

From Eczema to Hansen's Disease: A Case of Diagnostic Oversight

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While eczema is a common skin condition, not every chronic rash should be treated as such. A 54-year-old woman presented with persistent, erythematous-to-hyperpigmented lesions on her upper trunk. Despite repeated treatments for presumed eczema, her symptoms persisted. Upon referral, histopathological evaluation revealed dermal granulomas with Langhans giant cells and epithelioid histiocytes - findings consistent with borderline tuberculoid leprosy. She was promptly initiated on multibacillary multidrug therapy (MB-MDT). This case highlights that even in endemic regions, leprosy may be overlooked in atypical clinical presentations.

Keywords: Eczema, Leprosy, Hansen's Disease, Borderline Tuberculoid, Misdiagnosis, Evaluation

Introduction

Hansen's disease is a chronic disease caused by *Mycobacterium leprae*, with protean clinical presentations ranging from a solitary cutaneous rash to severe peripheral neuropathy. It predominantly involves the skin in its early stages as a hypopigmented or reddish patch accompanied by definite impairment of sensation. Later it may progress to involve the peripheral nerves with resultant neuropathy, disability, and social stigma. Leprosy continues to represent a considerable global health burden (Chen et al 2022).

Case Report

A 54-year-old lady presented to our outpatient

department with complaints of erythematous-to-dusky, raised lesions over her body for 1–2 years. The lesions had initially appeared over her arms and progressed to involve the skin over both upper limbs and upper back (Fig 1a & 1b). She reported that sun exposure worsened the lesions and denied a history of atopy or use of topical medications before their onset. Over the next few weeks, she observed that some of the lesions had become increasingly erythematous. However, she did not report any loss of sensation over the lesions, loss of sweating, tingling, numbness, or other systemic symptoms. She had sought treatment from local doctors for over a year and had received oral and topical steroids, antihistamines and emollients. She subsequently

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Fig. 1(a): Multiple erythematous-to-dusky papules and plaques noted over the back and extensor aspect of both arms.

(b): Multiple xerotic plaques with interspersed dusky papules and a few plaques noted over the extensor aspect of right forearm.

presented to our institution with persistent lesions despite treatment.

A thorough clinical examination revealed diffuse xerosis interspersed with multiple erythematous-to-dusky papules, and annular plaques with a raised outer border over the extensor aspect of both upper limbs and back. Sensory assessment was done for light touch using cotton wool,

for pain using pinprick, and temperature discrimination with warm and cold test tubes over the lesional and non-lesional skin and were found to be intact. Monofilament testing and voluntary muscle testing were performed as part of nerve function assessment and were normal. Peripheral nerve examination demonstrated asymmetrical, non-tender thickening of the

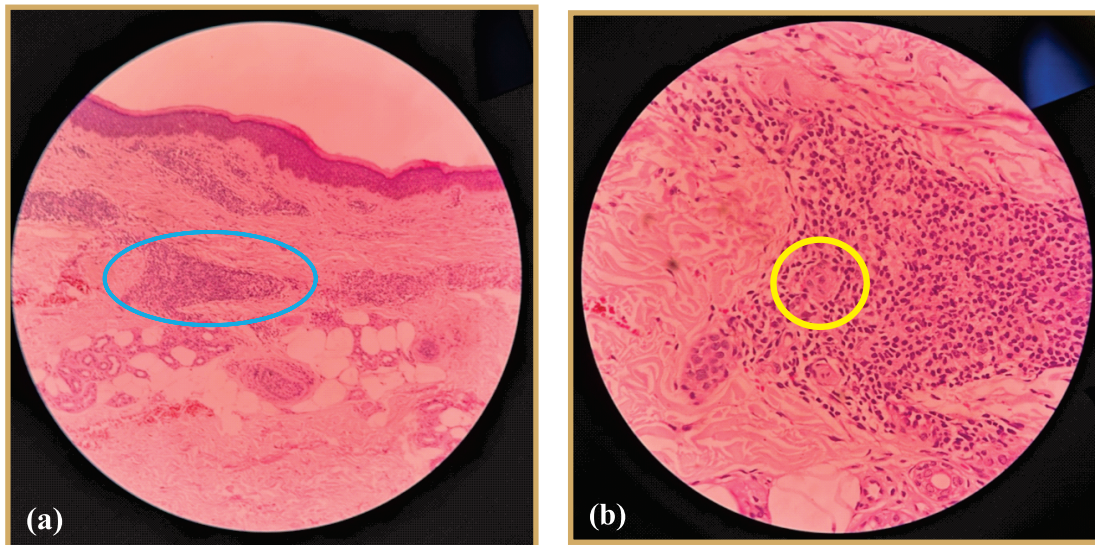


Fig. 2 (a): Histopathological section of skin biopsy taken from the left forearm showing multiple ill-defined granulomas (blue circle) in the dermis (H & E stain 10× magnification). **(b):** Dermal granulomas consisting of lymphocytes intermixed with epithelioid histiocytes and Langhans giant cells (yellow circle), perivascular and peri-adnexal inflammatory infiltrates and an unremarkable epidermis (H & E stain 40× magnification).

ulnar and radial cutaneous nerves, greater on the right side. No motor weakness or functional impairment was detected at presentation.

There was no evidence of mucosal involvement, pedal oedema, or glove-and-stocking anaesthesia. Routine haematological investigations were within normal limits. At this stage, the following differential diagnoses were considered: subacute cutaneous lupus erythematosus (SCLE) due to the history of photo-aggravation; leprosy, given the presence of diffuse ichthyosis, and thickened nerves; tinea corporis, sarcoidosis and granuloma annulare.

Subacute cutaneous lupus erythematosus was excluded as there was no history of oral ulcers and systemic symptoms. Additionally, anti-nuclear antibody (ANA) testing was negative.

Potassium hydroxide (KOH) mount was done and

negative for fungal elements, thereby excluding dermatophytosis. Slit skin smears were taken from the active edge of representative lesion, earlobes, forehead, chin and thigh and all were negative for acid-fast bacilli. Histopathological examination of a biopsy specimen from a lesion on the left forearm demonstrated dermal granulomas composed of epithelioid histiocytes, lymphocytes, and Langhans giant cells, along with perivascular and peri-adnexal inflammatory infiltrates. The epidermis was unremarkable, and a Grenz zone was absent (Fig. 2a, 2b). Fite–Faraco stain for acid-fast bacilli was negative. The absence of palisading granulomas and naked granulomas ruled out granuloma annulare and sarcoidosis, respectively. The clinical picture, peripheral nerve thickening and histopathological findings were suggestive of borderline tuberculoid

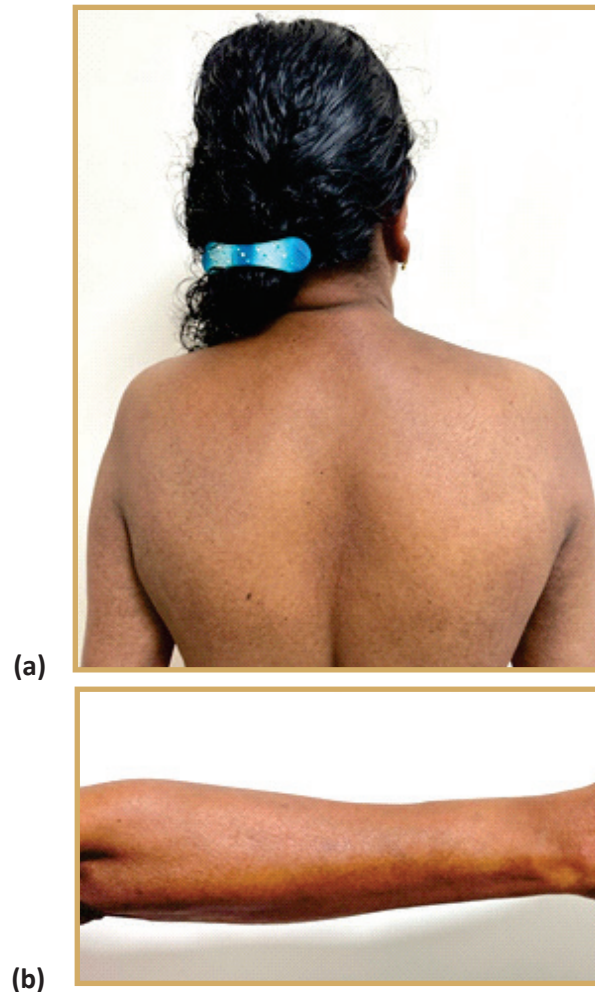


Fig. 3 (a): Resolution of lesions over the back and extensor aspect of both arms. (b) Marked resolution of lesions over the forearm at follow up after initiation of MB-MDT.

leprosy. Treatment with multibacillary multi-drug therapy (MB-MDT) was initiated as per WHO guidelines and supportive treatment in the form of emollients was given. On further inquiry, there were no known household contacts with leprosy and the family members were screened and found normal.

At her one-month follow-up, majority of the lesions had resolved (Fig 3a & 3b). The patient was followed up with regular clinical and

neurological assessments. There were no new sensory deficits, no nerve tenderness, and no evidence of lepra reactions during the follow-up period; hence, systemic corticosteroids were not administered. The patient demonstrated good adherence to MB-MDT and did not experience any treatment-related adverse effects.

Discussion

Leprosy is a chronic infectious disease caused by *Mycobacterium leprae*, characterized by

a wide spectrum of clinical presentations, ranging from solitary skin lesions to extensive involvement of peripheral nerves leading to significant neuropathy. Despite its well-documented pathophysiology, atypical presentations continue to confound even experienced clinicians, particularly when they mimic common inflammatory dermatoses such as eczema or psoriasis. The irreversible atrophy of sebaceous and sweat glands due to granulomatous infiltration may contribute to persistent ichthyosis and asteatotic eczema-like changes, further obscuring the underlying aetiology.

In early borderline tuberculoid Hansen's disease, sensation may remain clinically intact despite histological evidence of perineural granulomatous inflammation, potentially leading to diagnostic delay. This clinicopathological discordance may be attributed to subclinical neural involvement, wherein early damage to autonomic fibres results in reduced sweating and consequent ichthyotic skin changes, preceding overt sensory impairment. Subclinical nerve dysfunction is known to occur early in the disease course and may continue to evolve even after initiation of multidrug therapy, underscoring the importance of proactive and longitudinal nerve function monitoring (Somasundaram et al 2025). Several reports in literature highlight the overlap between leprosy and eczematous dermatoses, often leading to misdiagnosis and inappropriate treatment. Rahman et al (2021) documented two leprosy cases misdiagnosed as eczema due to chronic, non-pruritic lesions unresponsive to therapy. Sensory loss on examination and histopathology confirmed borderline spectrum of leprosy. Chronicity of lesions and lack of pruritus were key differentiating features (Rahman et al 2021). Pavithran (1990) described three patients

initially diagnosed with various eczemas but later confirmed to have leprosy. The lack of pruritus and poor response to treatment highlighted the need for diagnostic vigilance in recalcitrant dermatological conditions (Pavithran 1990).

A case of pure neuritic leprosy was identified by Dicko et al (2025) following treatment of pyoderma in a patient with atopic dermatitis. After initial improvement of cutaneous lesions, the patient developed pain, paraesthesia, nerve thickening, and palmar-plantar hypoesthesia, suggestive of a reactional state. Management with WHO MB-MDT and systemic corticosteroids resulted in complete recovery without sequelae (Dicko et al 2025).

A patient with widespread erythema and scaling was diagnosed by Chaudhari et al (2024) as borderline lepromatous leprosy with Type 1 reaction, exemplifying its polymorphic presentation (Chaudhari et al 2024).

Rare presentations of leprosy—including psoriasiform plaques, anetoderma-like lesions, ulcerative leprosy, pustular erythema nodosum leprosum (ENL), Lazarine leprosy, verrucous plaques, hypertrophic scarring, and histoid Hansen's disease—have been documented (Yadav et al 2024, Sawatkar et al 2023).

These findings reinforce the need for considering leprosy as a differential diagnosis in patients with chronic, non-responsive cutaneous conditions. Notably, the lesions in the present case had undergone a discernible exacerbation in the weeks preceding presentation to our department, despite sustained conventional eczema therapy, an observation that proved instrumental in prompting further diagnostic scrutiny beyond a presumptive diagnosis of eczema.

Failure to promptly recognize leprosy can lead to irreversible peripheral neuropathy, deformities,

and disability, significantly impacting quality of life. Early initiation of MB-MDT remains curative and prevents disease progression.

Conclusion

This case accentuates the need to maintain a high index of clinical suspicion for leprosy in patients presenting with chronic, treatment-resistant dermatoses, even in the absence of classical sensory impairment. It highlights the importance of recognising atypical presentations and adopting a systematic approach that integrates careful dermatological examination with targeted neurological assessment, supported by appropriate histopathological evaluation. Such vigilance is essential to avoid misdiagnosis, prevent inappropriate therapy, and reduce the risk of long-term complications.

Ethical approval

Written informed consent was obtained from the patient to publish her data. The study (case report) was approved by the Institutional Ethics Committee (FMIEC/CCM/732/2025) dated 19/08/2025.

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