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## Case Report

# Ultrasonography and magnetic resonance imaging of ulnar nerve abscess in leprosy



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## ARTICLE INFO

## Article history:

Received 5 January 2013

Accepted 30 September 2013

Available online 20 November 2013

## Keywords:

Abscess

Leprosy

Magnetic resonance imaging

Ulnar nerve

Ultrasonography

and consequent psychosocial damage. Based on the individual's immune status, leprosy presents as a continuum extending from polar tuberculoid to polar lepromatous leprosy. Patients with all forms of leprosy, but particularly those with the borderline tuberculoid (BT) form may develop abscesses of nerves, most commonly the ulnar nerve (1). This article illustrates the ultrasonographic and magnetic resonance imaging (MRI) appearance of ulnar nerve abscess in a patient with leprosy.

## Case report

A 34-year-old male patient of BT leprosy who had completed two years of multi-drug therapy two years ago, presented with occasional pain and tingling sensation along the inner aspect of his left lower arm of six month's duration. There was no history of fever. He also noticed a superficial thick cord-like swelling at the same place and impaired sensations along the inner aspect of his hand.

Physical examination revealed tender thickening of the left ulnar nerve for approximately 8.0 cm proximal to the medial epicondyle of the humerus. Multiple soft nodules were palpable along the course of the nerve. 'Ulnar claw' was noted with inability to extend the interphalangeal joints of the 4th and 5th digits. Thenar and hypothenar muscle wasting along with 'guttering' of the 1st web space were present. Sensations were impaired for all modalities along the medial aspect of the hand and the fifth digit. There were no local trophic changes.

## Introduction

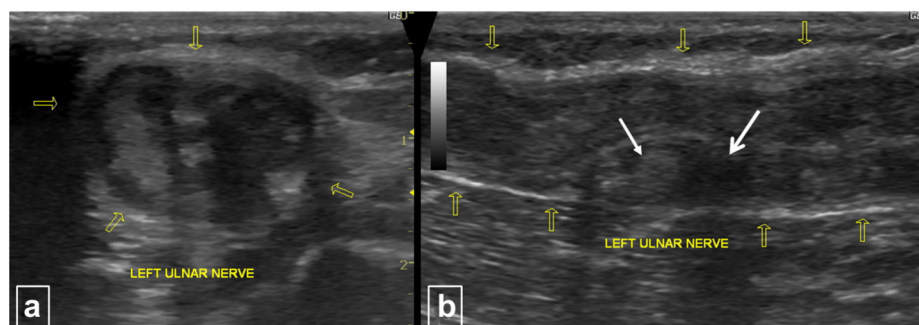
Leprosy or Hansen's disease is a non-fatal, slowly progressive, chronic granulomatous infection caused by *Mycobacterium leprae* and was first mentioned in ancient Indian texts from sixth century B.C.<sup>1</sup> There is preferential involvement of the skin, peripheral nervous system, upper respiratory tract, eyes and testes due to their lower temperature than the core body temperature. The neurotropism of the bacteria and immune-mediated reactions cause much debilitation and mutilation

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<http://dx.doi.org/10.1016/j.mjafi.2013.09.013>

0377-1237/© 2013 Published by Elsevier B.V. on behalf of Director General, Armed Forces Medical Services.



**Fig. 1 – (a) & (b) Axial (a) and longitudinal (b) ultrasound scans show thickening of the left ulnar nerve with loss of the normal fascicular pattern, granuloma (thin white arrow) and abscess (thick white arrow) formation and thickening of the nerve epineurium (yellow arrows). The maximum thickness of the nerve was 12.0 mm.**

The rest of the physical examination including the eyes, testes and nose did not reveal any abnormality.

High-resolution ultrasonography using a linear probe at 12 MHz (Logiq Pro 5, GE Healthcare, Waukesha, Wisconsin, USA) revealed nodular thickening of the left ulnar nerve proximal to the medial epicondyle for a length of approximately 8.0 cm. The maximum diameter of the nerve was 12.4 mm. The nerve fascicles were swollen and appeared heterogeneously hypoechoic, surrounded by the echogenic perineurium and epineurium (Fig. 1). Small focal outpouchings were also noted arising from the nerve.

Non-contrast as well as contrast-enhanced MRI (Siemens Avanto 1.5 T MRI scanner, Erlangen, Germany) of the patient revealed nodular thickening of the left ulnar nerve for an approximate length of 8.0 cm proximal to the medial epicondyle. The maximum thickness of the nerve was 12.0 mm. The nerve fascicles appeared swollen and mildly hyperintense to muscle on T1-weighted images and markedly hyperintense on fat-saturated (FS) proton density (PD) and T2-weighted images. The perineurium and epineurium appeared hypointense on all sequences and appeared thick. There were multiple disruptions in the perineurium and epineurium with small contiguous variable sized outpouchings. A 'horse-shoe'

shaped and epineurial collection (mildly hyperintense to muscle on T1-weighted images and strongly hyperintense on FS PD and T2-weighted images) was also noted between the nerve and the triceps muscle. Minimal epineurial hyperintense signal on PD-FS images was present. Post-contrast images revealed enhancement of the nerve and rim-enhancement of these neural outpouchings (Figs. 2 and 3). Based on these imaging findings a diagnosis of ulnar neuritis with ulnar nerve abscesses was made.

The patient was assumed to have relapsed. He was put on a course of steroids and multi-drug therapy was reinstated. Slit skin smear examination for acid-fast bacilli was negative. He was also referred for decompressive surgery. On follow-up after a month, the patient was asymptomatic with significant reduction in the ulnar nerve thickening without any increase in the sensorimotor deficit.

## Discussion

With an estimated 600,000 new cases detected annually, of which 60% are from India, leprosy can be considered the most common treatable neuropathy in the endemic zones.<sup>2</sup> *M. leprae*



**Fig. 2 – (a)–(c) The panel shows (a) coronal T1-weighted, (b) coronal fat-suppressed proton density weighted and (c) coronal fat suppressed T1-weighted post-contrast MRI images. The ulnar nerve is thickened (thick white arrows) and multiple enhancing outpouchings are noted arising from the nerve (thin white arrows).**

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