

Case Report

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Compression of the Ulnar Nerve: from Froment's Sign to Differential Diagnosis



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Introduction

Compression of the ulnar nerve at the elbow is considered the second most common compression neuropathy of the upper limb after carpal tunnel syndrome. The lesions that compromise this nerve have various causes, infectious, inflammatory, and traumatic. Ulnar nerve compression in the cubital fossa should always be considered in the differential diagnosis. We present a case of ulnar entrapment injury and, based on current literature, discuss the clinic, differential diagnosis, and treatment options [1,2].

Keywords: Carpal Tunnel Syndrome; Neural Leprosy; Neurolysis; Neuropathy; Infectious

Case Report

RCP, 38 years old, male, doctor, no comorbidities. He reports that about 5 years ago he began to show impaired dexterity and muscle weakness with atrophy of the distal third of the left brachial artery. At the time, he evoked feelings of tightness in the elbow region and slight alterations to the touch of the last fingers of the hand, especially when it rested on surfaces. Neurological examination shows damage to the muscles innervated by the ulnar nerve, muscle atrophy (Figures 1 & 2), paresis of certain muscles, as well as superficial hypoesthesia in the medial region of the fourth and fifth metacarpals. Normal deep reflexes. Sign of Froment present. Electroneuromyography: isolated mononeuropathy of the ulnar nerve. Elbow ultrasound: slight change in signal and increase in thickness of the ulnar nerve. MRI of the cervical spine:

normal. Other differential diagnoses were excluded, such as pure neural leprosy (Figure 3).

Discussion

Patients who frequently must flex the forearm are more susceptible to compression of the ulnar nerve in the elbow (telephone operators and workers with machines vibration). Another predisposing factor is the practice of sports requiring throwing in forced flexion above the head and rapid acceleration (baseball, golf). In our case, the patient, in addition to being a surgeon, was a tennis player [3]. At the elbow, the ulnar nerve passes through a tunnel of tissue (the cubital tunnel) that passes under a bony bump on the inside of the elbow. This bony bump is called the medial epicondyle. The place where the nerve passes

under the medical epicondyle is called the “funny bone”. At the level of the funny bone, the nerve is close to the skin and hitting it causes a feeling of shock . The ulnar nerve gives sensation (feeling) to the little finger and to half of the ring finger on both the palm and back side of the hand (photo 3) [4]. In the forearm, via the muscular branches of the ulnar nerve: Flexor carpi ulnar is, Flexor digitorum profundo's (medial half); In the hand, via the

deep branch of the ulnar nerve: The muscles of the hypothenar eminence, Adversary muscle of the lesser, Abductor minor muscle, Flexor brevis muscle; The third and fourth; lumbrical muscles; dorsal interosseous muscles; Palmar interosseous muscles; adductor muscle of the thumb; Flexor pollicis brevis muscle (deep head). In the hand, via the superficial branch of the ulnar nerve: palmaris brevis muscle [5].



Figure 1: Note muscular atrophy in the forearm and the presence of a hand with a sign of papal blessing.



Figure 2: Atrophy of the adductor pollicis muscle.



Figure 3: Ulnar Nerve Damage Causes Hypoesthesia or Anesthesia in the Medial Region of the Fourth Metacarpal and Fifth Metacarpal - Both in the Palmar and Dorsal Regions.

The present case presented a positive Froment's sign: test to assess paralysis of the ulnar nerve whose segmentation is C8 and T1, more precisely the action of the adductor muscle of the thumb. The test assesses the patient while holding a sheet of paper with their thumb. The sign that appears when the patient, trying to squeeze a paper between the thumb and index finger, adduction of the thumb becomes impossible and is replaced by flexion (median nerve). It indicates paralysis of the adductor pollicis muscle innervated by the ulnar.

Ulnar nerve mononeuritis can occur with infectious causes (e.g., leprosy), hereditary neuropathies, and vasculitis. We cannot forget the lesions of the ventral roots of C8-T1 in the cervical region. Acromegaly can affect this area, although it is a rare cause. Patients with diabetes mellitus and/or hypothyroidism are also more susceptible. High resolution ultrasound (USGAR) of the elbow and above the elbow is an interesting examination in distinguishing between neuropathies of the ulnar nerve of the elbow due to leprosy and entrapment. All patients should undergo palpation, electroneurography, and ultrasound of the right and left ulnar nerves. An MRI of the cervical region is also usually requested [6-8].

The initial treatment of the syndrome is conservative. If it fails or neurological deficits are present surgical option is considered. The following decompression techniques are reported in the literature: simple decompression (neurolysis), subcutaneous intramuscular submuscular transpositions, subtotal medial spondylectomy. The patient in question did not undergo surgical treatment, he unfortunately had irreversible sequelae [9].

Conclusion

The diagnosis and appropriate treatment of ulnar nerve entrapment requires all members of the healthcare team to have a basic level of understanding of the pathology of entrapment, as well as their role in managing the patient's symptoms. Primary care physicians and mid-level practitioners are often the first steps in diagnosing ulnar nerve entrapment syndromes. A basic understanding of upper extremity anatomy is paramount in providing initial guidance to patients with symptoms of nerve compression, as well as directing them to the appropriate provider for further management.

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