Short report

Anatomical variation-Communication between musculocutaneous nerve and median nerve

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ABSTRACT

Variations of the musculocutaneous nerve and median nerve at the level of brachial plexus are common. During our routine dissection we observed a branch communicating between the musculocutaneous nerve and median nerve in a fifty year old male cadaver right upper limb. The communicating branch arising from the musculocutaneous nerve distal to the coracobrachialis in upper one third of the arm along with normal muscular branches of the nerve. In the same limb we also observed an accessory head of biceps brachii muscle. To prevent unwanted outcomes of operations conducted on musculo cutaneous nerve, it gives clinical consideration during surgical interventions and clinical investigations of the arm.

1. Introduction

Anomalies of the brachial plexus and its terminal branches are not uncommon. Brachial plexus is network of nerves supplying the upper limb. Median nerve arising from the medial and lateral cords of the plexus, where as musculocutaneous nerve from the lateral cord. Variations in the formation and branching of brachial plexus are reported by several investigators [1,2,3].The musculo cutaneous nerve is the continuation of the lateral cord and pierces the coracobrachialis an descends laterally between the biceps and brachialis muscles It is the main nerve of arm by supplying the muscles of the arm [4,5].Musculocutaneous nerve has frequent variations associated with its connection to the median nerve. It may run behind the coracobrachialis muscle or adhere for some distance to the median nerve and pass behind the bicepsbrachii muscle.

2. Materials and methods

The upper extremities of 40 cadavers were dissected and observed for this study. All the cadaveric materials were studied in the Department of Anatomy, Sri Venkateswara Medical College, Tirupati. A longitudinal incision was made at the anterior aspect of the arm, from the level of acromion process to a point about 2.5 cm below the elbow joint. A horizontal incision was made bilaterally in both proximal and distal ends of the longitudinal incision. The subcutaneous fat, fascia and coracobrachialis muscle were separated to observe the communication between musculocutaneous nerve and median nerve.

3. Results

In a fifty years old male cadaver, a communicating branch between musculocutaneous nerve and median nerve were observed in the upper one third of the arm of right upperlimb, but the left upper limb remains normal. The communicating branch is not piercing the coracobrachialis [figure-I] and arises distal to it in the upper one third of the arm. In the same cadaver we also observed the accessory head of the bicepsbrachi muscle [figure-II] which is originating from the humerus on its medial side and fuses with bicipitaltendon. Some of the fibers of the supernumerary third head joined the brachilalis muscle.
Variations in the communications between median nerve and musculocutaneous nerves have been described by Le Minor [6] into five types: in type I, there is no communication between the median nerve and musculocutaneous nerve. In type II, the fibers of the medial root of the median nerve pass through the musculocutaneous nerve and join the median nerve in the middle of the arm. In type III, the lateral root fibers of the median nerve pass along the musculocutaneous nerve and after some distance leave it to form the lateral root of the median nerve. In type IV, the musculocutaneous nerve fibers join the lateral root of the median nerve and after some distance, the musculocutaneous nerve arises from the median nerve. In type V, the musculocutaneous nerve is absent [7] and all fibers of the musculocutaneous nerve pass through the lateral root and fibers to the muscles supplied by the musculocutaneous nerve branch directly from the median nerve. In our case, communication branch observed between musculocutaneous nerve and median nerve which is not piercing the coracobrachialis muscle and passing behind the muscle in the upper third of the arm. Venieratos and Anagnostopoulou [8] described communication between the musculocutaneous nerve and median nerve is proximal to the entrance of the musculocutaneous nerve to the coracobrachialis, in other type of communication is distal to the muscle. Where as in other type the neither nerve nor its communicating branch pierced the muscle. In our study, we observed there was humeral head of biceps brachii. Duplicated musculocutaneous nerve associated with three headed biceps brachii muscle observed in a case study by Abu-Hijleh [9,10]. This accessory head of biceps brachii in our study may attribute to the random factors influencing the mechanism of formation of limb muscles and peripheral nerves during embryonic life [11,12].

4. Discussion

Communication branches between musculocutaneous nerve and median nerve or between median nerve and ulnar nerve have been reported [10,13,14]. Lesions of this communication branch may give rise to difficulty in diagnosis. In diagnostic clinical neurophysiology, variations in connections between musculocutaneous nerve and median nerve may have significance.

5. Conclusion

Communication branches between musculocutaneous nerve and median nerve or between median nerve and ulnar nerve have been reported [10,13,14]. Lesions of this communication branch may give rise to difficulty in diagnosis. In diagnostic clinical neurophysiology, variations in connections between musculocutaneous nerve and median nerve may have significance.

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6. References


