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Case Report

VARIATION IN MUSCULO- CUTANEOUS NERVE– 2 CASE REPORTS

Archana Kotli N^{1*}, Ashwini H²

¹Assistant Professor, Department of Anatomy, MRMC, Gulbarga, Karnataka, India

²Assistant Professor, Department of Anatomy, GIMS, Gulbarga, Karnataka, India

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*Corresponding Author: **Archana. N. Kotli,**

Assistant Prof, Department Of Anatomy, Mahadevappa Rampure Medical College, Gulbarga, 585103, Karnataka, India

ABSTRACT

Although anatomical variations in Brachial Plexus is a common entity. Coracobrachialis muscle receiving its nerve supply from branch of lateral cord and Musculocutaneous nerve neither supplying nor piercing it is rare. We report similar cases found during routine dissection for 1st MBBS 2010-11 batch in 2 male embalmed cadavers of approximate age of 40yrs and 70yrs, in the department of anatomy, MR Medical College, Gulbarga.

Keywords: Musculocutaneous Nerve, Coracobrachialis Muscle, Lateral cord, Medial cord, Median Nerve.

INTRODUCTION

Musculocutaneous nerve supplies the muscles of anterior compartment of arm (Coracobrachialis, Biceps brachi and Brachialis). It is derived from the lateral cord of brachial plexus and conveys the fibres from C₅, 6 and 7. The nerve initially accompanies the lateral side of third part of axillary artery and pierces the coracobrachialis muscle. The nerve then passes downward and laterally across the front of the arm in between the biceps brachi and brachialis. Through the nerve to brachialis it gives articular twigs to the elbow joint and a nutrient branch to the humerus. Just below the elbow it pierces the deep fascia lateral to the tendon of biceps brachi, and extends further downwards as the lateral cutaneous nerve of the forearm to as far distally as the base of thenar eminence¹.

CASE REPORT 1

In a 40 yr male embalmed cadaver [Fig 1 (a)- rt side and fig 1 (b)- Lt side] , coracobrachialis received its nerve supply directly from lateral cord of brachial plexus about 18mm (rt) and 16 mm (Lt) distal to the tip of coracoid process.

Lateral cord, gave its 1st branch lateral pectoral nerve then 2nd to coracobrachialis and further in its course divided into 2 branches, MCN and lateral root to median nerve at about 40mm (rt) and 45mm (Lt) distal to tip of coracoid process. MCN coursed downwards and gave a branch to biceps then to brachialis (in addition also supplied by branch from radial nerve- hybrid muscle) and continued as lateral cutaneous nerve of forearm. In the Lt arm between the branch to biceps and brachialis it gave a branch to the median nerve

(communicating branch) and one more twig to biceps just above the elbow joint.

No other muscular or vascular variations were present.

CASE REPORT 2

2nd case also presented a similar variation in a 70yr male embalmed cadaver [Fig 2 (a)- rt side and fig 2 (b)- Lt side] , coracobrachialis received its nerve supply directly from lateral cord of brachial plexus about 22mm (rt) and 18 mm (Lt) distal to the tip of coracoid process.

Lateral cord, gave its 1st branch lateral pectoral nerve then 2nd to coracobrachialis and further in its course divided into 2 branches, MCN and lateral root to median nerve at about 52mm (rt) and 48mm (Lt) distal to tip of coracoid process. MCN coursed downwards and gave a branch to biceps then to brachialis and continued as lateral cutaneous nerve of forearm. No other variation was found as in earlier case of Lt arm plus no other muscular or vascular variations were noted.

DISCUSSION

Gray's² mentions that branch to coracobrachialis (CB) is given off before the musculocutaneous nerve (MCN) enters the muscle: its fibres are from 7th cervical ramus and may branch directly from lateral cord as in our case. Anson³ mentions that MCN is composed of fibers directly from C₅ & 6, in 50% from C₄ & 7. Nerve to CB is from the nerve close to its origin, sometimes from 7th cervical nerve directly to the muscle. According to W. Henry Hollinshead⁴, three muscles of front of the arm are innervated by MCN. Biceps and Brachialis regularly receive fibres from C₅ & 6 nerve where as CB

receives from 6th & 7th rarely from C₅ also. MCN is said to receive fibres from 7th cervical nerve in only about 2/3rd of cases but in about 50% cases the nerve or nerves to CB arise in part from lateral cord or from C₇, thus can receive 7th cervical fibres even when MCN has none.

Avinash Abhaya et al (2006)⁵ reported a case of bilateral dual origin of MCN, the first being thinner branch from lateral cord supplying only the coracobrachialis at higher level and second one the normal branch supplying biceps and brachialis and continuing as lateral cutaneous nerve of forearm. Abhaya et al (2003)⁶ reported a rare case of lateral cord itself piercing the CB and then dividing into MCN and lateral root to median nerve within the muscle itself, MCN gave a branch to CB. Chauhan R and Roy TS (2002)⁷ in their study on 200 cadavers reported a case of female cadaver where in median nerve (MN) was formed by 3 roots on rt side only, third root was from MCN. MN received one more communicating branch from MCN and MCN did not pierce the CB. Hollinshead⁸ states that sometimes MCN passes deep to CB instead of passing through it. MCN sometimes gives a branch that joins MN, this is usually interpreted as that fibres that should have run through the lateral root (LR) to MN failed to do so but entered instead the MCN and are rejoining the MN, less frequently MCN receives a communicating branch from MN. Akhilandeshwari B and Shuba R (2009)⁹ reported 2 cases of anomalous origin of MCN from 50 upper limb (UL) specimen, here MCN arose from MN supplied all 3 muscles without piercing CB and continued as lateral cutaneous nerve of forearm. Dahiphale VP et al (2012)¹⁰ from their study on 40

UL reported communications between MN and MCN in 5 UL, MN was formed by 3 roots, 2 from LC (lateral cord) & 1 from MC (medial cord) in 1 UL, LC & MC joined to form a single trunk from which arose all the branches of LC & MC in 1 UL and in 1 UL, LC gave a branch to CB which then joined with medial root (MR) to form MN, MCN arose from MN gave muscular branches then continued as lateral cutaneous nerve of forearm. Jamuna M and Amudha G (2011)¹¹ from their study of 50 UL reported that MCN was absent in 3 UL (6%), in 1 UL CB received from LC; biceps and brachialis from MN. In 2nd case LC joined with MR to form MN and MN gave a common branch which supplied all the 3 muscles and in 3rd case LC gave LR to MN, a common branch arose from LC which supplied all 3 muscles and continued as lateral cutaneous nerve of forearm. CB was not pierced by the nerve in 3 cases (6%) and in 1 case (2%) MCN rejoined MN after piercing MN. Such significant variations could be the result of alterations in signaling between mesenchymal cells and neuronal growth during early stages of limb development. Once formed any developmental difference would persist postnatally.

Isolated lesions of MCN is very rare can occur from exercise, strenuous activity, cast placement, trauma and surgery. Symptoms include difficulty in elbow flexion, numbness, paraesthesia and loss of sensation over lateral aspect of forearm. Similar to cervical spine root impingement or brachial plexus lesions. Diagnosis can be made by magnetic resonance imaging and electrodiagnostic technique.



Figure 1 (a) right side

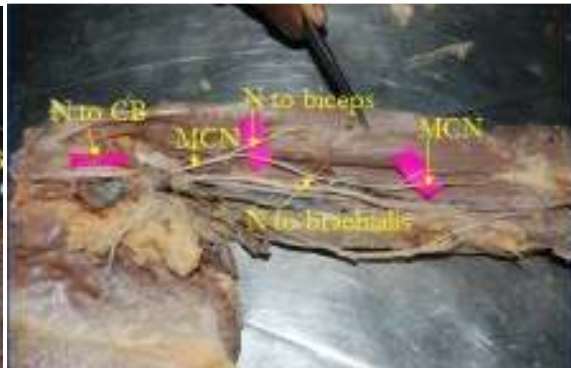


Figure 1 (b) Left side

Figure 1: Showing N to CB directly from LC and MCN not piercing CB in 40yr male cadaver Figure 1: Showing N to CB directly from LC and MCN not piercing CB in 40yr male cadaver



Figure 2 (a) Right side



Figure 2 (b) Left side

Figure 2: Showing N to CB directly from LC and MCN not piercing CB in 70yr male cadaver MCN- coracobrachialis muscle. LC- Lateral cord MCN- musculocutaneous nerve. N- Nerve

CONCLUSION

Coracobrachialis received its nerve supply directly by a thin branch from lateral cord (fibres 7th cervical nerve) of brachial plexus and MCN did not pierce CB in its course. The knowledge of course and distribution of lateral cord, their variation and level of penetration are important for performing neurotisation of brachial plexus lesions, supra and infra clavicular blocks, shoulder arthroscopy and reconstructive surgeries.

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