

# Ulnar Neuropathy Caused by Intraneural Cold Abscess Due to Leprosy: Case Report

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## Research Article

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# Abstract

**Introduction:** Ulnar neuropathy due to cubital tunnel syndrome is a common presentation in elective orthopaedic clinics with causes usually attributed to idiopathic chronic compression. However, rare diagnoses should be considered.

**Case presentation:** we present a case of chronic insidious ulnar neuropathy in a 52 year old female with a two year history of progressive left hand weakness and decreased sensation. She was born in West Africa and she was noted to be generally fit and healthy. Surgical exploration and decompression of ulnar nerve showed fusiform swelling and caseous material discharged out from small incision in nerve sheath. Leprotic neuropathy was suspected and confirmed by microbiology lab. Pure neurotic leprosy is extremely rare and nerve biopsy is the gold standard for diagnosis. There were 202,256 new leprosy cases registered globally in 2019 according to WHO (World Health Organization) figures, and disease can present decades after exposure.

**Conclusion:** leprotic neuropathy should be considered in the differential diagnosis of peripheral ulnar neuropathy even in temperate regions to avoid delay in diagnosis and undesirable sequelae.

## Introduction:

Ulnar neuropathy due to cubital tunnel syndrome is a common presentation in elective orthopaedic clinics with causes usually attributed to idiopathic chronic compression. However, rare diagnoses should be considered and the senior author has previously reported on unusual case of bilateral simultaneous ulnar nerve palsy [1]. We present a case of chronic insidious ulnar neuropathy with unusual intraoperative findings.

## Case Presentation:

A 52 year old right hand dominant female presented to our upper limb clinic with a two year history of progressive left hand weakness and decreased sensation with difficulty with activities of daily living. She reported the beginning of her symptoms after incidental trauma to her left hand with an undisplaced fracture of 4th metacarpal. She was noted to be generally fit and healthy without significant medical or family history. She was born in West Africa and had been living in Ireland for 20 years.

Examination showed weakness of grip strength of 2 kg using a Jamar dynamometer versus 30 kg on contralateral normal side, loss of sensation in ulnar nerve distribution and inability to flex the PIPs and DIPs joints of the ring and little fingers against resistance. Froment's test was positive and there was a positive Tinel's sign at the cubital tunnel. Routine blood investigations including full blood count and inflammatory markers were normal. Nerve conduction studies confirmed the presence of significant ulnar neuropathy with axonal damage localized at the elbow.

She was scheduled for ulnar nerve release. At operation the roof of the cubital tunnel was incised as routine. A fusiform swelling of the whole nerve was noted just proximal to medial epicondyle [Figure 1(a)]. A small longitudinal incision of the epineural sheath was made and caseous material discharged [Figure 1(b)].

Specimens were obtained for histology and microbiology. Leprotic neuropathy was suspected and the diagnosis was confirmed in the regional lab with Sanger DNA sequencing. Antimycobacterial combination therapy with Dapson and Rifampicin was commenced as per the World Health Organization (WHO) guidelines on treatment of Leprosy.

## **Discussion And Conclusion:**

Leprosy is a chronic infectious disease caused by a slowly growing bacillus, *Mycobacterium leprae*, identified by G. H. A. Hansen in Norway in 1873 [2]. It was the first bacterium to be identified as causing disease in humans [3]. The natural immunity of the host determines the clinical and pathological manifestations of the disease which can take 20 years or more to appear [4]. Nerve infection in Leprosy is due to persisting antigen in Schwann cells which can stimulate inflammatory episodes years after an initial infection. Untreated leprosy can cause damage to skin, nerves, limbs and eyes. 95% of people who contact the organism do not develop clinical disease and extensive contact is necessary for disease spread [5]. Disease is common in India, Brasil and Indonesia but numbers of new cases have dropped dramatically in the last few decades [5].

Neuropathy with cutaneous lesions is a common presentation of leprosy and it is perhaps the best known form of inflammatory neuropathy. The nerves in the upper limbs are more often affected than those of the lower. The most commonly involved nerves are the ulnar, median, posterior auricular, superficial radial, common fibular, superficial fibular and posterior tibia [6]. Isolated ulnar nerve disease represents 60% of mononeuritis cases. Pure neuritic leprosy (PNL) with mainly sensory symptoms is extremely rare and nerve biopsy is the gold standard for diagnosis [5]. Nerve thickening and enlargement is usually found although this was not clinically evident in our patient.

We report a rare presentation of leprosy in a patient without cutaneous or systemic manifestation (PNL). According to WHO guidelines on leprosy, any patient who has a thickened or enlarged peripheral nerve with loss of sensation must be considered to have Leprosy [2]. There were 202,256 new leprosy cases registered globally in 2019 according to WHO figures, and disease can present decades after exposure [4]. In conclusion, leprotic neuropathy should be considered in the differential diagnosis of peripheral ulnar neuropathy even in temperate regions to avoid delay in diagnosis and undesirable sequelae.

**Level of Evidence:** IV

**Declarations:**

**Conflicts of interest:**

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### **Ethical Approval and Consent to participate:**

No ethical committee approval is required for this case report.

### **Consent for Publication:**

Written informed consent was obtained from the patient.

### **Competing Interests:**

The authors declare no competing interests.

### **Funding:**

No funding received.

### **Authors' Contributions:**

The corresponding author diagnosed the case and confirmed the diagnosis with microbiology lab. He wrote the report after collecting the necessary information. The senior author supplied the clinical photos, did the English language corrections and added some changes.

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## **Figures**

## Figure 1

(a) Fusiform swelling of ulnar nerve within the cubital tunnel after decompression (b) caseous material expressed through a small incision in nerve sheath.

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