

CASE REPORT

Multiple supernumerary muscles of the arm and its clinical significance

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Abstract: During routine cadaveric dissection of the flexor compartment of the right arm, multiple supernumerary muscles were observed in a 56-year-old male cadaver. There were three supernumerary muscles took taking origin independently from the humerus distally to the insertion of coracobrachialis muscle. The upper two supernumerary muscles were attached to the common tendon of the biceps brachii muscle and considered as its additional heads. The third supernumerary muscle passed between the biceps brachii and brachialis muscles, then crossed obliquely the brachial artery and median nerve nearing cubital fossa to get inserted in to the radial side of the humeral head of the pronator teres. The clinical significance of the above variations is discussed (Fig. 1, Ref. 16). Full Text (Free, PDF) www.bmj.sk.

Key words: anatomical variation, supernumerary muscles, biceps brachii, median nerve, brachial artery.

Anomalous muscles usually do not cause symptoms but are of academic interest. They become a surgical problem when they produce symptoms or are difficult to differentiate from soft-tissue tumors. The presence of additional muscles in the flexor compartment of arm is often observed during dissection and surgical procedures. The presence of supernumerary humeral heads of biceps brachii is one of the common variations seen in this region affecting an estimated 9–22 % of population (1, 2). Four-headed biceps brachii muscles are also reported in the literature by various authors (3, 4, 5). Rodriguez-Niedenfuhr et al (6) found four-headed biceps brachii in five arms (1.4 %) out of 350 arms they observed.

Rarely there are additional „unnamed muscles“ present in the flexor compartment of arm; which can be the cause of various pathological conditions. Ozan et al (7) described a third head of biceps brachii with three tendons; two of these tendons were inserted to the bicipital aponeurosis whereas the third tendon inserted to the ulnar head of the pronator teres muscle. Dharap (8) found an „unnamed muscle“ on the distal half of the arm; this muscle arose from the humerus between the coracobrachialis and brachialis muscles, passed obliquely above the brachial artery and median nerve and was inserted to the common origin of the forearm flexors. Nebot-Cegarra et al (9) found that accessory fasciculi of the pronator teres muscle were present in 8.3 % of specimens they studied. These fasciculi arose from the ten-

don of the brachialis muscle (5.0 %), from the radial tendon of the biceps brachii muscle (3.3 %), from the Gantzer's muscle (1.6 %) or from the flexor digitorum superficialis muscle (1.6 %). In the present case the „unnamed muscle“ was not taking origin from none of the above structures but the insertion was to the pronator teres muscle. The „unnamed muscle“ in the present case can be a cause of high median nerve palsy together with symptoms of brachial artery compression.

Case report

During routine cadaveric dissection of the flexor compartment of the right arm, multiple supernumerary muscles were observed. There were three supernumerary muscles took taking origin independently from the humerus distally to the insertion of coracobrachialis muscle (Fig. 1). The upper two supernumerary muscles were attached to the common tendon of the biceps brachii muscle and considered as its additional heads. The third supernumerary muscle (length, 20.4 cm; width at the origin, 0.3 cm and width at the insertion, 1.2 cm) took origin below the additional muscle heads of biceps brachii and passed between the biceps brachii and brachialis muscles then crossed obliquely above the brachial artery and median nerve nearing the cubital fossa to get inserted in to the radial side of the humeral head of the pronator teres. In the present case the musculocutaneous nerve was absent and all the flexor muscles of the arm were innervated by the median nerve (Fig. 1).

Discussion

The biceps brachii muscle is classically described as a two-headed muscle that originates proximally, with a long head from

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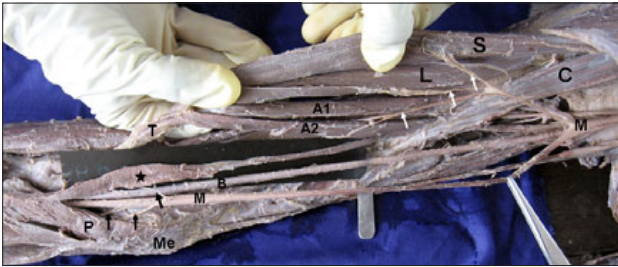


Fig. 1. Antero-medial view of the right upper limb. A1 – upper supernumerary biceps brachii muscle; A2 – lower supernumerary biceps brachii muscle; B – brachial artery; C – coracobrachialis muscle; L – long head of biceps brachii; M – median nerve; Me – medial epicondyle of humerus; P – humeral head of pronator teres muscle; S – short head of biceps brachii; T – common tendon of biceps brachii; asterisk indicates the “unnamed muscle” took origin from the medial aspect of the shaft of the humerus and was inserted to the radial side of the humeral head of the pronator teres. Note the white arrows were the branches to the biceps brachii and its supernumerary heads from the median nerve and the black arrows were the branches of the median nerve supply the “unnamed muscle” and the pronator teres.

the supraglenoid tubercle and short head from the apex of the coracoid process of the scapula. Distally these heads join to form a common tendon, which is inserted into the rough posterior aspect of the radial tuberosity (10), mainly contributing to the flexion and supination of the forearm. The medial brachial origin of the supernumerary heads of the biceps brachii may contribute to pronation of the forearm irrespective of shoulder joint position. In addition to elbow flexion independent of shoulder joint, the third head of the biceps brachii may enhance the strength of elbow flexion (11). The fourth head of the biceps brachii may further enhance the strength of elbow flexion and supination (4). According to Swieter & Carmichael (11), the additional humeral heads of biceps brachii as in this variation may become relevant for surgical interventions of in the arm, especially after humeral fractures with subsequent unusual bone displacements.

High median nerve compression in and around elbow has been described as resulting from a number of clinical and anatomic entities, including an anomalous head of the triceps (12), a prominent ligament of Struthers with or without a supracondylar process (13), pressure from the pronator teres (14), compression by the lacertus fibrosus (15) and with partial or complete rupture of the distal biceps insertion (16). The presence of an anomalous muscle in and around elbow, as in the present case may be one of the causes of high median nerve palsy and may cause brachial artery compression. Dharap (8) and Ozan et al (7) also described possible median nerve compression around the cubital fossa, by “unnamed muscle” and tendon respectively.

As high median nerve entrapment being uncommon and having an elusive diagnosis, the present additional “unnamed muscle” should be kept in mind as a possible cause of proximal median nerve compression.

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