Case Report

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Variations Associated with Median Nerve and Musculocutaneous Nerve: A Case Report

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Abstract

Anatomic variations involving different nerves and muscles of upper limb are known to occur. Knowledge of any deviation from the normal pattern of distribution of anatomical structures helps the surgeons and other clinicians during any intervention of the upper limb. In the present case, during routine dissection of a female cadaver in the left upper limb, we found communication between left median nerve and musculocutaneous nerve in the proximal region of arm and left musculocutaneous not piercing the coracobrachialis muscle in the arm. The musculocutaneous nerve instead of piercing coracobrachialis passes in between biceps and brachialis. Coracobrachialis is supplied by a branch directly from the lateral cord and another from musculocutaneous nerve. However, the rest of the distribution of the median and musculocutaneous nerve were normal.

Key words: Musculocutaneous nerve; Coracobrachialis muscle; Biceps; Brachialis.

Introduction

Anatomic variations involving different nerves and muscles of upper limb are previously reported. Knowledge of variations in anatomy is important to anatomists, radiologists, anesthesiologists and surgeons. Presence of anatomic variations of the peripheral nervous system is often used to explain unexpected clinical signs and symptoms of nerve palsy syndrome and vascular problems. Median-nerve (MN) formed by medial and lateral roots from the medial and lateral cords of brachial plexus. Musculocutaneousnerve (MCN)-branch from lateral cord, supplies and pierces the coracobrachialis muscle, then passes through anterior compartment of arm. MCN also supplies biceps and brachialis muscle in the arm and then continues as lateral cutaneous nerve of forearm. We found concomitant variations of MN and MCN in the upper part of the arm along with an additional supply of coracobrachialis directly from the lateral cord.

Case summary

During routine dissection for undergraduate students, in the left arm of a female cadaver of approximately 60 yrs of age, we found 3 concurrent variations in the upper part of the arm. MN received a communicating branch from musculocutaneous nerve in the proximal region of arm just after its formation of main

Figure 1: Musculocutaneous nerve not piercing the coracobrachialis muscle. Coracobrachialis supplied by branches directly from lateral cord and musculocutaneous nerve

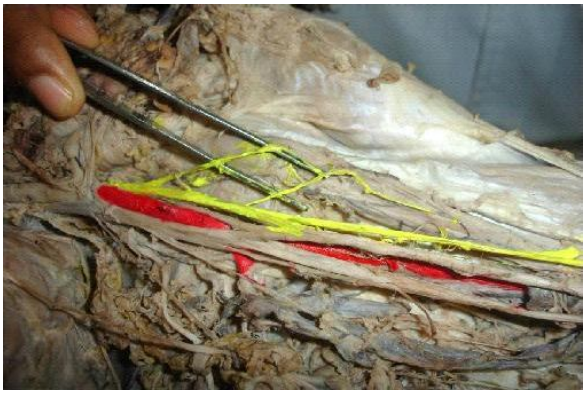

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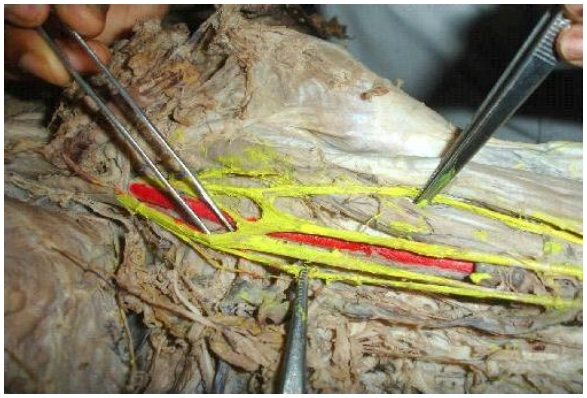
Figure 2: Median nerve formed by 3 roots (Lateral cord, medial cord and twigs from musculocutaneous nerve



trunk. That communicating branch can be taken as the third or 2nd lateral root of median root. Musculocutaneous nerve originating from the lateral cord doesn't pierce coracobrachialis and traverse in between biceps and brachiais. Coracobrachialis muscle is supplied by a branch directly from the lateral cord along with a separate twig from MCN. Rest of the course and distribution of MN and MCN was normal.

Discussion

Knowledge of anomalous branching pattern of brachial plexus and coexisting muscular anomalies help the surgeons during surgical interventions of upper limb to avoid inadvertent consequences. The forelimb muscles develop from the mesenchyme of the para-axial mesoderm during 5th week of embryonic life. The axons of spinal nerves grow distally to reach the limb bud mesenchyme. As suggested by Sannes *et al*[1], the migration of the developing axons is regulated in a highly coordinated specific fashion. Any alterations in signalling between mesenchymal cells and neuronal growth cones can lead to significant variations.

Le Minor (1990) reported Types I – V regarding variant communications between the musculocutaneous and median nerve.[2] However, *Venieratos and Anangnostopoulou (1998)* have described only three types of communications between the MCN and MN in relation to the coracobrachialis muscle.[3]

Type 1: communicationbetween MCN and MN is proximal to the entrance of the MCN into the coracobrachialis.

Type 2: the communication is distal to the muscle.

Type 3: neither the nerve nor its communicating branch pierced the muscle

In present case, the communication of MN and MCN can be categorized as type III of *Venieratos and Anangnostopoulou (1998).*[3] The communicating branch from MCN which is of same calibre as that of the lateral root joins the MN in the upper third of the arm, hence can be considered as 3rd root of medial nerve. As described in present case, MCN does not pass through the coracobrachialis muscle, can be explained in terms of such developmental abnormalities for axonal guidance in the coracobrachialis muscle or circulatory factors during fusion of cords of brachial plexus.

Knowledge of variation is of immense importance during surgical exploration of axilla and arm region, during nerve block, during internal fixation of humeral fracture from common anterior approach to avoid injury to these nerves

References

1. Sannes HD, Reh TA, Harris WA. Development of the nervous system In: Axon growth and guidance. New York: Academic Press; 2000, 189-97.
2. Le Minor JM. A rare variant of the median and musculocutaneous nerves in man. *Archieves Anatomy Histology Embryology.* 1992; 73: 33-42.
3. Venieratos D, Anangnostopoulou S. Classification of communications between the musculocutaneous and median nerves. *Clinical Anatomy.* 1998; 11: 327-31.