Introduction

As per the medical and surgical aspects, nerve supply of arm is very important. The musculocutaneous nerve (MCN) branch out from lateral cord of brachial plexus. It innervates coracobrachialis, biceps brachii and brachialis muscles and continues as the lateral cutaneous nerve of forearm without exhibiting any communication with median nerve or any other nerve. Here, unilateral variant origin of musculocutaneous nerve is reported. In an adult male cadaver, a branch of median nerve represents musculocutaneous nerve which supplies coracobrachialis, biceps brachii and brachialis muscles and continues as lateral cutaneous nerve of forearm. This branch does not pass through coracobrachialis muscle. Such several variations surgeons should keep in mind while performing surgeries of axilla and upper arm.

Case Report

In an adult male cadaver MN was seen to be different from its usual course. In the right upper limb, a branch of MN represents MCN. The motor branches to the muscles of anterior compartment of the right upper arm (i.e. coracobrachialis, biceps brachii, brachialis) found to arise from the branch of the right MN (Figure 1) and the same continued as the lateral cutaneous nerve of forearm. This branch was not passing through coracobrachialis muscle. When traced upwards, the fibers were found to be coming from the lateral root of MN. Left sided structures were as usual.

Discussion

Variants of branching pattern of MCN and MN have been well described by many authors [3, 4]. Le Minor (1992) classified these variations in to five types [5]. Type 1: no communication between the MN and MCN; type 2: the fibers of medial root of MN pass through the MCN and join the MN in the middle of the arm; type 3: fibers of the lateral root of the MN pass through the MCN and after some distance leave it to form lateral root of MN; type 4: the MCN fibers join the lateral root of the MN and after some distance the MCN arise from the MN; type 5: The MCN is absent and the entire fibers of MCN pass through lateral root of MN and fibers to the muscles supplied by MCN branch out directly from MN. In this type the MCN does not pierce the coracobrachialis muscle. Present finding indicated presence of Le Minor type V variant. Other classification for variations is suggested by Venieratos and Anagnostopoulou (1998) in relation to coracobrachialis muscle [6]. Type I: communication is proximal to coracobrachialis muscle; type II: communication is distal to muscle; type III:
neither the nerve nor the communicating branch pierce the coracobrachialis muscle. The present variation did not coincide with any of Venieratos’s classification.

The existence of this variation described in our case report may be attributed to the random factors influencing the mechanism of formation of limb muscles and the peripheral nerves during embryonic life. In the context that ontogeny recapitulates phylogeny; it is possible that the variation seen in the current study is the result of developmental anomaly. In human being forelimb muscles develops from mesenchyme of paraxial mesoderm in the fifth week of intrauterine life [7]. Regional expression of five Hox D (Hox D 1 to Hox D 5) genes is responsible for upper limb development [8]. The motor axons arrive at the base of limb bud; they mix to form brachial plexus in upper limb. The growth cones of axons continue in the limb bud [7]. The guidance of the developing axons is regulated by the expression of chemo-attractants and chemo-repulsant in highly coordinated sight specific fission. The tropic substances attract the correct growth cones or support the viability of the growth cones that happen to take the right path. Tropic substances include brain-derived neurotropic growth factor, c-kit ligand, neutrin-1, neutrin-2, etc. [9]. Significant variations in nerve pattern may be result of altered signaling between mesenchymal cells and neuronal growth cones or circulatory factors at the time of fission of brachial plexus cords.

**Clinical Significance**

Meticulous knowledge of possible variations of MCN and the MN may endow with valuable help in the management of traumatology of shoulder joint and arm as well as in circumventing iatrogenic damage during repair operations of these regions.

**References**


