

Evidence of lateral antebrachial cutaneous nerve entrapment during autopsy

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Compression of the lateral cutaneous nerve of the forearm is a rare clinical entrapment syndrome. This report describes the compression of the lateral antebrachial cutaneous nerve at the level of the lateral margin of the biceps brachii tendon identified during autopsy. This is the first cadaveric case reported in the literature. The anatomy, the possible areas of entrapment, the most frequent diagnostic problems and the main therapeutic options for this rare occurrence are also discussed. (Folia Morphol 2008; 67: 218–220)

Key words: lateral antebrachial nerve, cutaneous, forearm, autopsy, entrapment

INTRODUCTION

As it descends laterally between the biceps and the brachialis, the musculocutaneous nerve pierces the deep fascia lateral to the tendon of the biceps just below the elbow, continuing as the lateral cutaneous nerve of the forearm (LCNF). The latter nerve passes deep to the cephalic vein, descending along the radial border of the forearm to the wrist supplying the skin of the anterolateral surface of the forearm. At the wrist the LCNF pierces the deep fascia and passes to the base of the thenar eminence, ending in the cutaneous rami [1, 11, 13].

Compression of the LCNF is an infrequently identified entrapment neuropathy. Entrapment of the LCNF most frequently occurs at the point where the nerve arises from beneath the biceps tendon and pierces the deep fascia. A case of LCNF entrapment distal to the elbow flexion crease has also been described, but this was attributed to an anatomical variation. Proximal musculocutaneous nerve compressions are mainly due to coracobrachialis hypertrophy, whereas distally compression occurs between the bicipital tendon or aponeurosis and the brachialis muscle [2, 3, 8, 11, 12].

This report describes a case of LCNF, discovered during cadaveric preparation, in a 78 year-old male with no history of previous upper limb trauma.

CASE REPORT

During a routine dissection course at the Department of Anatomy of the Aristotle University of Thessaloniki, Greece, a brachial fascia band bridging the LCNF in the palmar surface of the cubital region was identified in a 78-year old male (Fig. 1). The band was triangular in shape with its tip arising from the midpoint of the palmar surface of the brachial fascia, approximately 1.25 cm above the elbow flexion crease. The band was almost 3.2 cm in length passing obliquely medially and inferiorly, inserting into the brachial fascia with a base measuring 1.1 cm.

The fascial band crossed the LCNF superficially at a distance of 0.9 cm from its tip. The band compressed the LCNF at a distance of 2.9 cm after its exit from the lateral margin of the bicipital tendon. LCNF emerged underneath the fascial band entering the subcutaneous tissue just below the cephalic vein (Fig. 2).

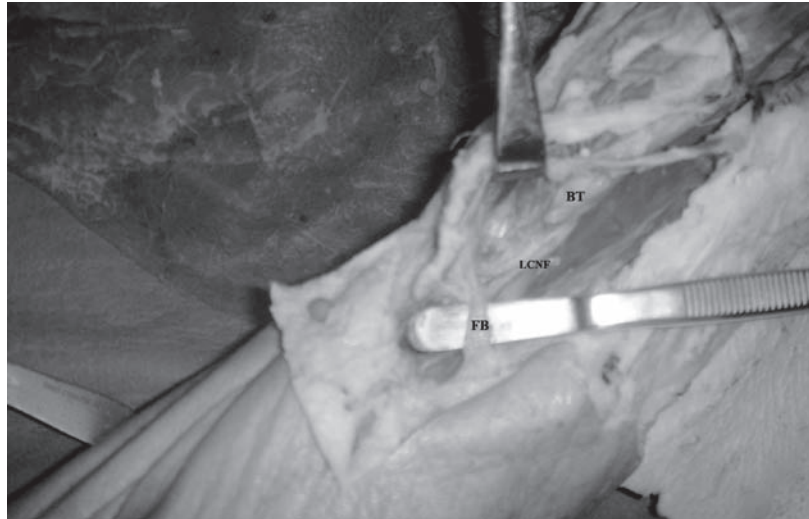


Figure 1. A brachial fascia band bridges the lateral cutaneous nerve of the forearm (LCNF) at the palmar surface of the cubital region; FB — fascial band, BT — bicipital tendon.

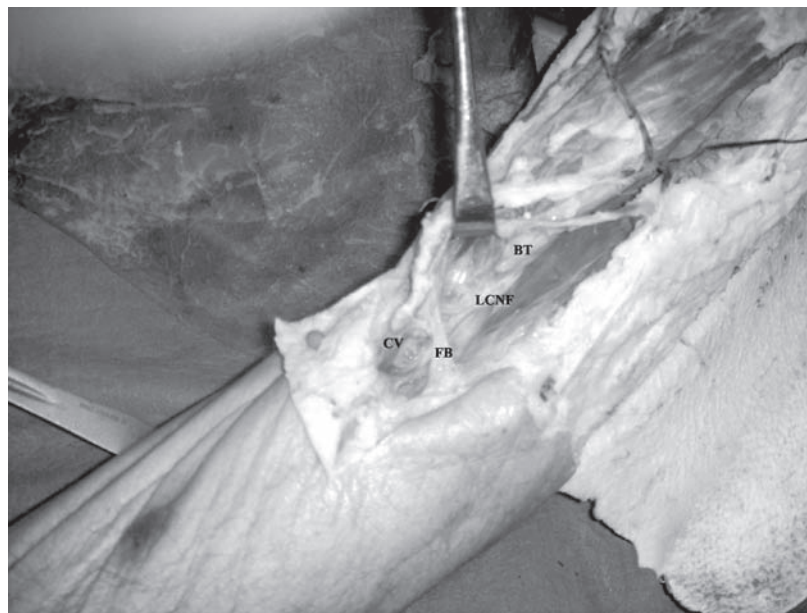


Figure 2. The lateral cutaneous nerve of the forearm (LCNF) emerging underneath the fascial band enters the subcutaneous tissue, just below the cephalic vein; FB — fascial band, BT — bicipital tendon, CV — cephalic vein.

DISCUSSION

The lateral cutaneous nerve of the forearm is the sensory terminal branch of the musculocutaneous nerve. It runs in the upper arm, where it is protected by the biceps brachii muscle, and emerges from beneath the lateral margin of the biceps proximally to the elbow, piercing the brachial fascia, becoming subcutaneous. This is the standard course, although it has also been reported that the LCNF emerges in

a variable manner thereafter to become subcutaneous. Specifically, according to some authors the LCNF surfaces from the lateral aspect of the biceps tendon and pierces the deep fascia at the level of the interepicondylar line. It must be mentioned however that the group of fasciculi of the musculocutaneous nerve to the biceps, brachialis and lateral cutaneous nerve of the forearm are constantly located from lateral to medial. Moreover, it has also been

demonstrated that the LCNF is associated with the cephalic vein within the subcutaneous fat in almost every individual [1, 3, 4, 11, 13].

The musculocutaneous nerve can be compressed in various anatomical areas. Proximal compressions are located at the level of its passage within the coracobrachialis and attributed to coracobrachialis hypertrophy, whereas distal compressions occur at the elbow flexion crease between the bicipital tendon or aponeurosis and the brachialis muscle. Very rarely the site of the entrapment is distal to the elbow crease [2, 6, 15].

Narasanagi was the first to describe compression of the lateral antebrachial cutaneous nerve in 1972 [12]. Four years later Hale reported the case of a physician suffering from LCNF compression and named the condition "handbag paraesthesia" [9]. Since then, numerous clinical cases have been described in the literature [2, 7, 8, 11, 15]. To our knowledge the present case is the first identified during cadaveric preparation.

The possibility of entrapment of lateral cutaneous nerve of the forearm must be included in the differential diagnosis of lateral elbow pain. Patients usually present with pain around the elbow. Physical examination may demonstrate tenderness over this area, a positive Tinel's sign lateral to the biceps tendon and hypaesthesia of the anterolateral aspect of the forearm. Some patients may manifest paraesthesia along the volar aspect of the distal forearm. It is also significant to distinguish between forearm paraesthesia caused by disorders of the LCNF and the superficial radial nerve [8, 10, 11, 14]. Other conditions that may produce similar symptoms include lateral epicondylitis, cervical radiculopathy, brachial plexus injury and median neuropathy of the forearm [7, 8].

Diagnosis of LCNF entrapment depends on detailed history, thorough physical examination and good knowledge of anatomical landmarks. Injections of local anaesthetic in the suspected area for diagnostic purposes can discriminate between LCNF entrapment, lateral epicondylitis and radial tunnel syndrome. In addition, electrodiagnostic studies can be very helpful in confirming the diagnosis of LCNF entrapment [11].

Whatever the cause of LCNF compression, treatment alternatives include resting and general restriction of activities, administration of non-steroidal anti-inflammatory agents, splinting, the use of ultrasound techniques, steroidal injections locally,

electrical nerve stimulation and surgical exploration and decompression [5]. Regarding surgical intervention, it has not been elucidated whether resection of the lateral margin of the biceps is mandatory during decompression of the LCNF or not [5].

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