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Cubital Tunnel Syndrome In A 42-Year-Old Man: A Case Report And Literature Review

Monsif Salek[1], Aymane Bijbij[2], Habib Belamlih[3], Soufiane Belabbes[4], Taoufik Africha[5]

Department Of Diagnostic And Interventional Radiology, Military Hospital Of Meknès, Hassan II University Hospital, Fez, Morocco
Faculty Of Medicine And Pharmacy, Sidi Mohamed Ben Abdellah University, Fez, Morocco

Abstract
Cubital tunnel syndrome (CuTS) is the second most common peripheral nerve entrapment neuropathy after carpal tunnel syndrome, resulting from compression of the ulnar nerve at the elbow. It typically presents with paresthesia in the ulnar nerve distribution and, in advanced cases, motor weakness. We report the case of a 45-year-old man with numbness of the ring and little fingers of the right hand, diagnosed with cubital tunnel syndrome. Clinical presentation, diagnostic work-up, and management are discussed, along with a review of similar cases in the literature.

Keywords: *Cubital tunnel syndrome (CuTS), ulnar nerve entrapment, peripheral neuropathy, elbow, nerve conduction studies.*

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I. Introduction

Cubital tunnel syndrome is caused by chronic compression or irritation of the ulnar nerve as it passes through the cubital tunnel at the elbow [1]. It is the most frequent site of ulnar nerve entrapment and the second most common entrapment neuropathy overall [2].

The condition is often related to prolonged elbow flexion, repetitive trauma, or anatomical narrowing of the cubital tunnel. Clinically, it presents with sensory symptoms in the ulnar nerve territory and, in advanced cases, weakness of ulnar-innervated hand muscles [3].

We present the case of a middle-aged man with isolated sensory symptoms, highlighting the diagnostic process and management strategies in comparison with similar reports.

II. Case Presentation

A 42-year-old right-handed man presented with a 3-month history of progressive numbness affecting the ring and little fingers of his right hand. He denied pain, weakness, neck symptoms, or history of trauma. His symptoms were aggravated by prolonged elbow flexion, particularly during phone use.

On examination, there was decreased light-touch and pinprick sensation in the ulnar distribution distal to the wrist. Motor strength in ulnar-innervated intrinsic hand muscles was preserved. Tinel's sign over the cubital tunnel was positive. No clawing or atrophy of the hand was observed.

Electromyography (EMG) and nerve conduction studies confirmed a conduction block of the ulnar nerve across the elbow, consistent with cubital tunnel syndrome.

MRI of the elbow was performed (Figures 1, 2, 3, 4 and 5) and shows typical findings: focal thickening of the ulnar nerve proximal and at the cubital tunnel. The thickened segment shows abnormal high PD and T2 signals. Also we noted a normal thickness of the cubital retinaculum with outward deviation due to the thickened ulnar nerve and no bony lesions or joint effusion was seen.

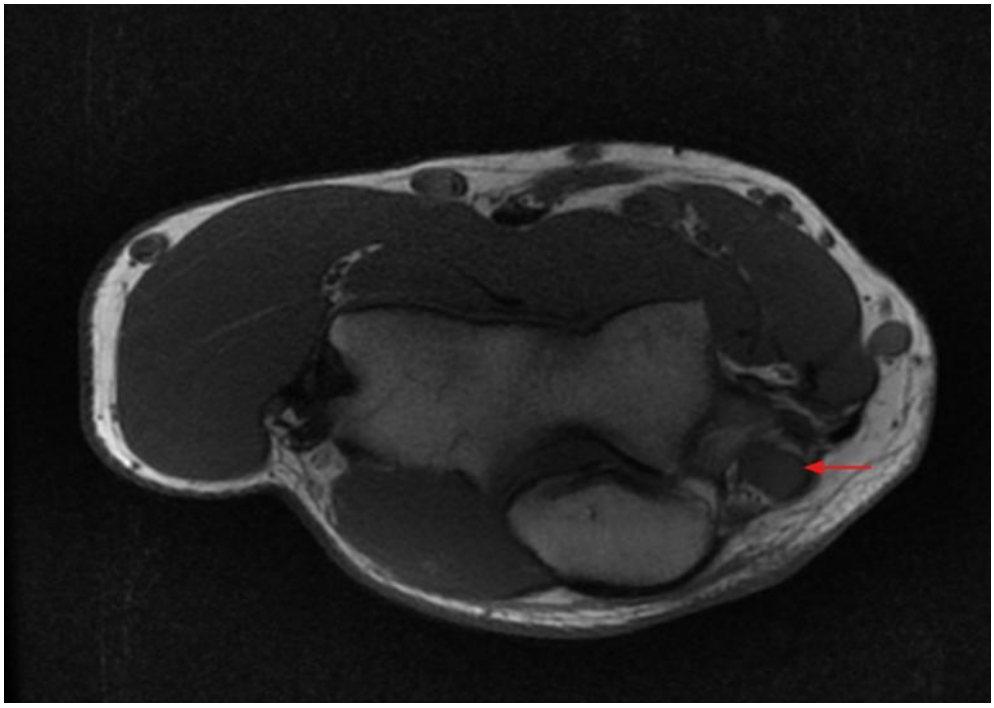

Figure 1The MRI T1 FSE (Fast Spin Echo) axial view findings you describe—an enlarged and thickened ulnar nerve within the cubital tunnel

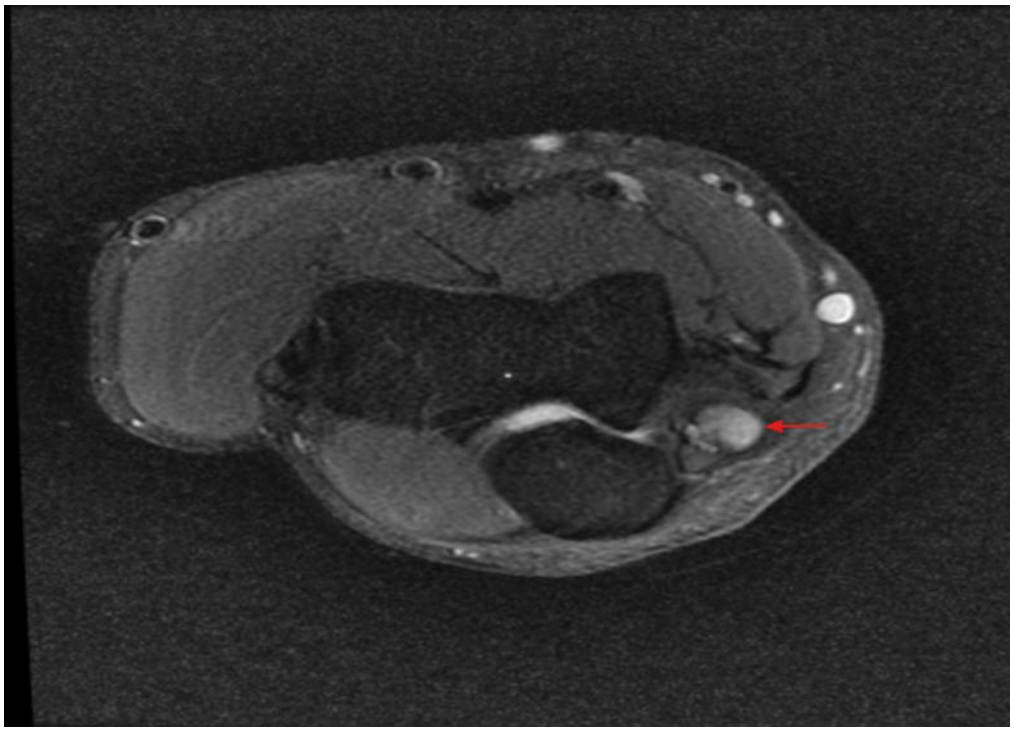

Figure 2 The MRI PD axial view findings shows an enlarged and thickened ulnar nerve within the cubital tunnel with an abnormal high PD signal.

Figure 3 The MRI T1 FSE (Fast Spin Echo) sagittal view shows an enlarged and thickened ulnar nerve within the cubital tunnel.

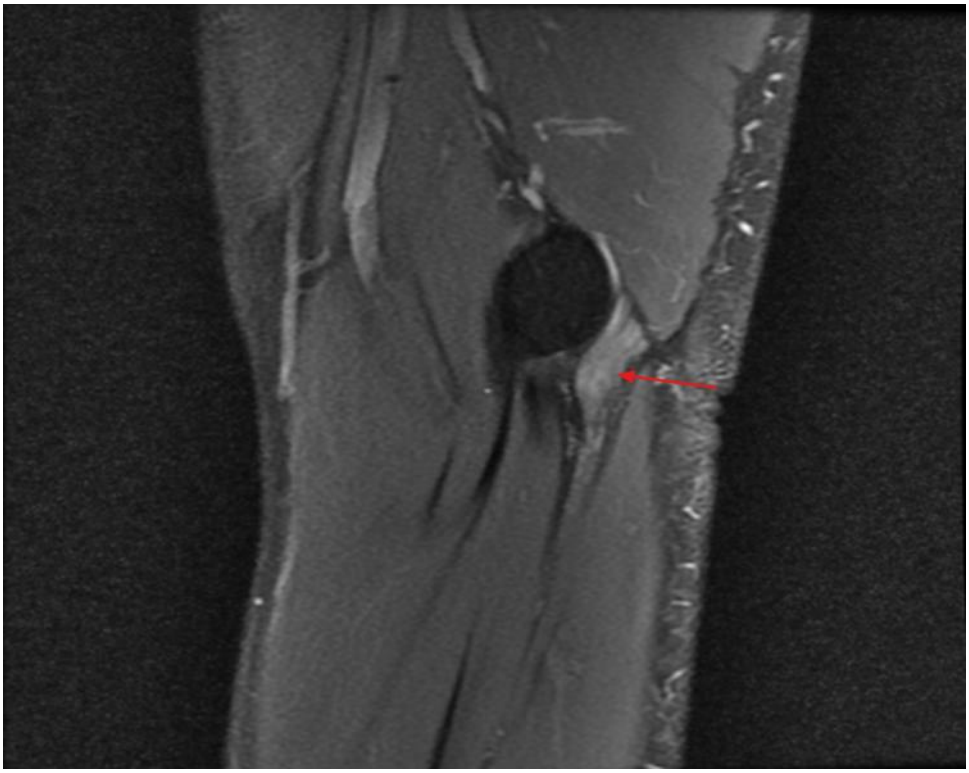

Figure 4 Sagittal PD MRI view demonstrate high signal intensity within the nerve

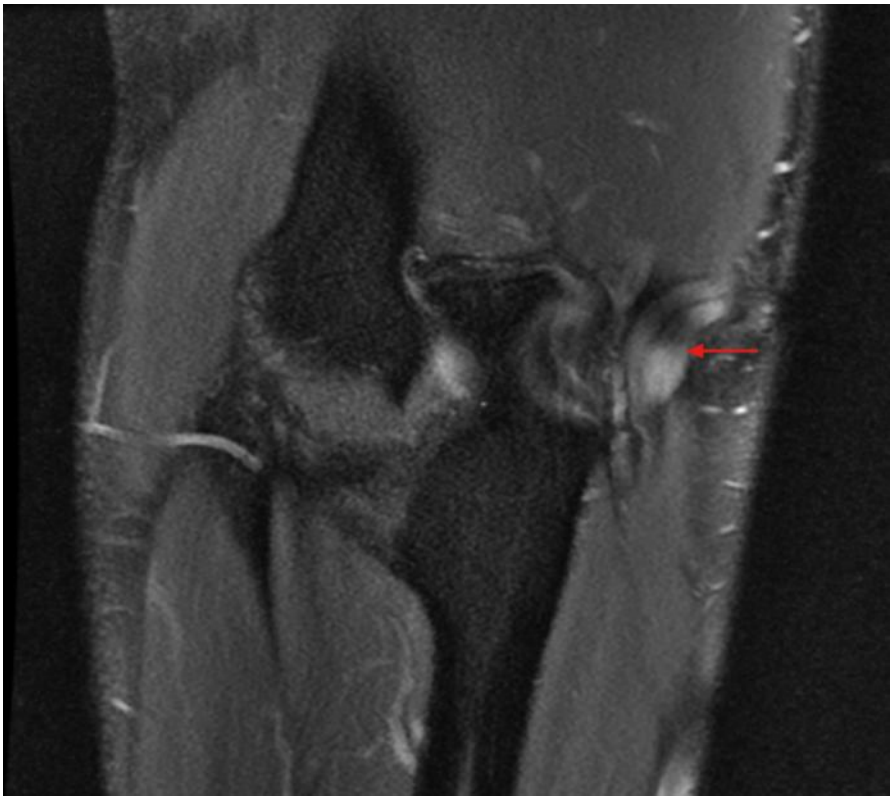

Figure 5 Coronal PD MRI view demonstrate high signal intensity within the nerve

The patient was managed conservatively with activity modification, nighttime elbow extension splinting, and nonsteroidal anti-inflammatory drugs.
At 3-month follow-up, symptoms had improved significantly without progression to motor deficit.

III. Discussion

Cubital tunnel syndrome (CuTS) is the most common site of ulnar nerve entrapment and the second most frequent entrapment neuropathy after carpal tunnel syndrome [1,2]. The ulnar nerve is particularly vulnerable at the elbow due to its superficial position and the anatomical constraints of the cubital tunnel. This fibro-osseous canal is bounded medially by the medial epicondyle, laterally by the olecranon, and roofed by the Osborne ligament. Repetitive elbow flexion increases intraneural pressure and stretches the nerve, while direct external compression further exacerbates entrapment [3].

The clinical spectrum ranges from intermittent paresthesia to permanent sensory loss and intrinsic hand muscle weakness. Early stages typically present with numbness or tingling in the ulnar nerve distribution (ring and little fingers), as in our patient. Prolonged or severe compression can lead to motor involvement, with decreased grip strength, interosseous muscle atrophy, and clawing of the ulnar digits [4]. Our patient had isolated sensory involvement without objective weakness, corresponding to a mild form of CuTS.

Electrodiagnostic studies remain the gold standard for confirming diagnosis and localizing the site of entrapment [5]. In our case, nerve conduction studies demonstrated focal slowing across the elbow, consistent with ulnar nerve compression in the cubital tunnel.

MRI plays an increasingly important role in the evaluation of CuTS, particularly in cases where the diagnosis is uncertain, symptoms are atypical, or a structural cause is suspected. High-resolution MRI at 1.5T or 3T with dedicated surface coils allows direct visualization of the ulnar nerve and surrounding structures. Typical findings include increased T2-weighted signal intensity within the nerve (reflecting intraneural edema), focal nerve enlargement proximal to the compression site, and flattening of the nerve at the tunnel entrance. Secondary changes may include hyperintense signal in the flexor carpi ulnaris muscle due to denervation edema in acute stages, and fatty infiltration in chronic stages [6,7]. Dynamic imaging in flexion can demonstrate positional narrowing of the tunnel or subluxation of the nerve over the medial epicondyle. In our case, MRI excluded space-occupying lesions, synovial hypertrophy, and bone deformity, and confirmed preserved fascicular architecture—features consistent with a mild, reversible entrapment.

Management depends on severity. Conservative treatment—including patient education, avoidance of prolonged elbow flexion, nighttime splinting in extension, and anti-inflammatory medications—has a high

success rate in mild to moderate cases [8]. Our patient improved significantly with conservative measures alone, underscoring the importance of early diagnosis before the onset of irreversible motor deficits. Surgical intervention, including simple decompression or anterior transposition, is reserved for patients with persistent symptoms or progressive neurological deficit [9]. Long-term prognosis is generally favorable if the condition is identified early and managed appropriately.

IV. Conclusion

We describe a case of cubital tunnel syndrome in a 45-year-old man presenting with isolated sensory symptoms in the ulnar nerve distribution. Prompt recognition and early conservative management led to symptom improvement and prevented progression to motor deficit. Awareness of early clinical signs is essential to avoid delayed diagnosis and irreversible nerve damage.

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