Case Report

Ulnar nerve entrapment neuropathy due to extraneural ganglia at the elbow: A case report

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Abstract

A rare case of ulnar nerve entrapment due to extraneural ganglion at the elbow is presented. A 64-year-old right-handed man presented with a 6 months history of pain in his right elbow, progressive numbness, tingling, atrophy and weakness in his right hand. Electrophysiological studies demonstrated a severe conduction block affecting the ulnar nerve in the retrotrochlear groove but without any sign of major axonal loss. Neurological examination showed sensory loss of the little and ring fingers and reduced gripping power of the right hand with hypotenar and intrinsic muscles atrophy. The sign of Tinel’s and Phalen's test was positive. The cyst was not within the epineurium of the ulnar nerve and contained yellowish jelly like material. After an uneventful postoperative course, the patient’s neurological status was gradually improved and he had practically no neurological deficit at follow-up of 1 year. Although extraneural ganglia at the elbow is a rare cause, it must be investigated at the onset of cubital tunnel syndrome.

Key words: Elbow, entrapment neuropathy, ganglion, ulnar nerve

INTRODUCTION

Compression of ulnar nerve at cubital tunnel is the second most common compression neuropathy of upper extremities after carpal tunnel syndrome. Medial elbow ganglia originating from ulnahuneral joint is reported as a rare cause (3, 8, 14). Its prevalence is reported as <3 to 8 % for cubital tunnel syndrome patients in the literature (1, 6, 7). We present a case that had ulnar nerve compression due to elbow extraneural ganglia.

CASE REPORT

A 64-year-old right-handed male was admitted to the hospital with complaining of elbow pain. The pain worsens at rest and accompanied by dysesthesia, paresthesia. His neurological examination revealed positive Tinel’s sign and Phallen’s test on the right ulnar tunnel, as well as atrophy of hypotenar and intrinsic muscles of the right hand and hypoesthesia of right C7 and C8 dermatomes.
Electroneuromyography showed severe conduction block in ulnar nerve at the proximal part of the medial epicondyl without any significant axonal loss. The patient underwent ulnar nerve decompression under general anesthesia. The ulnar nerve was found to be compressed and laterally displaced by a firm round cystic mass. The cyst was not within the epineurium of the ulnar nerve and contained yellowish jelly-like material. It was dissected from the epineurium and excised. Histopathological examination demonstrated a multilobulated and degenerative cystic lesion with local fibrin material in its walls lying in fibrocollagenous tissue stroma (Figure 1). Histopathological diagnosis was ganglia. One year after the surgery evaluation signs of rearrangement of motor unit potential were detected at electroneuromyography. After an uneventful postoperative course, the patient’s neurological status was gradually improved and he had practically no neurological deficit at follow-up of 1 year.

![Figure 1. Myxoid degeneration at fibrotic wall of cystic lesion.](image)

**DISCUSSION**

A review of medical literature indicates many different causes of ulnar tunnel syndrome, including ganglions, repetitive trauma neuropathies, ulnar artery thrombosis, anomalous muscle bellies or fibrous bands, fractures or dislocations of the ulnar side of the wrist, rheumatoid tenosynovitis, osteoarthritis of the radio-ulnar and carpal joints, hemangiomas, lipofibromas, giant cell tumors, neuroma, accessory carpal ossicle, bipartite hamate, edema after an insect bite, and activities with prolonged periods of wrist hyperextension such as bicycle racing (4, 6, 9).

On the other hand ganglions as a rare cause of ulnar nerve compression is a rare entity. Histopathological examination has demonstrated that the ganglia develop from connective tissue by myxoid degeneration (12). The exact pathogenesis of ganglion cysts is uncertain, but two main theories have been proposed (10, 11). One theory proposes that the ganglion arises within the nerve itself due to cystic degeneration of the epineurium or perineurium, cystic degeneration in a schwannoma, intraneural hemorrhage, or metaplasia of the connective tissue of the nerve trunk (10, 11). Another theory, which currently holds the most consensuses, regards these cysts as of synovial origin (10, 11). It proposes that ganglion originates from the articular or paraarticular tissue and subsequently tracks along the sheath of a small articular nerve to its final position in sheath of a major nerve. A stalk connecting the cyst with a nearby joint, which is reported to be present in ~40% of the cases, is considered a finding in favor of this hypothesis (10, 11). In our case, a stalk connecting the cyst with the joint was not found at surgery. The patients with intra and extraneural ganglion cysts present with signs and symptoms caused by compression effect on the involved nerve as our case. These include localized or referred pain, paresthesia, and partial or complete paresis of the innervated muscles (6, 15). Most common symptom, as seen in our case, is pain on medial surface of the elbow at rest. Neurological examination usually shows C7-8 and T1 dermatomal hypoesthesia, tenar and hypotenar atrophy, loss of thumb adduction and distal phalanx flexion in forth and fifth fingers. Phalen’s test and Tinel’s sign were both positive. A mass is occasionally palpable along the course of the involved nerve. Electromyographic studies are reliable in determining the site of nerve lesion but cannot demonstrate the morphological character of the lesions (6).
The lesion was not palpable but EMG showed the lesion in our case. Imaging methods like MRI, CT, ultrasonography and arthrography are helpful for diagnosis. The MRI findings reveal the lesions as being located along the course of the involved nerve, situated close to joint, with homogeneous low signal intensity on T1-weighted images and high signal intensity on T2-weighted images (2, 6, 13, 15). Enhancement effect after intravenous injection of contrast agent has not been observed in the previously reported cases (2, 13). CT shows the ganglion as a round, sometimes bi- or multiloculated mass with thin and well defined wall that does not enhance after contrast agent administration (5, 10). No imaging method was carried out in our patient.

The distinction between intra- and extraneural ganglion may be difficult. The diagnosis of extraneural ganglion can be established by identifying the cyst and nerve separately. Intra neural ganglion affects longer nerve segment. But there is no statistical data about the length of an intra- or extraneural ganglion (15). In our case, a nerve trunk was not identified adjacent to the cyst. In the large series of Kuta et al., most ganglia were not detected before surgery and were found by chance while the ulnar nerve was being freed in the cubital tunnel (6). However, the definitive diagnosis was achieved only by the histopathological examination. In fact, most authors look upon the absence of synovial membrane as a criterion allowing differentiation of an intraneural cyst from a synovial ganglion originating from a diarthroidal joint (6, 9). In our case we excised a hard mass with a hemorrhagic membrane.

Ganglions are divided into five types according to their shape and size (6). They can be bigger than 5 mm or may be 5–10 mm or even bigger than 10 mm, round or multinodular. Ganglions may compress the nerve from different directions, compression from the lateral size being the most common form of compression. (6). In our case compression from the posterior site was seen.

Simple decompression by excision of the ganglion, anterior transposition of the ulnar nerve or epicondylectomy is the preferred surgical modalities (6). In our case, ulnar nerve had no compression in the cubital tunnel but after it emerged from the tunnel there was compression effect of the intraneural ganglion so decompression was accomplished by excision of the ganglion by using microsurgical technique. Generally no complication in the early or late postoperative period was seen (6). Short or long term follow-up shows that symptoms of the patients improve in the order of appearance and that their neurological deficits get better in the long run (3, 6). In our case, pain was relieved dramatically and other symptoms and neurological deficits had become better after the surgery. By that case we wanted to emphasize that presence of extraneural ganglion cyst in the elbow should be kept in mind as a rare cause of ulnar nerve entrapment neuropathy.

**Dirsekte ekstranöral gangliona bağlı ulnar sinir tuzak nöropatisi: Olgu sunumu**

**ÖZET**


**ANAHTAR SÖZÇÜKLER:** Dirsek, ganglion, ulnar sinir, tuzak nöropatisi
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