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Case Series

Hansen's Disease Mimicking as Papulosquamous Conditions – A Case Series

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Hansen's disease is a chronic granulomatous infectious disease caused by *Mycobacterium leprae* and *Mycobacterium lepromatosis*, primarily affecting skin and nerves, with a long incubation period. Depending upon bacillary load and host immunity, the clinical spectrum of leprosy is very wide. Leprosy, along with lepra reactions, can sometimes have uncommon clinical presentations, posing a diagnostic challenge leading to delayed treatment. We hereby present three cases of borderline lepromatous leprosy, two of them in type 1 lepra reaction, clinically mimicking papulosquamous conditions. Such scenarios with atypical presentations necessitate a keen clinical suspicion and confirmation with histopathological and microbiological examination, highlighting its role in early diagnosis, especially in endemic areas, for timely management of the disease.

Keywords: Papulosquamous, Borderline Lepromatous, Atypical

Introduction

Leprosy is a chronic granulomatous infectious disease caused by *Mycobacterium leprae* and *Mycobacterium lepromatosis*, primarily affecting the skin and peripheral nerves (Smith & Saunderson 2010). The most remarkable thing about leprosy is its enormously wide variation in the way it affects different people, depending upon the infected individual's immune status and genetic makeup (Sardana et al 2020).

Leprosy can sometimes have uncommon clinical presentations. To add on, lepra reactions, which are immunologically mediated episodes of acute or subacute inflammation during the natural chronic course of infection (Kar & Chauhan 2016), complicate the diagnosis further. Clinical suspicion of leprosy, especially in endemic areas, along with prompt histopathological and microbiological examination, for its confirmation plays a key role in its early detection. In this case series, we hereby report three cases of leprosy mimicking papulosquamous conditions.

Case 1:

A 65-year-old male, farmer by occupation, presented with multiple red raised scaly lesions, all over the body for 3 months. The lesions initially appeared over the abdomen, which gradually progressed in size and number to involve the chest, back, and upper and lower limbs over a period of 3 months. The lesions were associated

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with mild itching and white-colored scales, which were a handful in amount and easily fell off from the body.

On dermatological examination, there were multiple, well-defined erythematous annular plaques of diameter ranging from 2cm to 10cm,

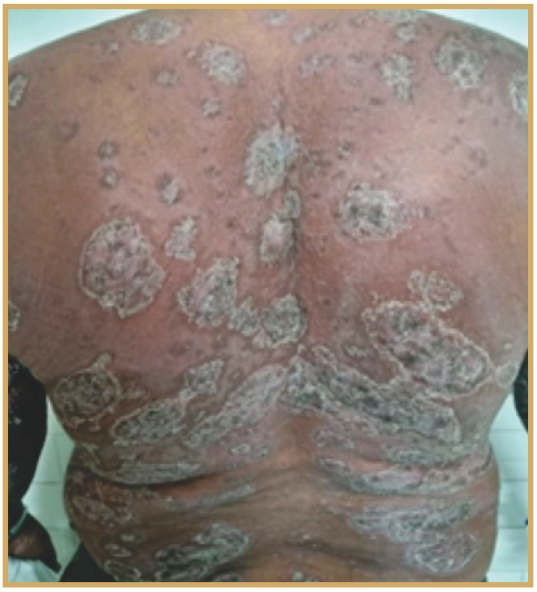

Fig. 1A : Multiple well defined erythematous plaques with white scales all over back.

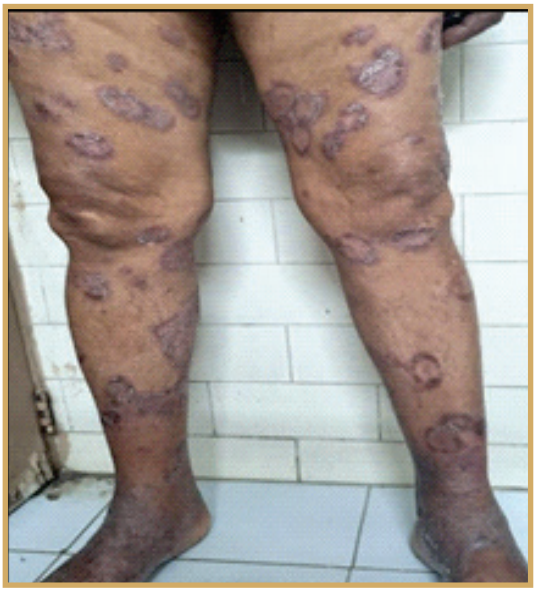

Fig. 1B : Multiple well defined annular plaques over bilateral lower limbs.

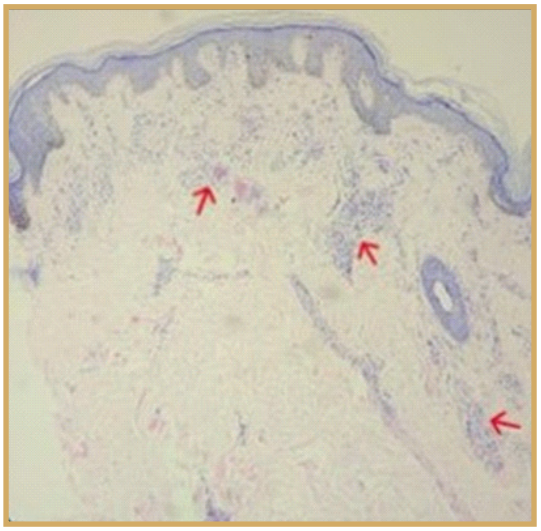

Fig. 1C : Low power (10X) magnification showing granulomatous inflammation in perineural and peri adnexal areas (red arrow).

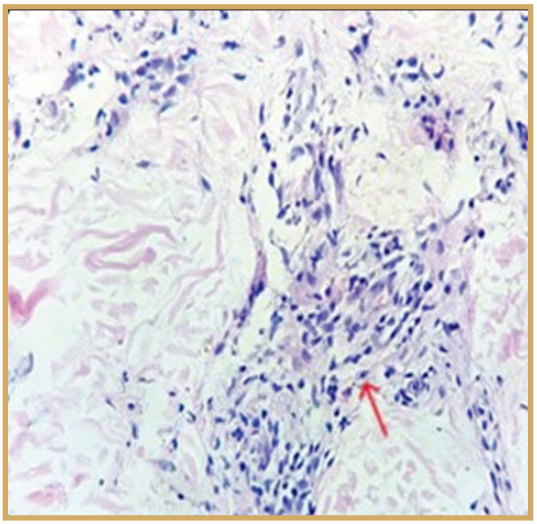

Fig. 1D : High power (40X) magnification of granuloma with epithelioid cells and macrophages (red arrow).

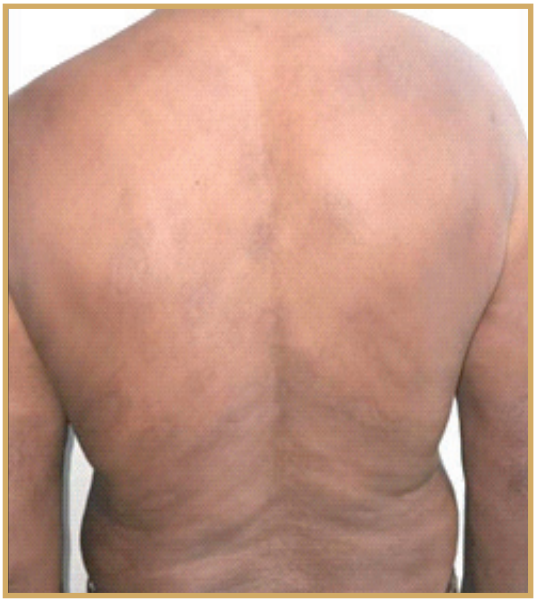

Fig.1E : Resolution of lesions over the back after 8 months of MB-MDT therapy.

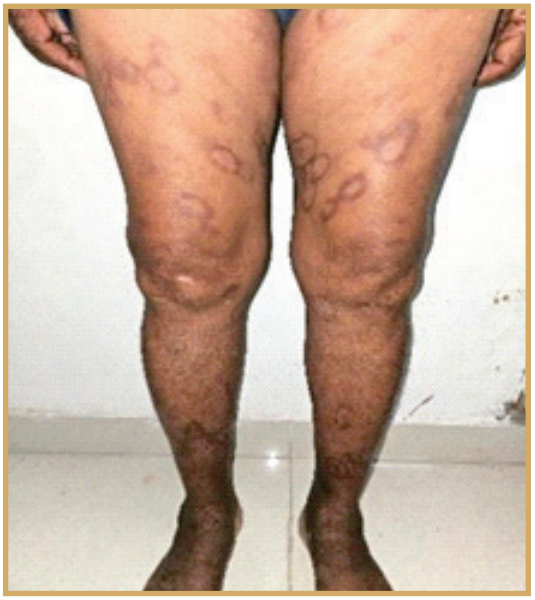

Fig 1F : Resolution of lesions over thigh with PIH after 8 months of MB-MDT therapy.

studded with loose white scales, discreetly distributed over the back, chest, abdomen, face, neck and all four limbs. Plaques over the lower limbs showed central clearing. (Figs. 1A and 1B)

Differential diagnosis of papulosquamous disorders like chronic plaque psoriasis, disseminated eczema, contact dermatitis, cutaneous drug reaction, mycosis fungoides, cutaneous lupus and borderline leprosy were considered.

Sensory examination revealed reduced touch, pain and temperature sensations over the lesions. Peripheral nerve examination showed left radial cutaneous, bilateral ulnar and bilateral common peroneal nerve grade 2 thickening with no tenderness.

Skin punch biopsy, from plaque over right thigh, showed granuloma consisting predominantly of macrophages with isolated clumps of epithelioid cells present around blood vessels and neurovascular bundles with surrounding sparse lymphocytic infiltrate. (Figs. 1C and 1D) The bacillary index showed AFB 3+, which led to the diagnosis of borderline lepromatous leprosy. A slit skin smear showed AFB 3+.

Patient was started on multibacillary multidrug therapy (MB-MDT) for one year and responded to it after about 8 months of regular treatment (Fig. 1E, Fig. 1F).

Case 2:

A 47-year-old male, presented with red-colored raised lesions all over his body for 2 months, and fever for 5 days. These lesions were first noticed over the back and increased in size and number to involve the whole trunk, upper and lower limbs, over a period of 2 months. A few lesions over the buttocks, back, and thigh were painful, associated with white-colored scales along with fever for 5 days which was low-grade, intermittent in nature and was associated with chills. There was no history of itching, drug intake, or sore throat prior

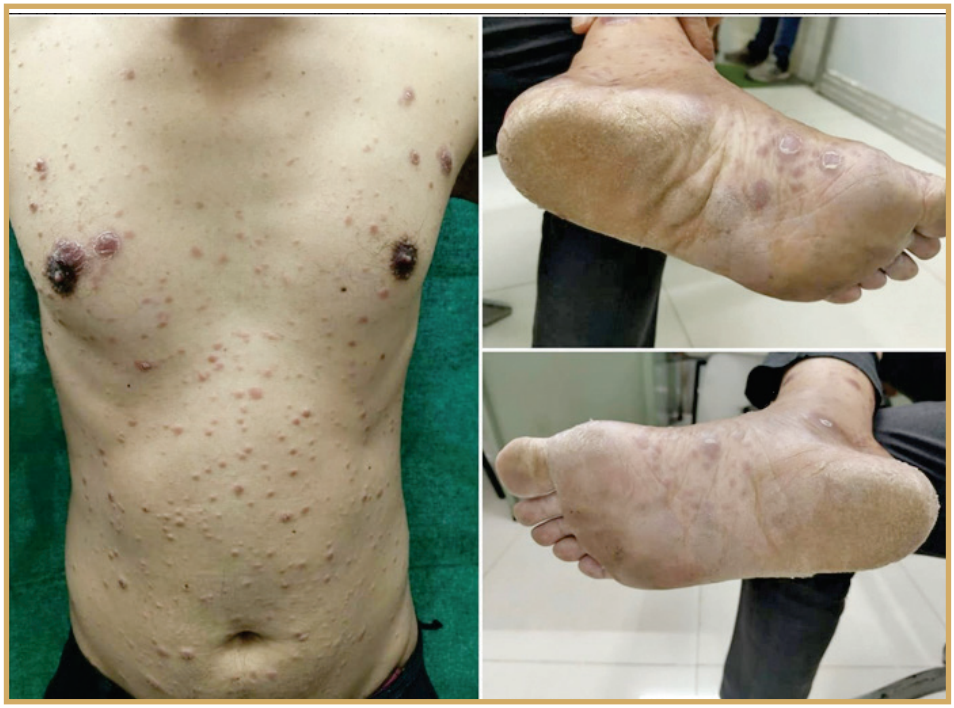

Fig. 2A : Multiple, discrete erythematous papules and plaques over the trunk and bilateral soles.

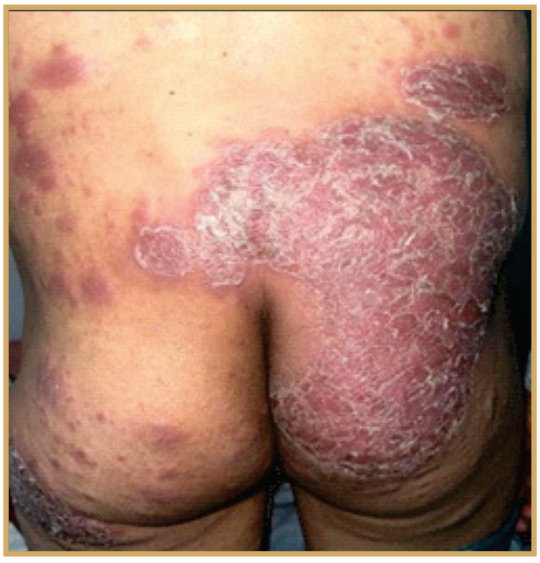

Fig. 2B : Single large, erythematous, edematous, plaque with scaling present over the gluteal region.

to the onset of lesions. The patient denied the history of high-risk behavior.

On dermatological examination, multiple well-defined erythematous papules and plaques of size ranging from 1.5 cm to largest 12cm in diameter were present over the chest, abdomen, back, buttocks, bilateral upper and lower extremities, palms and soles (Fig. 2A). A few tender plaques over the gluteal region, back and thighs were associated with erythema, edema and loose white scales (Fig. 2B).

Based on history and dermatological examination, differential diagnosis of psoriasis, secondary syphilis, eczema was made.

Skin biopsy was performed from plaque over the buttock. Histopathological examination revealed granulomatous inflammation, consisting predominantly of macrophages with

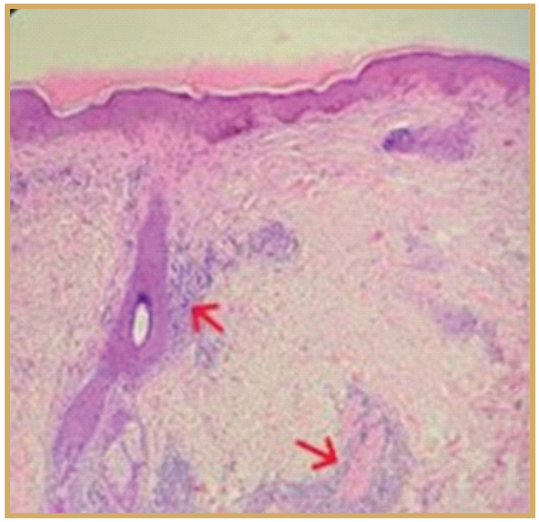

Fig. 2C : Low power (10X) magnification with dermis showing granulomatous inflammation around peri-adnexal and perineural structures (red arrow)

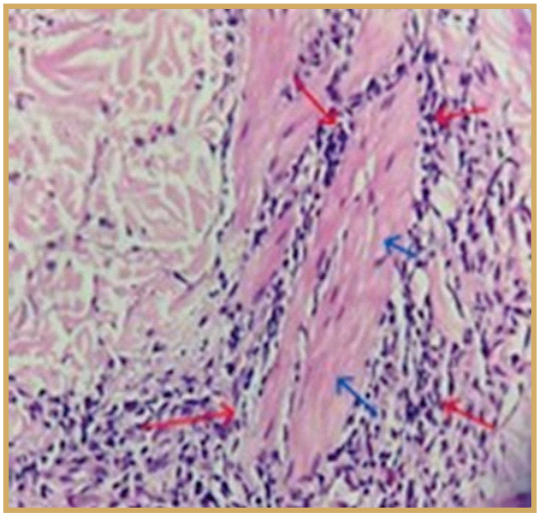

Fig. 2D : High power (40X) magnification of granulomatous inflammation (red arrow) around the nerve bundle (blue arrow).

isolated clumps of epithelioid cells present around adnexal structures, with surrounding lymphocytic infiltrate. (Figs. 2C and D), consistent with borderline lepromatous leprosy. Bacillary index was AFB 3+.

Peripheral nerve examination was performed. No nerve thickening or tenderness was noted. Sensations over patches, palms and soles was normal. Motor examination was normal. We also performed slit skin smear which showed AFB of 3+. Hence based on clinical, histopathological and microbiological findings, we confirmed diagnosis of borderline lepromatous leprosy with type 1 reaction.

MB-MDT was started for 1 year along with systemic corticosteroids in tapering doses leading to gradual improvement within 5 months of regular treatment.

Case 3:

A 67-year-old female, presented with red raised lesions over face, neck, chest, back, both upper and lower limbs since 2 years. The lesions started over back which gradually increased in size and number to involve chest, both the upper and lower limbs and face over a span of 6 months, associated with mild itching and scaling. Since last 2 months, the lesions over face developed increased redness, swelling, and scaling, associated with fever and chills.

On cutaneous examination, there was single, well to ill-defined scaly, erythematous, edematous, plaque covering both cheeks, nose, upper lip, chin, and part of the forehead (Fig. 3A). Also,

there were multiple, discrete, well-defined erythematous plaques, ranging from size 5x5 cm to 2x2 cm, associated with white-coloured fine scaling over the trunk, bilateral upper and lower extremities (Fig. 3B).

Sensory examination over patches, palms and soles was normal. Nerve examination showed grade 2 thickening of bilateral ulnar nerve, bilateral radial cutaneous nerve and bilateral

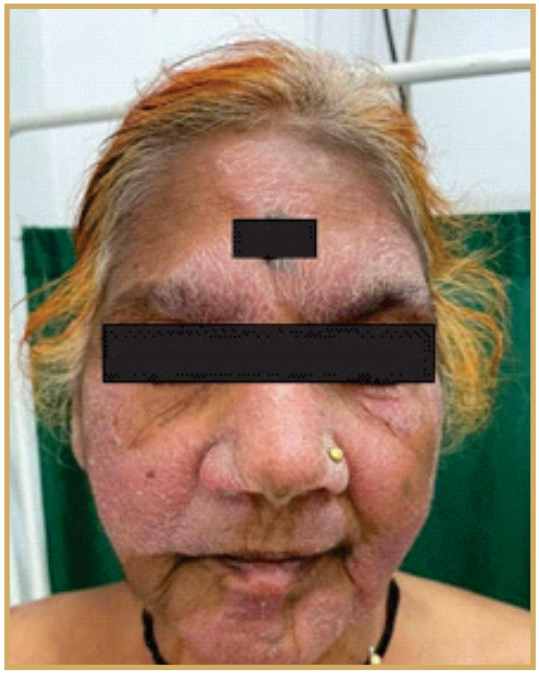

Fig. 3A : Single, well to ill-defined scaly erythematous, edematous, plaque covering both cheeks, nose, upper lip, chin, and part of the forehead.

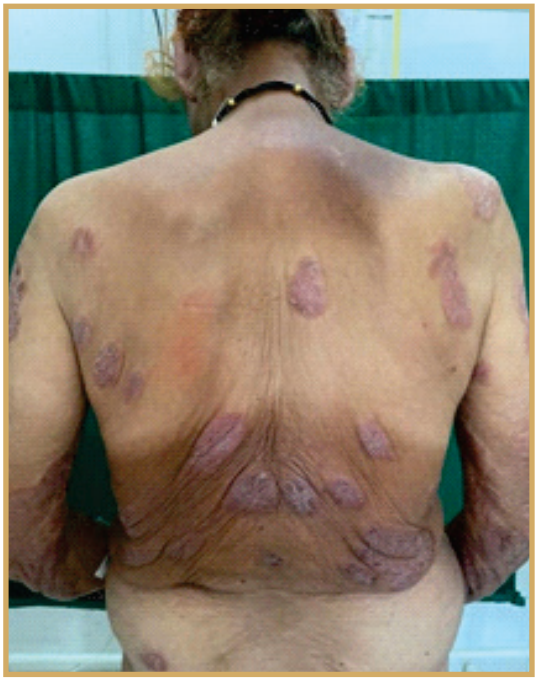

Fig. 3B : Multiple, discrete, well-defined, scaly, erythematous plaques over the back.

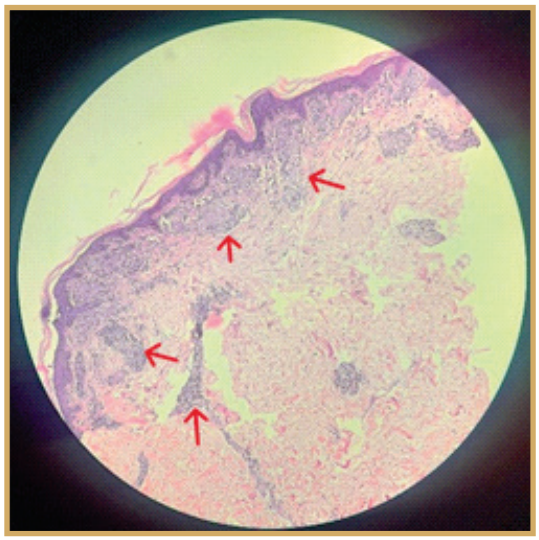

Fig. 3C : Low power (10X) magnification showing granuloma in superficial dermis and perineural structures, with lymphocytic infiltrate (red arrow).

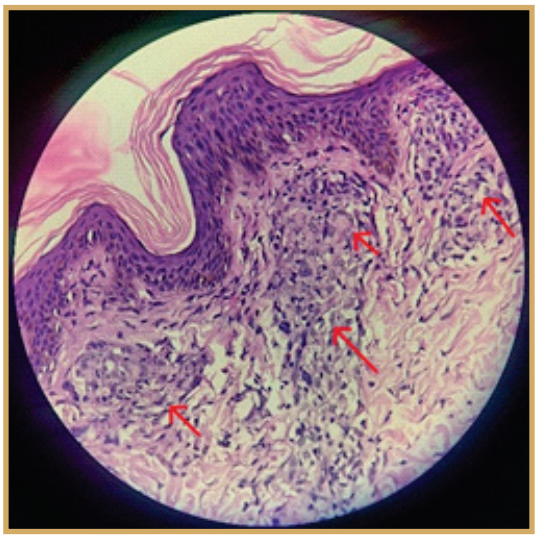

Fig. 3D : High power (40X) magnification of granuloma with epithelioid cells and macrophages (red arrow).

common peroneal nerve, with grade 1 tenderness of bilateral ulnar nerve.

A slit skin smear showed bacteriological index of 2+. Histopathological examination showed granuloma consisting predominantly of macrophages with clumps of epithelioid cells present around blood vessels, nerves and superficial dermis, with surrounding lymphocytic infiltrate (Figs. 3C and 3D). Bacillary index showed AFB 3+.

Based on clinical and histopathological features, a diagnosis of borderline lepromatous leprosy with psoriasiform type 1 reaction was made. The patient responded well to MB-MDT with corticosteroids.

Discussion

Borderline leprosy with or without type I reaction can mimic the common papulosquamous conditions like plaque psoriasis (Supekar et al 2023, Vora et al 2015), disseminated eczema, mycosis fungoides, secondary syphilis, contact dermatitis, cutaneous lupus, drug reaction, sarcoidosis and leishmaniasis. The lesions of type I lepra reaction being erythematous, edematous and painful, when associated with scaling can be easily confused with plaque psoriasis, manifesting as psoriasiform type 1 lepra reaction (Kumar et al 1992). In this case series, we have described leprosy and its reactional states, manifesting clinically as psoriasiform lesions. In case 2, leprosy was detected incidentally on histopathology.

There is a historical relationship between leprosy and psoriasis. The term 'Lepra' was used to describe many skin diseases, including psoriasis, eczema, vitiligo, alopecia areata and boils. Hippocrates (460–377 BC), used the word 'psora' to describe itch, and 'lopoi' to describe the dry and scaly features of skin conditions. In 1809, Robert Willan (1757–1812), used the term 'lepra vulgaris' to discuss modern psoriasis, which again further perpetuated the confusion between psoriasis and leprosy. Ultimately, it was Ferdinand von Hebra (1816–1880), who permanently shed the term 'lepra' from the description of psoriasis in the 1800s, finally allowing the two diseases to be separate (Sarfraz & Butt 2023). There have been various reports of the coexistence of leprosy and psoriasis in the same patient (Kumar et al 1992, Dogra et al 2003).

Conclusion

Leprosy can be a great mimic of many conditions. Vigilant approach is crucial, especially in endemic countries like India, to identify the diverse manifestations of leprosy. Also, provisions of Slit skin smear [SSS] and biopsy are not adequately available across public health system, with SSS being the weakest link in leprosy control programs. These Bacillary Index positive cases are the source of transmission in the community and if not promptly diagnosed and treated will continue shedding bacteria, accelerating the transmission. Thus, leprosy and lepra reactions with uncommon presentations, should be actively ruled out in suspected cases with the help of microbiological and histopathological examination. This awareness is essential for ensuring timely diagnosis and treatment, contributing to the reduction of morbidity, particularly in cases where effective treatment is possible.

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