

Case report

A CASE WITH ABERRANT ORIGIN OF THE BRACHIAL AND ANTEBRACHIAL ARTERIES AND SOME REMARKS ON THE TERMINOLOGY OF THE UPPER LIMB VARIANT ARTERIES

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Summary

In this report we describe an interesting case with aberrant arteries in the arm and forearm region established during routine anatomical dissection. There were two brachial arteries located in front and behind the median nerve. In the upper forearm region the first of them divided into the radial and ulnar arteries; the second brachial artery prolonged in the common interosseus artery. Considering the reported variations we review the different terminologies concerning the arterial variations of the upper limb and also present their possible clinical implications.

Key words: variant arteries, upper limb, terminology, clinical considerations

Introduction

Numerous variations in the arterial pattern of the upper limb have been observed frequently, either in routine anatomical dissections or in clinical practice [1-13]. Sometimes, however, one and the same variant findings have been named differently because of the existing controversies in the names of the variant arteries. In this report we describe an interesting variation in the upper limb arterial anatomy and considering our findings we discuss the terminology of the upper limb arteries reported up to now. We also present the possible clinical significance of the variant arteries in help to clinicians.

Case report

During routine anatomical examination of the right hand of a 65-year old Caucasian female cadaver an aberrant anatomy of the major arteries of the arm and forearm was detected. Upon dissecting the brachial region, it was noted that axillary artery bifurcated into two large brachial arteries coursing in front and behind the median nerve (Fig. 1). The first of these arteries passed downwards and in the anterior cubital fossa at the level of the neck of the radius divided into the radial and ulnar arteries, having their usual course through the forearm and hand (Fig. 2). The second of the brachial arteries, passing beneath the median nerve, continued in the forearm region as the common interosseus artery that later divided into the usual anterior and posterior interosseus arteries.

Discussion

Variations in the upper extremity have been subjects in numerous anatomical studies because of their high incidence [1,5,6,7,8,12,13]. Despite this, there are

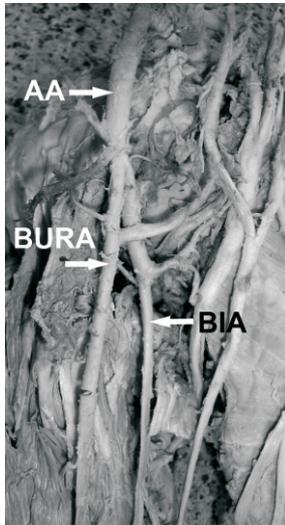


Fig. 1. Photograph of the variant artery. AA – axillary artery; BURA – brachioulnar artery; BIA – brachiointerosseus artery.

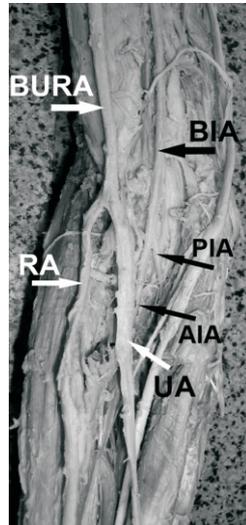


Fig. 2. Photograph of the variant artery. BURA – brachioulnar artery; BIA – brachiointerosseus artery; RA – radial artery; UA – ulnar artery; AIA – anterior interosseus artery; PIA – posterior interosseus artery.

differences in the current literature, due to the use of various terminologies and criteria for classification. Some authors applied topographic criteria and thus considered the arteries regionally. An existing second artery in the arm have been termed “brachialis superficialis”, but when it crossed the elbow it have been termed “radial”, “ulnar”, “superficial ulnar” or “interosseus” [1,10,12]. Therefore, different variations of the brachialis superficialis and the variations of the radial or ulnar arteries were analyzed separately. Other terms describing the origin of the aberrant artery in the arm region included “superior” and “inferior” [9], “superior”, “media” and “inferior” [1] and “superior”, “media”, “inferior” and “ima” [6]. Some authors grouped together the information about the origin of the artery in the arm together with the information about its course in forearm and proposed different terms such as “superficial radial”, “superficial ulnar”, “high origin of the radial” or “high origin of the ulnar” [8]. Due to the great diversity of terminology and the existence of similar arteries with different terms, the reported results could not be compared [8]. Therefore, after revision of the current literature Rodriguez-Niedenfuhr et al. proposed a new classification for the upper limb variant arteries combining the term “brachio” with the corresponding region of the forearm where the artery prolonged [8]. They used the terms “brachioradial”, “brachioulnar”, “brachiointerosseus”, “brachiomedian” or a combination of these, and depending on whether the latter arteries adopted a normal or superficial course in the forearm, the term “superficial” were added. In our case, if we use the older terms, we should describe the

presence of “superficial brachial artery” that in the upper forearm region divided into the radial and ulnar artery and also “deep brachial artery” prolonging into the common interosseous artery. According to the terminology of Rodriguez-Niedenfuhr et al., however, we have a “brachioulnar” and “brachiointerosseus” arteries.

The arterial variations of the upper limb have been implicated in different clinical situations [8]. Some of these variant arteries could be used as a feeding artery to a free flap from medial arm skin [2,13]. The presence of such variations can be hazardous because these aberrant arteries could be vulnerable to injury [2, 13]. An accidental intra-arterial injection of drugs due to the proximity of normal vein puncture sites can cause thrombosis or gangrene, leading to amputation of the arm or fingers [13].

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