Case Report:
Concurrent Variations of Lateral Pectoral, Median, and Musculocutaneous Nerves

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Citation

Submitted: Nov 23, 2016; Accepted: Dec 30, 2016; Published: Jan 31, 2017

Abstract: Brachial plexus frequently presents variations of its cords and branches. We saw concurrent variations of lateral pectoral, median and musculocutaneous nerves. There were two lateral pectoral nerves. Median nerve was formed by the union of 3 roots; two lateral roots and one medial root. Medial root arose from the ulnar nerve. Musculocutaneous nerve did not pierce the coracobrachialis muscle. There was a thick communicating branch between the musculocutaneous and median nerves. Though there are reports on individual variations mentioned above, it is very rare to see all of them in the same individual. Knowledge of these variations may be handy in axillary lymph node clearance and performing nerve blocks.

Key Words: Lateral pectoral nerve, median nerve, musculocutaneous nerve, brachial plexus

Introduction:
Brachial plexus is the nerve plexus that supplies the nerves to the upper limb. Its supraclavicular part is situated in the neck and the infracavicular part in the axilla. Infracavicular part consists of cords and branches of the brachial plexus. Many variations of the cords and branches of the brachial plexus have been reported already. Lateral pectoral nerve usually arises from the lateral cord and supplies the pectoralis major and minor muscles. Generally it does not pierce the pectoralis minor muscle. Sometimes, the lateral pectoral nerve arises from the supraclavicular part of the brachial plexus.[1] Median nerve is usually formed by union of its lateral and medial roots arising from lateral and medial cords of brachial plexus respectively. Occasionally, median nerve possesses more than two roots.[2,3] Musculocutaneous nerve is a branch of lateral cord of brachial plexus and rarely does it fail to pierce the coracobrachialis muscle.[4] Various communicating branches between median and musculocutaneous nerve have also been reported.[5] We report the combination of all above said variations in a single cadaver and discuss their possible clinical implication.

Case Report
During dissection classes for medical students, we noticed multiple variations in the left brachial plexus of an adult male cadaver aged about 75 years. There were two lateral pectoral nerves. They arose from the lateral cord of brachial plexus. One of them entered the pectoralis major muscle after passing above the upper border of the pectoralis minor muscle; while the other entered the pectoralis major muscle after piercing the pectoralis minor muscle (Figures 1 and 2). The medial root of median nerve arose from the proximal part of the ulnar nerve. The lateral root was thin and it arose from the lateral cord. After crossing the axillary artery from lateral to medial side, it divided into two roots. These two roots joined the medial root to form the median nerve, medial to the axillary artery (Figures 1 and 2). Thus the median nerve had three roots in total. Musculocutaneous nerve did not pierce the coracobrachialis muscle. The proximal part of the median nerve was thinner than the proximal part of the musculocutaneous nerve. There was a thick communicating branch between the musculocutaneous and median nerves in the distal part of the axilla. Through this communicating branch, about 50% of fibres of musculocutaneous nerve were given to the median nerve.
Origin of the median nerve in the current case differs from the earlier reported cases mainly because its medial root arose from the ulnar nerve. Axillary artery being crossed by the lateral root, division of lateral root into two branches and formation of median nerve medial to the axillary artery also make the case more interesting. Anaesthesiologists performing nerve blocks, surgeons performing resections of neoplasms and dealing with trauma of the axilla are advised to be aware of this variation of the median nerve.

Musculocutaneous nerve may be totally absent [9], may not pierce coracobrachialis [4] and may give communicating branches to nearby nerves in the axilla.[10] In the current case, the nerve did not pierce the coracobrachialis but its branches and distribution was normal. The eye catching feature of the musculocutaneous nerve in this case is that major part of it continued into the median nerve as the communicating branch. This communicating branch contributed about 50% of the total thickness of the median nerve beyond the axilla. Injury to this branch can result in significant sensory and motor loss in the upper limb.

**Conclusion:**

Though individual variations of lateral pectoral, median and musculocutaneous nerves have been reported as individual cases, reports on combined variations of all the three are lacking. Origin of medial root of the median nerve from ulnar nerve is the unique feature of this case. Knowledge of these variations can be very important for surgeons while cleaning axillary lymph nodes and performing reconstructive and cosmetic breast surgeries. It is also of importance to plastic surgeons and anaesthesiologists.

**References**


