of arteries from the aortic arch during the dissection of 453 cadavers. Four cases of right and left brachiocephalic trunks were found and a single case of a bicarotid trunk. Lize [14] found 5 cases of anomalous origin of branches from the aortic arch out of 430 corpses.

An anomalous origin and course of the left subclavian artery is not common and because the case presented in our paper has not yet been observed, we decided to describe it, as it might be of clinical importance.

DESCRIPTION OF THE CASE

During laboratory dissection of a human male cadaver, the aortic arch gives off two vessels, i.e., 1) the common stem for the brachiocephalic trunk and the left subclavian artery appears on the right side, and 2) the left common carotid artery (Fig. 1, 2) appears on the left side. The diameter of the common stem was twice of that of the left common carotid

artery. This stem originated at the level of the 2nd right sternocostal joint, is about 2cm long, and ascends obliquely to the right. It extends from behind the lower part of the manubrium sterni to the level of the inferior margin of the right sternoclavicular joint. Behind this joint, the common stem divides into the left subclavian artery and the brachiocephalic trunk (Fig. 1, 2).

The aberrant left subclavian artery takes its origin from an anteromedial aspect of the common stem and extends upward anteriorly to the trachea and left common carotid artery. At the level of the upper margin of the left sternoclavicular joint, the artery enters the space between scalenus anterior and scalenus medius muscles.

The brachiocephalic trunk is approximately 2 cm long and then it divides into the right subclavian and the right common carotid arteries.

The left subclavian artery arises slightly to the left of the common stem and enters the neck behind the left sternoclavicular joint.

There were no anomalies in the heart and other large vessels in the described case.

DISCUSSION

Few of the variations in the branches of the arch of the aorta have any functional significance but some of them may cause symptoms due to their position. They may also be significant in the event of surgery. Such variations result from the persistence of parts of

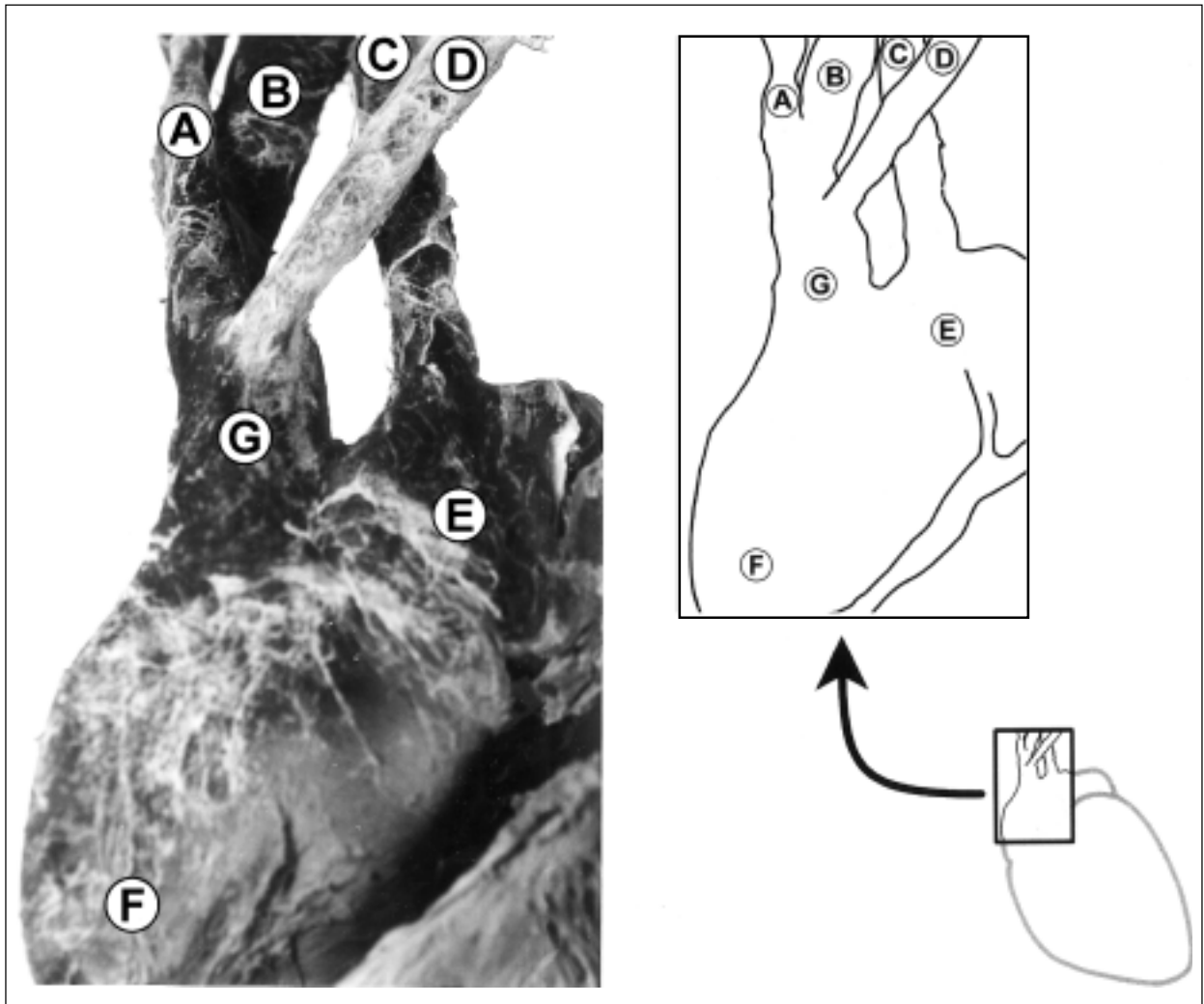


Figure 1. A — right subclavian artery, B — right common carotid artery, C — left common carotid artery, D — left subclavian artery, E — aortic arch, F — ascending aorta, G — common stem.

the aortic arches that usually degenerate, or due to the disappearance of parts that normally persist.

Animal experiments suggest that disturbances in the neural crest may be involved in the genesis of certain anomalies of the major arteries. When the cardiac neural crest is removed from an early ovarian embryo, malformations involving the carotid arteries and aortic arch result [6].

The aortic arch is derived from the left horn of the aortic sac, left aortic arch 4, and the left dorsal aortic root. The brachiocephalic trunk and common carotid arteries represent the aortic sac. The right subclavian arises from aortic arch 4, the right dorsal aortic root, and the sixth intersegmental vessel [3, 7, 18]. The left subclavian artery is sixth intersegmental in origin [18, 19].

The described aberrant origin of the left subclavian artery results from an early formation of the horns of the aortic sac and the lack of communication between the left horn of this sac and the sixth intersegmental artery which forms the stem of the subclavian artery.

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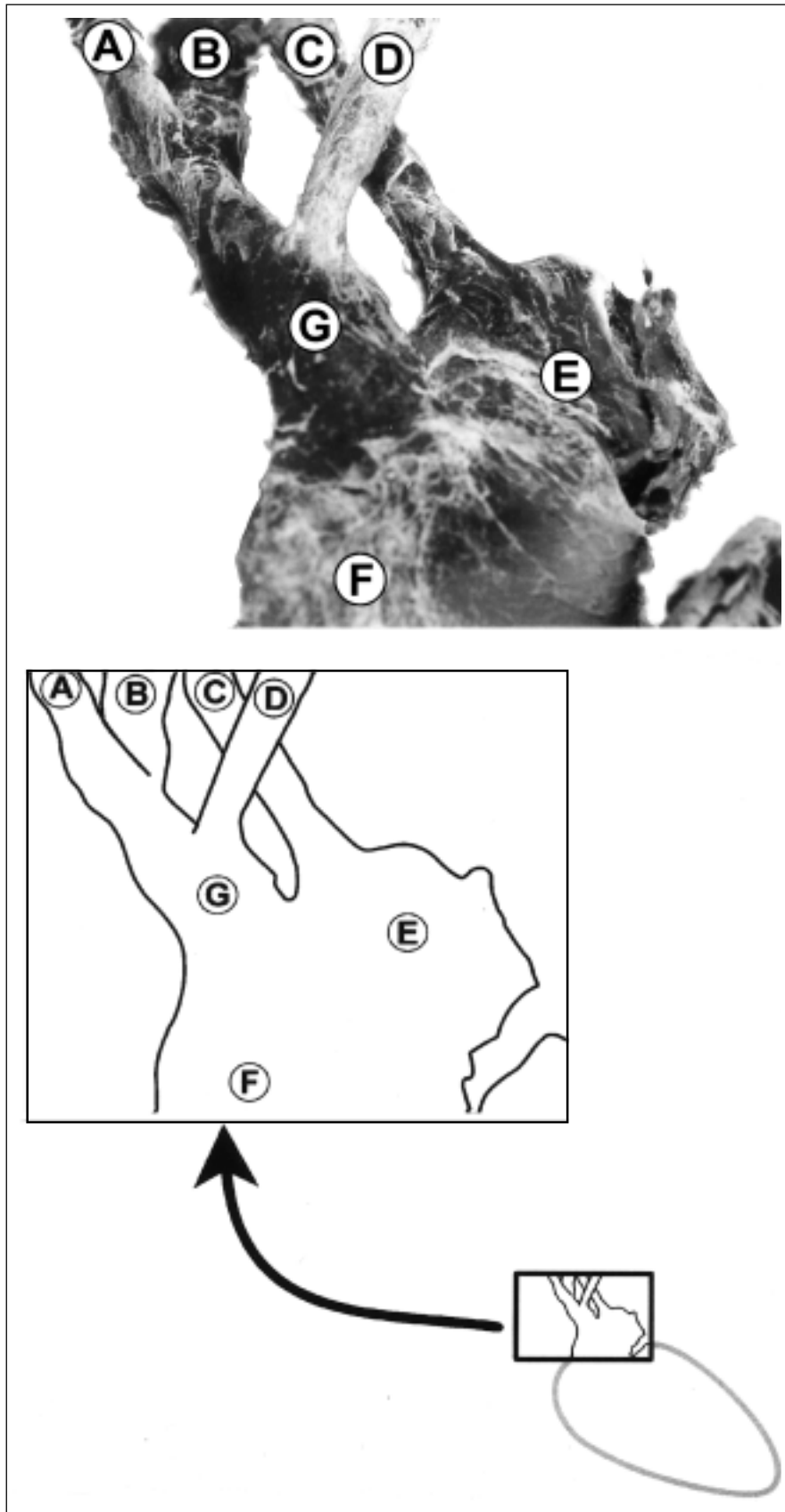


Figure 2. **A** — right subclavian artery, **B** — right common carotid artery, **C** — left common carotid artery, **D** — left subclavian artery, **E** — aortic arch, **F** — ascending aorta, **G** — common stem

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