Journal of Communicable Diseases
Volume 56, Issue 1 - 2024, Pg. No. 145-151
Peer Reviewed & Open Access Journal

Case Series

Lepromatous Leprosy Masquerading as Infective and Inflammatory Skin Conditions: A Series of Four Cases

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DOI: https://doi.org/10.24321/0019.5138.202419

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How to cite this article:
Ramasamy S V, Vellaisamy S G, Manickam N, Rajasekaran K. Lepromatous Leprosy Masquerading as Infective and Inflammatory Skin Conditions: A Series of Four Cases. J Commun Dis. 2024;56(1):145-151.

Date of Submission: 2023-02-23
Date of Acceptance: 2023-03-20

A B S T R A C T

Leprosy is a chronic infectious disease mainly affecting the skin and peripheral nerves. The clinicopathological manifestations are a reflection of the strength of cell-mediated immunity (CMI). In lepromatous leprosy (LL), the CMI is severely impaired, leading to multiple, symmetrical, diffuse infiltrated lesions like macules, plaques, and nodules over the skin. However, this disease can manifest as a variety of unusual presentations, like non-healing ulcers, transient tender erythematous nodules, fever, pedal oedema, polyarthritis, radiating pain, nasal stuffiness, and epistaxis are not uncommon. These atypical manifestations are easily overlooked, leading to misdiagnosis if there is no strong clinical suspicion. Early diagnosis and timely administration of multibacillary multidrug therapy (MB MDT) are essential to prevent permanent and progressive deformities. We report four atypical cases of LL that were misdiagnosed outside as eczema (Case 1), molluscum contagiosum (Case 2), psoriasis (Case 3) and furunculosis (Case 4). Thus, this case series highlights the importance of detailed history taking, thorough clinical examination, slit skin smear and histopathological examination, especially in endemic countries, to diagnose this disease with various faces as early as possible to reduce the risk of deformities and transmission in society and achieve eradication.

Keywords: Atypical, Lepromatous Leprosy, Eczema, Psoriasis, Molluscum Contagiosum, Furunculosis

Introduction

Leprosy is a chronic infectious granulomatous disease caused by Mycobacterium leprae. The spectral nature of clinical manifestations in leprosy is a reflection of the response of the host's cell-mediated immunity against the intracellular organism. The most widely accepted Ridley-Jopling classification is based on clinical, histological, immunological, and bacteriological parameters.[1,2]

Hansens disease is a Neglected tropical disease (NTD) and is considered an important public health problem due to its magnitude and excessively disabling nature.[3] Every year, nearly 2,00,000 new cases are reported. As per 2019 World Health Organization data, it was found that in India, 10,000 new cases were reported per year.

According to the World Health Organization, leprosy is diagnosed with at least one of the following cardinal signs:

1. Definite loss of sensation in a pale (hypopigmented) or reddish skin patch
2. A thickened or enlarged peripheral nerve, with loss of sensation and/ or weakness of the muscles supplied by that nerve
3. The presence of acid-fast bacilli in a slit-skin smear[4]

LL is characterised clinically by bilaterally and symmetrically distributed macules, diffuse infiltrates, and nodules.[5] The nerve involvement is also symmetrical with glove and stocking anaesthesia. In advanced cases, there can be leonine facies, superciliary madarosis, ocular, nasal mucosa, musculoskeletal system, liver, kidneys, and testicular involvement, leading to a wide range of atypical presentations. Such atypical presentations, which were initially diagnosed as dermatitis, pyoderma, lupus vulgaris, and polyarteritis nodosa, were later confirmed by histopathological examination to be LL in a few reports.[6,7] Herein, we report a series of four cases of LL that presented as various skin diseases and hence were misdiagnosed elsewhere.

Case 1: Lepromatous Leprosy Mimicking Eczema

A 50-year-old male diagnosed and treated outside as a case of eczema came to our dermatology OPD with a history of itchy, raised skin lesions over his abdomen, back, and legs for the past 6 months. On examination, superciliary madarosis, xerosis, and bilateral ear lobe infiltration were noted. Cutaneous examination revealed a few well-defined atrophic plaques over the back, a few infiltrated scaly plaques over the abdomen, and multiple skin-coloured papules over the chest, abdomen, and extremities (Figure 1). The sensation was reduced over the patch in the back. There was thickening of the ulnar and radial nerves without tenderness. The motor deficit was present in the areas supplied by the ulnar and radial nerves. Slit Skin Smear (SSS) was positive, and histopathological examination of the infiltrated plaque over the abdomen showed sheets of foamy macrophages (Figure 2) in both the superficial and deep dermis around the periadnexal and perineural regions consistent with LL. The patient was referred to a leprosy centre to start on MB MDT.

Figure 1.(Case 1) Few Atrophic Scaly Plaques Over the Back

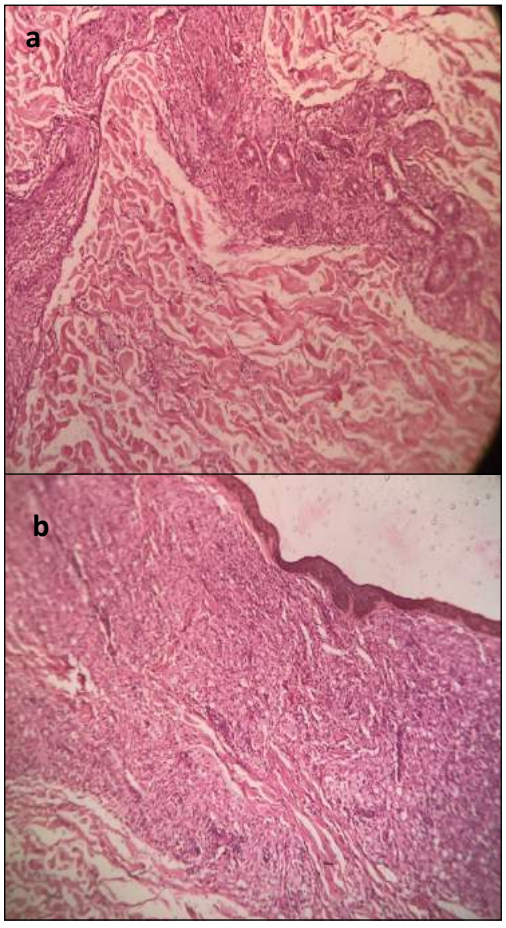

Figure 2a.(H&E x40) and 2b.(H&E x10): (Case 1) Photomicrograph Showing Diffuse Infiltration by Foamy Macrophages Involving the Dermis (Indicated by Yellow Arrows)

ISSN: 0019-5138
DOI: https://doi.org/10.24321/0019.5138.202419

Case 2: Lepromatous Leprosy Mimicking Molluscum Contagiosum

A 58-year-old male with complaints of raised skin lesions over the chest, back, and abdomen for the past 6 months who was misdiagnosed outside as a case of Molluscum contagiosum came to our OPD with the persistence of symptoms. On further probing into the history, he gave a past history of getting treatment for hypopigmented skin lesions (30 years ago). On cutaneous examination, polymorphic lesions like multiple shiny nodules, a few umbilicated papules, and plaques were seen all over the ear lobules, neck, chest, arms, forearms, back, and abdomen (Figure 3). Loss of sensation was observed over the plaques and plantar aspect of the left forefoot. Nerve examination revealed bilateral symmetrical thickening of most peripheral nerves without tenderness. Motor deficit was present along the areas supplied by these nerves. Slit skin smear was positive in all sites and revealed clumps of bacilli with globi formation (Figure 4a). Biopsy taken from the chest nodule showed dense collections of foamy macrophages in sheets in the dermis (Figure 4b). Grenz zone was also noted. A final diagnosis of LL was made, and he was referred to start MB MDT.

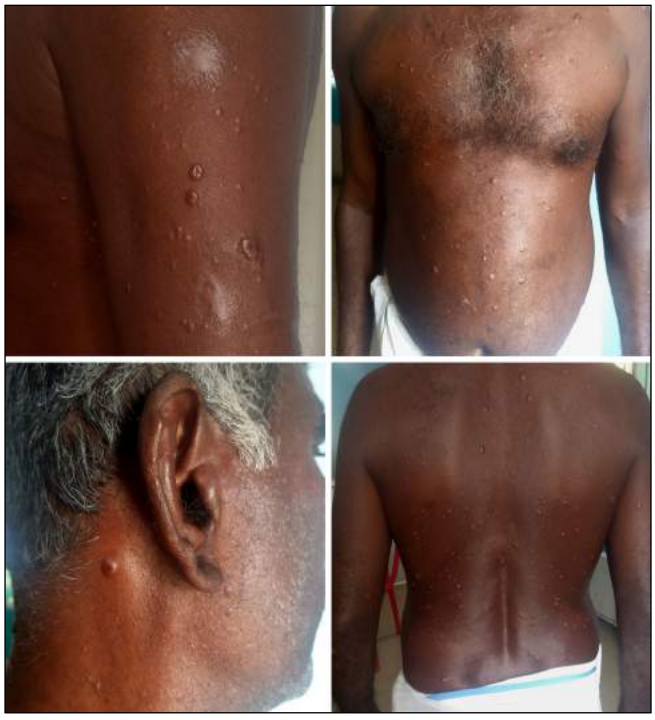

Figure 3.(Case 2) Multiple Skin-Coloured Nodules Over the Trunk (Indicated by Yellow Arrows), Umblicated Papules (Indicated by Red Arrows), Ear Lobe Infiltration (Indicated by the Blue Arrow)

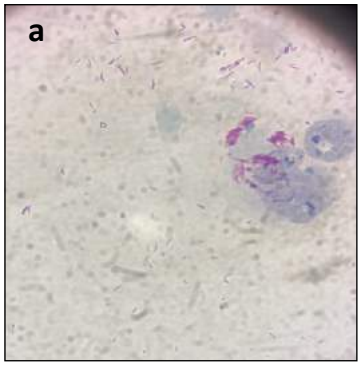

Figure 4a.(Case 2) Slit Skin Smear Showing Clumps of Acid Fast Bacilli with Globi Formation (Indicated by Yellow Arrow)

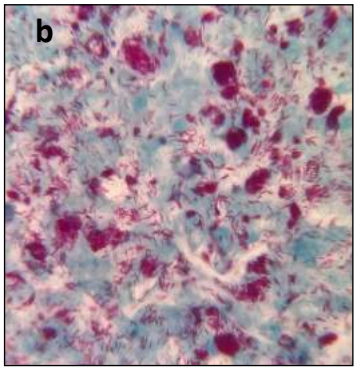

Figure 4b.(Case 2) Photomicrograph Showing Staining With Fite Faraco Demonstrating Numerous Acid Fast Bacilli in the Dermis (H&E, x40)

Case 3: Lepromatous Leprosy Mimicking Psoriasis

A 54-year-old diabetic male presented to our Dermatology OPD with itchy, scaly skin lesions all over the body associated with a burning sensation for the past 6 weeks. He was treated outside as a case of psoriasis with topical steroids and had no response. On cutaneous examination, numerous erythematous scaly plaques were seen over the neck, upper chest, arms, back, and thighs (Figure 5a). Nerve examination revealed thickening of a few peripheral nerves without tenderness. Motor deficit was seen in areas supplied by the ulnar, median, and radial nerves. Slit skin smear was positive from the right ear lobe, the right index finger, and over the lesions. Biopsy taken from the erythematous plaque over the back showed numerous foamy macrophages and lymphocytes in the dermis and around the adnexal structures. Multinucleate giant cells were seen in some granulomas (Figure 5b). The patient was diagnosed as a case of downgrading LL and was referred to start MB MDT.

ISSN: 0019-5138
DOI: https://doi.org/10.24321/0019.5138.202419

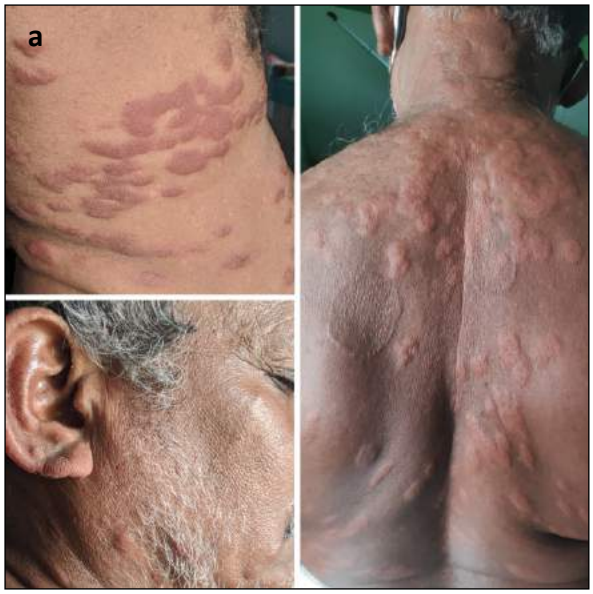

Figure 5a.(Case 3) Multiple Erythematous Scaly Plaques

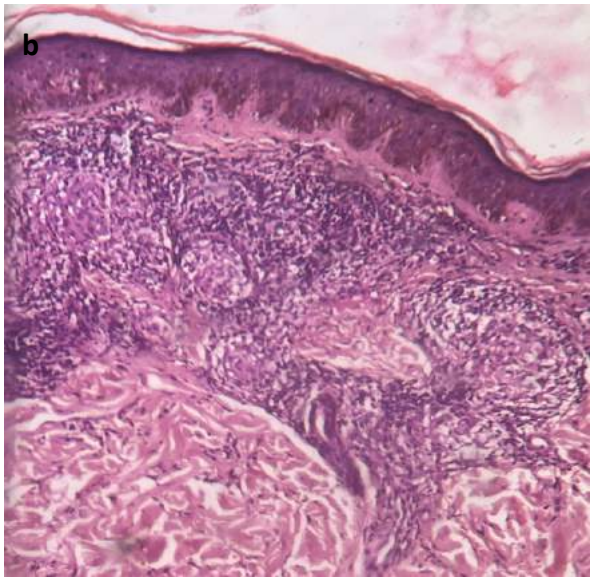

Figure 5b.(Case 3) Photomicrograph Showing Multinucleate Giant Cells (Indicated by Yellow Arrows) (H&E, x10)

Case 4: Lepromatous Leprosy Mimicking Extensive Furunculosis

A 22-year-old male came with complaints of painful ulcerative nodules all over the body associated with fever, myalgia, pedal oedema, and pain radiating to the left forearm for the past one week. He was already treated outside as a case of furunculosis with antibiotics and came for consultation to our OPD as the lesions did not subside. Hypopigmented asymptomatic lesions over the trunk were noted by the patient one month ago. On cutaneous examination, multiple well-defined erythematous and hypopigmented nodules were present all over the back, chest, and limbs. A few ulcerated nodules were present. Ichthyotic hypopigmented patches were present over both thighs. The nerve examination revealed multiple enlarged, tender peripheral nerves. Motor deficit was present in areas supplied by the ulnar nerve. Glove and stocking anaesthesia was observed. Slit skin smear was positive from the nodule and other sites. Biopsy taken from the nodule over the back showed epidermal atrophy, with the dermis showing lymphocytic infiltrate with foamy macrophages (Figure 6). The patient was diagnosed as a case of LL with type II lepra reaction with neuritis. He was started on systemic steroids for neuritis and was referred to a nearby government centre to start MB MDT.

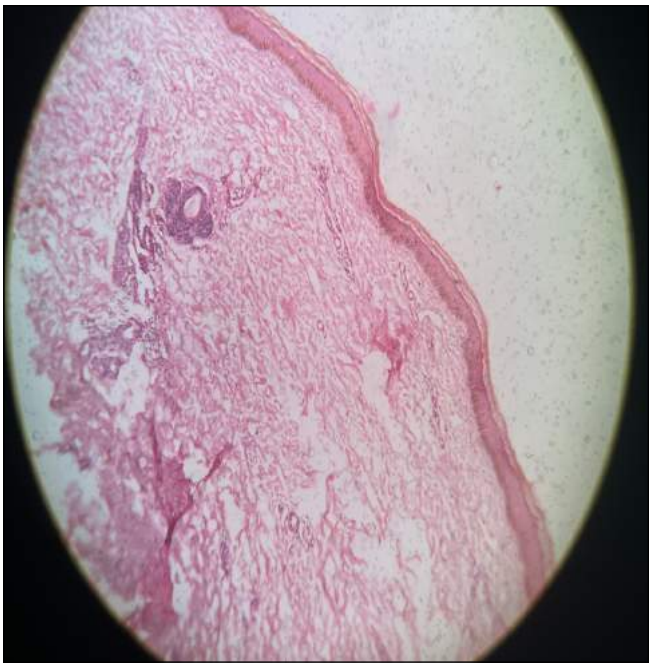

Figure 6.(Case 4) Photomicrograph Showing Epidermal Atrophy With Dermal Infiltration by Lymphocytes and Foamy Macrophages (Indicated by Yellow Arrow) (H&E, x40)

A summary of clinical characteristics, slit skin smear and histopathological features of all four cases is shown in Table 1.

ISSN: 0019-5138
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Table 1.Summary of All 4 Cases

Characteristics/ Properties	Case 1	Case 2	Case 3	Case 4
Age/ sex	50/ M	58/ M	54/ M	22/ M
Chief complaints	Raised itchy skin lesions over trunk and extremities	Raised skin lesions over the trunk	Itchy skin lesions all over the body	Painful raised lesions and ulcers all over the body
Duration	6 months	6 months	6 weeks	1 week
Associated symptoms	Itching	Asymptomatic	Itching, burning sensation	Fever, pedal oedema, myalgia, radiating pain over left forearm
Initial diagnosis and management	Eczema, steroids	Molluscum contagiosum	Psoriasis, topical steroids	Furunculosis, antibiotics
Clinical examination	Atrophic plaques and papules over the trunk and extremities	Skin coloured nodules and a few umbilicated papules over the trunk, extremities and ear lobes	Erythematous, scaly plaques over trunk and extremities	Multiple erythematous, tender ulcerative nodules over the trunk and extremities
Nerve thickening and motor deficit	Present	Present	Present	Present
Slit Skin Smear (SSS)	Positive	Positive	Positive	Positive
Histopathology	Sheets of foamy macrophages in both superficial and deep dermis around periadnexal and perineural regions	Dense collections of foamy macrophages in sheets in the dermis around perineural and periadnexal areas, Grenz zone noted	Foamy macrophages and lymphocytes in dermis and adnexal structures	Epidermal atrophy, dermal lymphocytic infiltrate with foamy macrophages

Table 2.Comparison of Our Cases With Similar Cases Reported Elsewhere

Researcher	Clinical Findings	Misdiagnosis	Actual Diagnosis
Our study	Itchy, atrophic, plaques and papules over the trunk and extremities	Eczema	Lepromatous leprosy
	Skin-coloured papules and nodules over the trunk, extremities and ear lobes	Molluscum contagiosum	Lepromatous leprosy
	Itchy, erythematous, scaly plaques over trunk and extremities	Psoriasis vulgaris	Lepromatous leprosy
	Multiple erythematous, tender ulcerative nodules over the trunk and extremities	Furunculosis	Lepromatous leprosy

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Jindal and Shirazi[6]	Multiple erythematous to hyperpigmented scaly plaques over the face, trunk and extremities	Air-borne contact dermatitis	Lepromatous leprosy
	Erythema, oedema and tenderness of right hand	Pyoderma	Lepromatous leprosy
	Fever, polyarthritis, testicular pain, hepatitis C positive	Polyarteritis nodosa	Lepromatous leprosy
Chintagunta and Jaju[7]	Asymptomatic elevated lesion with beaded papules at the margin over right elbow	Granuloma annulare, lupus vulgaris	Lepromatous leprosy
Tayshetye et al.[9]	Lower limb weakness	Mononeuritis multiplex	Pure neuritic leprosy
	Non-healing ulcers, blisters, tingling and numbness of hands	Axonopathy, myelinopathy	Borderline lepromatous leprosy
Ramesh et al.[10]	Tender cord-like thickening in the neck with facial oedema	Jugular vein thrombosis	Type 1 reaction
Vora et al.[11]	Skin-coloured infiltrated papules, nodules	Cutaneous metastasis, dermatofibroma	Histoid leprosy
Chauhan et al.[12]	Pain in small and large joints along with swelling	Rheumatoid arthritis	Pure neuritic type, Hansens reaction
Raut et al.[13]	Multiple erythematous nodules and plaques of varying sizes 3 mm–3 cm	Dermatophytosis	Multibacillary nodular leprosy
Saraswat et al.[14]	Papules and nodules	Bacterial or fungal infections	Lepromatous leprosy

Discussion

Leprosy is a great imitator[8] and has to be differentiated from a wide variety of other inflammatory, infective, and infiltrative dermatological conditions. It can also present with neurological symptoms like numbness, weakness, burning sensations, and radiating pain, posing a challenge to neurologists until a nerve biopsy is done. Leprosy can present as myositis, erythema multiforme-like Type 2 reactions, and common rheumatological disorders, as seen in multiple reports. In an endemic country like India in the elimination era, leprosy can masquerade as a variety of dermatological and systemic conditions (Table 2) leading to misdiagnosis if there is no clinical suspicion.

Histoid Hansens can mimic common skin conditions such as molluscum contagiosum, neurofibromatosis, and dermatofibroma. In our case series, case 2 presented as Molluscum contagiosum and was later confirmed by SSS and histology as LL. Differential diagnoses of Type 2 reactions include conditions such as Erythema nodosum, furunculosis, and Sweet syndrome. Our fourth case was also initially misdiagnosed as furunculosis, but with other clinical features, SSS and HPE, we confirmed the case as LL. Leprosy, especially tuberculoid leprosy, can mimic skin conditions like psoriasis and eczema due to the scaling associated with the lesions. A similar scenario was seen in Cases 1 and 3, and we finally diagnosed it as tuberculoid leprosy, downgrading to LL.

Proper history, clinical examination, and microbiological and histopathological investigations all go hand in hand in arriving at a diagnosis. Treatment does not stop at initiating MDT but involves the active participation of multiple specialists, like dermatologists, ophthalmologists, orthopaedics, neurologists, and physiotherapists, in reducing the deformities and rehabilitation to reduce the burden of the disease on the patient.

Conclusion

There has been a paradigm shift in the clinical presentation of leprosy in India. In the elimination era, we are still encountering an increasing number of atypical cases, as seen in our case series. Hence, more awareness about the clinical features and varied presentations should be made,

ISSN: 0019-5138
DOI: https://doi.org/10.24321/0019.5138.202419

especially among primary physicians in peripheral settings. Strengthening early case-finding activities by healthcare workers in peripheral and rural areas will play a vital role in achieving the elimination of leprosy.

Source of Funding: None

Conflict of Interest: None

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