

Median Nerve Branch Innervating the Brachialis Muscle – A Case Report –

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Abstract : We observed a slender nerve branch of the lateral root of the median nerve innervating the brachialis muscle, which is normally innervated by the musculocutaneous nerve, at the left arm of a Korean male (age, 74 years). The present nerve branch was accompanied with the communicating branch between the median and musculocutaneous nerves and supplied to the medial inferior portion of the brachialis muscle. The spinal root origins of this branch were C5 and C6. The nerve fiber number of the nerve branch innervating the brachialis muscle was 328. This variation may be very rare case and was different from previous observation.

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Key words : Median nerve, Brachialis muscle, Median-musculocutaneous communication

Introduction

The brachialis muscle is located at the anterior compartment of the upper arm. This muscle was innervated by musculocutaneous nerve, which is composed of fifth, sixth and seventh cervical nerves.

The brachialis muscle has been reported to be often innervated by a slender radial nerve branch (Ip and Chang 1968, Mahakkanukrauh and Somsarp 2002, Spinner et al. 2003, Blackburn et al. 2007). This radial branch innervates the lateral inferior portion of the brachialis muscle. The frequency of this occurrence was from 67.0% to 81.6%. On the other hand, median nerve branch innervating the brachialis muscle may be a very rare occurrence.

Communication between the median and musculo-

cutaneous nerves has been frequently reported (Venieratos and Anagnostopoulou 1998, Maeda et al. 2009). Maeda et al. (2009) classified the different types of the communications between the median and musculocutaneous nerves. According to their results, the brachialis muscle might be innervated by the median nerve in two cases: when the musculocutaneous nerve is absent and when the median nerve branch communicates with a branch of the musculocutaneous nerve innervating the brachialis muscle.

The present variation was different from the Maeda et al.'s results (2009).

Case Report

A slender nerve branch of the lateral root of the median nerve innervating the brachialis muscle, which is normally innervated by the musculocutaneous nerve, was observed at the left arm of a Korean male (age, 74

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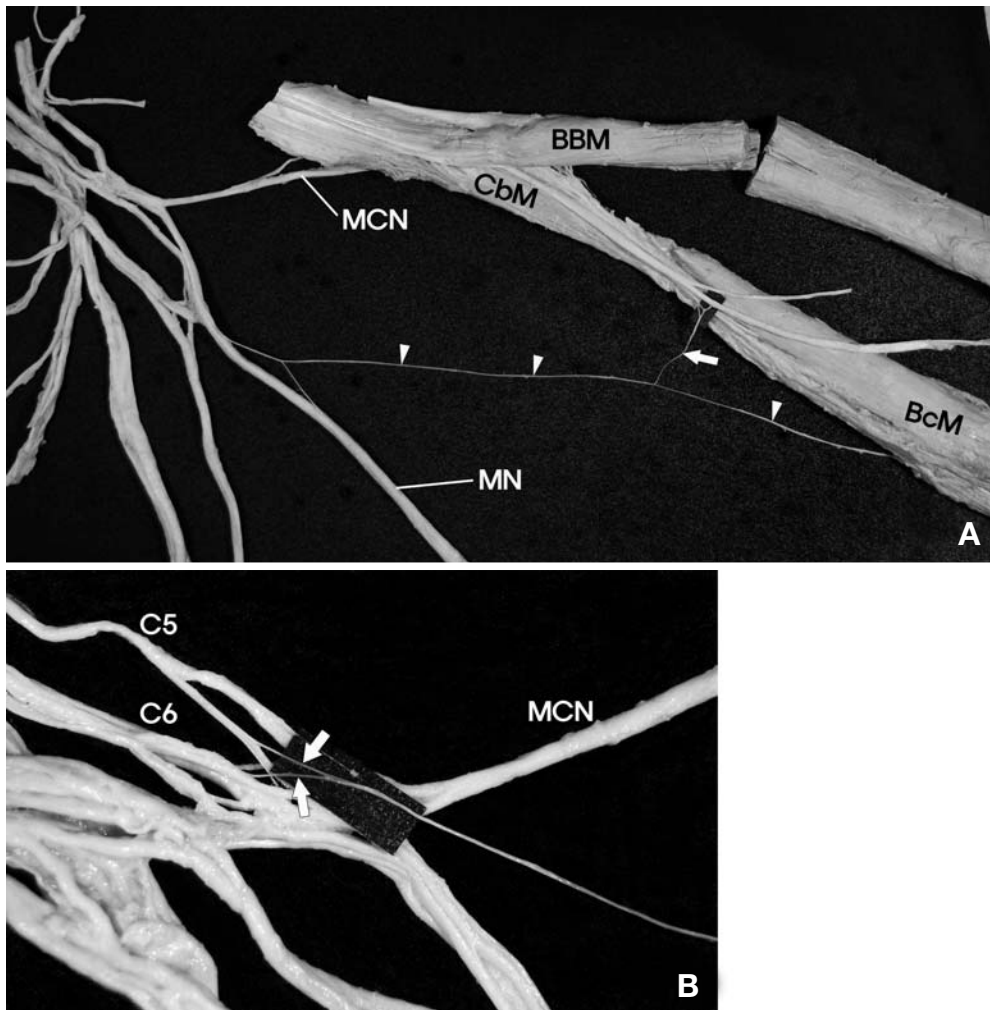


Fig. 1. A: The median nerve branch innervating the brachialis muscle (arrow head) and the communication between the median and musculocutaneous nerves (arrow). B: The nerve branch originated from C5 and C6. MCN, musculocutaneous nerve; MN, median nerve; CbM, coracobrachialis muscle; BBM, biceps brachii muscle; BcM, brachialis muscle.

years). The present nerve branch was accompanied with the communicating branch between the median and musculocutaneous nerves and supplied to the medial inferior portion of the brachialis muscle (Fig. 1A). The spinal root origins of this branch were C5 and C6 (Fig. 1B). The nerve fiber number of the nerve branch innervating the brachialis muscle was 328 and that of the communicating branch was 129. Therefore

the most nerve fibers are directly innervated to brachialis muscle.

Discussion

The brachialis muscle has been reported to be often innervated by a slender radial nerve branch (Ip and

Chang 1968, Mahakkanukrauh and Somsarp 2002, Spinner et al. 2003, Blackburn et al. 2007). This radial branch innervates the lateral inferior portion of the brachialis muscle. The frequency of this occurrence was from 67.0% to 81.6%. Oh et al. (2009) observed the spinal origin of this radial nerve branch in 20 samples of Koreans. The frequency according to spinal origins was 25.0% derived from C5 (5/20 cases), 55.0% from C6 (11/20), 15.0% (3/20) from C5 and C6 and 5.0% (1/20) from C6 and C7. On the other hand, median nerve branch innervating the brachialis muscle may be a very rare occurrence and the spinal origin was C5 and C6, which was similar origins with the origins of musculocutaneous nerve innervating the brachialis muscle.

Communication between the median and musculocutaneous nerves has been frequently reported (Venieratos and Anagnostopoulou 1998, Maeda et al. 2009). In the present case, the median nerve branch innervated the brachialis muscle and communicated between the median and musculocutaneous nerves.

Maeda et al. (2009) classified the different types of the communications between the median and musculocutaneous nerves. According to their results, the brachialis muscle might be innervated by the median nerve in two cases: when the musculocutaneous nerve is absent and when the median nerve branch communicates with a branch of the musculocutaneous nerve innervating the brachialis muscle. In the present case, the musculocutaneous nerve was normal presentation and the nerve branch innervating the brachialis muscle was separately

derived from the median nerve. Therefore, the present case of nerve branch innervation may be a different type from the second case reported by Maeda (2009).

In this cases, when the musculocutaneous nerve whole cutting injuries happens at the shoulder region during the shoulder surgery, a partial region of brachialis muscle may be contract, and the surgeon wrongly decided the musculocutaneous nerve intact.

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위팔근에 분포하는 정중신경 가지

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간추림 : 정상적으로 근육피부신경이 분포하는 위팔근에 정중신경의 가는 가지가 분포하는 예를 한국성인 남성의 왼쪽 팔에서 관찰하였다(나이: 74세). 이 정중신경의 가지는 정중신경과 근육피부신경의 연결과 함께 출현하였으며 위팔근의 안쪽아래의 일부분에 분포하고 있었다. 이 신경가지는 다섯째와 여섯째 목신경에서 기원하였으며 328개의 유수신경섬유로 구성되어 있었다. 이러한 변이는 과거에 보고된 정중-근육피부신경 연결형의 일부 형태에서 정중신경의 일부 성분이 두 신경의 신경연결을 경유하여 위팔근에 분포하는 형태와 달리 이 예에서는 정중신경에서 분지되어 나온 가지가 두 신경의 신경연결을 경유하지 않고 직접분포하는 유형으로 현재까지 기술된 적이 없는 형태이다.

찾아보기 낱말 : 정중신경, 위팔근, 정중-근육피부신경연결