Intraneural ganglion cyst of the ulnar nerve causing cubital tunnel syndrome masquerading a peripheral nerve abscess of a neuritic leprosy

Balaji Zacharia a, *, Sanoj Pulluparambil Poulose b, Midhun Madhu c

Depts of Orthopedics, Government Medical College, Kozhikkode, Kerala, PIN 673008, India
b Department of Orthopedics, Jubilee Mission Medical College and Research Center, Thrissur, Kerala, India
c Jubilee Mission Medical College and Research Center, Thrissur, Kerala, India

Abstract

Cubital tunnel syndrome is a common entrapment neuropathy affecting the ulnar nerve. Intraneural ganglion cyst and nerve abscess due to leprosy can cause cubital tunnel syndrome. In this article, we are presenting a case of cubital tunnel syndrome caused due to an intraneural ganglion cyst in a 48-year-old lady. It had produced some diagnostic confusion due to its clinical similarity with nerve abscess. This is the first report of a case of an intraneural ganglion cyst of the ulnar nerve masquerading the diagnosis of a nerve abscess.

1. Introduction

Cubital tunnel syndrome is the second commonest peripheral mononeuropathy with a prevalence of 5.9%. The ulnar nerve (UN) can be compressed near the medial intermuscular septum, ligament of Struthers, retroepicondylar groove, and between the origin of two heads of flexor carpi ulnaris. It is common on the left side. Smoking, recurrent subluxation, and male gender are at high risk.1 The UN originates from the C7, C8, and T1 nerve roots. After the formation in the medial cord, it traverses medial to the axillary artery. Later it pierces the medial intermuscular septum and lies in the posterior compartment where it passes through the cubital tunnel. The cubital tunnel is between the medial epicondyle and olecranon and is bounded posteriorly by Osborne’s ligament and rarely by the anconeus epitrochlearis muscle. Flexion of the elbow can cause compression of UN in the cubital tunnel.2 Intraneural ganglion cysts (INGC) are rare mucinous cysts seen in the epineurium of nerves. The UN is the second common site of INGC after the peroneal nerve. INGC can cause UN entrapment at the elbow and wrist. They are associated with painless swelling in the nerve.3 Pure neuritic leprosy manifests with neurological symptoms without any skin manifestations. Nerve abscess due to pure neuritic leprosy producing nerve abscess is reported.4 We are reporting an interesting case of INGC of the ulnar nerve masquerading the clinical features of nerve abscess due to leprosy.

2. Case presentation

A 48-year-old female presented to us in February 2019. She noticed progressive numbness of her right hand for nearly a year. Her symptoms aggravated during the night and activities requiring flexion of the elbow like using a phone. She experienced weakness in her right hand recently. She found it difficult to make a fist and keep the fingers close to each other. She was not on any medication and there were no constitutional symptoms. At the time of examination, there was wasting of the hypothenar muscles and minimal clawing of the 4th and 5th fingers of the right hand (Fig. 1). She had loss of sensations of the medial one and half fingers and medial half of the dorsum of the right hand. There was a weakness of the hypothenar muscles adductor pollicis muscles and flexor carpi ulnaris and medial half of flexor digitum profundus. All the interossei and the medial two lumbricals were also weak.
There weren't any features of abnormalities of the cervical spine, thoracic outlet syndrome, or pathologies in the axilla. There was isolated thickening of UN behind the medial epicondyle without any subluxation. The Elbow flexion test was positive.²

Routine blood investigations including ESR, CRP, and liver function tests were normal. A nerve conduction study of the right UN showed delayed conduction at the elbow level. An ultrasound scan showed thickening and fluid collection in the epineurium (Fig. 2). She got symptomatic relief after the surgery. There was no recurrence of the lesion after 2 years.

She was treated with deroofing of the cubital tunnel and excision of the cyst and anterior transposition of UN (Fig. 3). Histopathology showed a fibro collagenous wall without lining epithelium and lose fibromyxoid tissue inside the cyst suggestive of INGC (Fig. 4).

We obtained consent for publication from the patient.

---

Fig. 1. The photograph of the right hand showing minimal clawing of little and ring finger due to high ulnar nerve palsy (ulnar nerve paradox).

Fig. 2. An ultrasound scan of the elbow (A & B) showing thickened ulnar nerve behind the medial epicondyle and encased by cystic space without calcification and internal vascularity (Arrow).

Fig. 3. Intraoperative images (A) showing the thickened and enlarged ulnar nerve behind the elbow entering into the cubital tunnel (B) showing the original size of the ulnar nerve after the excision of the cyst.
cold abscess without features of inner nerve abscess in the pure neuritic type of leprosy can behave like a cold abscess. The right ulnar nerve caused some diagnostic confusion. This led us to think of INGC of UN causing cubital tunnel syndrome. The ulnar paradox due to the weakness of the long flexors was a cause for minimal clawing. The isolated thickening of the ulnar nerve at the elbow: A case report. BMC Neurology, 18 (1).


### Table 1

<table>
<thead>
<tr>
<th>Reference</th>
<th>Clinical features</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Li, P., Lou, D., &amp; Lu, H. (2018).</td>
<td>The cubital tunnel syndrome caused by a 57-year-old woman with pain numbness and weakness of the left hand.</td>
<td>USG guided aspiration followed by excision and anterior transposition of the UN</td>
</tr>
</tbody>
</table>

3. Discussion

We diagnosed our case as high ulnar nerve palsy with cubital tunnel syndrome. The ulnar paradox due to the weakness of the long flexors was a cause for minimal clawing. The isolated thickening of the right ulnar nerve caused some diagnostic confusion. This led us to consider the diagnosis of the pure neuritic type of leprosy. The nerve abscess in the pure neuritic type of leprosy can behave like a cold abscess without features of inflammation. Our region is having a high prevalence of the neuritic type of leprosy. The ultrasound also showed a cystic lesion with a fluid collection. This also made us think in terms of pure neuritic leprosy with ulnar nerve abscess. But the histopathology report was very surprising and the diagnosis was INGC of UN. This is the first case in the literature where an INGC masquerading the diagnosis of a nerve abscess due to leprosy.

There are very few cases of INGC in the past. In 1895 Zum Busch gave the earliest description. There are many theories regarding its formation. Degeneration of periarticular tissues, intraarticular synovial cyst, hamartoma, intraneural hemorrhage, repetitive microtrauma, and invasion of ganglion cyst into the epineurium are some of the proposed theories regarding its origin. There are very few reports of INGC of UN causing cubital tunnel syndrome (Table 1). The excision of the lesion and decompression was curative without recurrence. Aspiration of the cyst produces recurrence.

Pure neuritic leprosy affects large nerve trunks or their branches. Single or multiple nerves can be affected. There is nerve thickening and no skin manifestations. The UN is the commonest site. Nerve abscess is seen in 12.5% of cases. They behave like a cold abscess. They can mimic soft tissue tumors, neuroma, or lymphadenitis.

The clinical features of cubital tunnel syndrome include altered sensations in the volar and dorsal aspect of little and ring fingers. Loss of coordinated movements and weakness of the hand can be seen. Symptoms are exacerbated during flexion of the elbow. Specific tests like elbow flexion test, Wartenberg test, Froment’s sign, Jeanne signs, and scratch collapse test will be positive. Sensory loss along the distribution of UN can be demonstrated. A nerve conduction study may help in diagnosis. There are two classifications commonly used, one by Dellon and another by Mc Gavan. Nonsurgical management like splinting, avoidance of pressure on the medial aspect of the elbow, avoid prolonged rest in the flexed position of the elbow are useful in mild to moderate cases. In advanced cases, surgical management like decompression, medial epicondylectomy, or anterior transposition can be done.

This case is presented to highlight the importance of considering INGC as a differential diagnosis of nerve swelling.
4. Conclusion

The INGC can be a rare differential diagnosis of nerve abscess of leprosy in endemic areas.

Funding

We have not accepted any financial assistance from within or outside our institution for collecting data, writing the manuscript, or for its publications.

Ethical standards

This manuscript is prepared in compliance with ethical standards.
We got an IRB waiver for this report.

Author statement

Contributions of the author; collecting data, analyzing, writing, and editing the manuscript.

Declaration of competing interest

We have no conflict of interest for this manuscript and we have not accepted any financial assistance from within or outside of our institution for collecting data, writing the manuscript, and for its publications.

References