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Case Report

Sole, An Uncommon Location of Borderline Tuberculoid Hansen's Disease

S Nair[1], M Phiske[2], S Someshwar[3]

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Leprosy a chronic granulomatous infection, frequently affects areas with relatively low temperature and which are trauma prone. Areas like scalp, palms and soles, groins, genitalia, axillae, eyelids, and perineum, have been described as "immune" to development of leprosy. But clinic-pathological and bacteriological evidence of involvement of these so-called "immune zones" has rarely been documented. Palmoplantar involvement is uncommon in leprosy and could be easily misdiagnosed. We report here a case of 65-year-old male who had a single, well defined, round, 5*5 cm, dull erythematous to hyperpigmented plaque with central clearing over medial aspect of left foot extension as single, erythematous, roundish 2*2cm, plaque with central clearing over medial aspect of left foot just below ankle, for 3 months. There was decreased sensation to hot and cold temperature and to fine touch and pain over the lesions. Sensory examination elsewhere on the body was normal. There was no motor loss, no thickened nerves, no deformities, trophic ulcers or evidence of reaction. Histopathology of sole lesion suggested borderline tuberculoid Hansen's disease. Stain for AFB was negative. Slit skin smear was negative. Good response to MDT was seen at end of 4 months. Such presentation needs to be kept mind for diagnosis of leprosy for instituting timely and appropriate treatment.

Keywords : Hansen's, Soles, Granuloma, Borderline Tuberculoid, Leprosy

Introduction

Lepra bacillus has affliction for areas with relatively low temperature (<37°C), e.g skin, peripheral nerves, eyes and testes (Divyalakshmi et al 2021, Rajashekhar et al 2009). Hence areas of skin with relatively lower temperature and more exposed to trauma are mainly affected, commonly involving face, knees, elbows, gluteal region, dorsal aspect of extremities and trunk (Divyalakshmi et al 2021).

Areas like scalp, eyelids, axillae, palms and soles, groins, genitalia, lumbosacral area, midline of back and perineum are described as immune to development of leprosy lesions, hence are termed "immune zones" (Divyalakshmi et al 2021, Rajashekar et al 2009, Indira et al 1999). Relatively high local temperature is responsible for sparing of these zones (Indira et al 1999). But clinical, histological and bacteriological involvement of these zones is documented, hence they are called "relative immune zones" rather than "absolute immune zones" (Divyalakshmi et al 2021, Rajashekar et al 2009).

Involvement of soles and palms considered

[1] Dr Surina Nair, 2nd year Resident
[2] Dr Meghana Phiske, Associate Professor
[3] Dr Shylaja Someshwar, Professor and Head of Department
Dept of Dermatology, MGM Medical College and Hospital, Navi Mumbai-410209, Maharastra, India.
Corresponding Author : Dr Surina Nair, **Email** : surinanair@gmail.com

as relatively immune zones is well known in leprosy for a long period (Hopkins et al 1929, Rajashekhar et al 2009). However, localization of leprosy lesions to palms and soles may not draw attention to leprosy, thereby leading to delayed diagnosis. For this reason, we are reporting this case to keep the focus of treating doctors on such presentations.

Case report

A 65 year old male presented for evaluation of a asymptomatic dark raised lesions over sole of left foot since 3 months. He had taken treatment in form of oral and topical antibiotics along with steroid antibiotic combination for 10 days without any relief.

Cutaneous examination revealed a single, well defined, round, 5*5 cm, dull erythematous to hyperpigmented plaque with central clearing over medial aspect of left foot with extension as single, erythematous, roundish 2*2cm, plaque with central clearing over medial aspect of left foot just below ankle, since 3 months (Figs. 1, 2). There was decreased sensation to hot and cold temperature and also to fine touch and pain over the lesions. Sensory examination elsewhere on the body was normal. However, there was no motor loss/thickened nerves/deformities/ trophic ulcers or evidence of reaction. Differential diagnosis at the time of presentation considered were BT Hansen's, annular sarcoidosis and lupus vulgaris.

Routine blood investigations and X ray chest were normal. Biopsy showed unremarkable

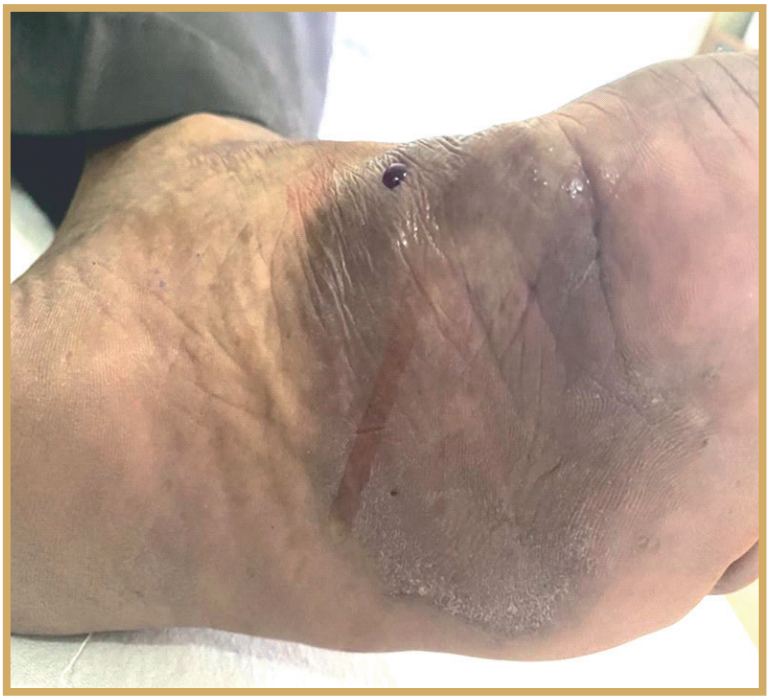

Fig. 1 : Single, well defined, round, 5X5 cm, annular, dull erythematous to hyperpigmented plaque over medial aspect of left sole.

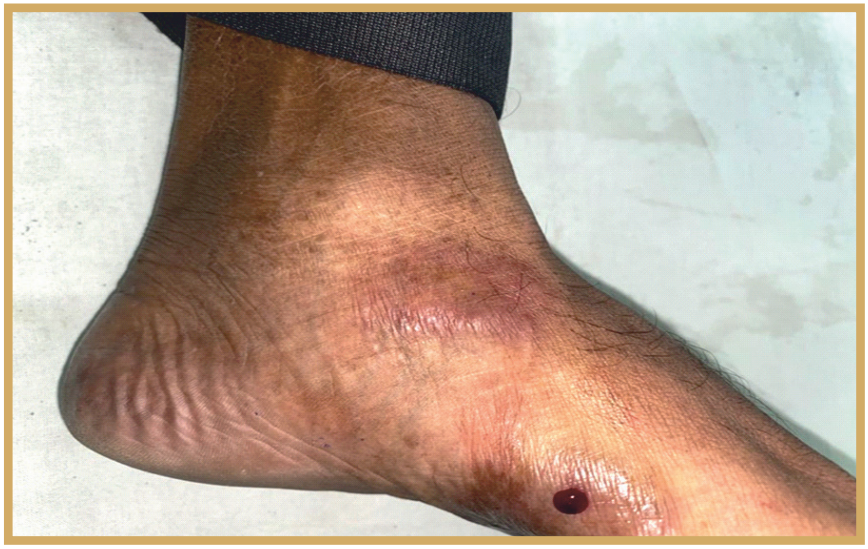

Fig. 2 : Single, erythematous, round, 2X2cm, plaque with slight central clearing over medial aspect of left foot just below ankle.

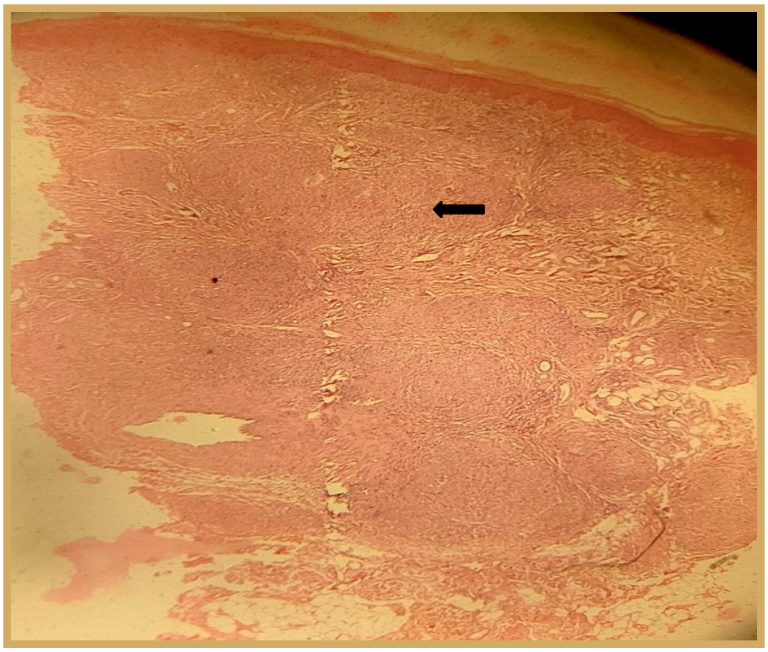

Fig. 3 : Basket weave hyperkeratosis overlying mildly acanthotic epidermis with well-formed granulomas in the entire dermis and subcutaneous tissue (H&E, 4X).

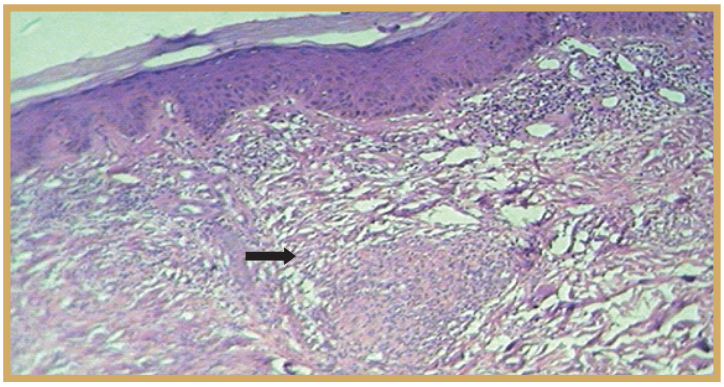

Fig. 3a : Basket weave hyperkeratosis overlying a mildly acanthotic epidermis. Perivascular lymphocytes in the upper dermis with well-formed granulomas (H&E, 10X) .

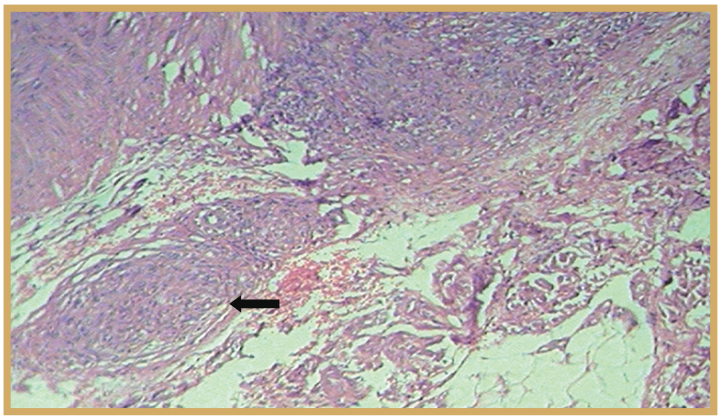

Fig. 3b : Well-formed granuloma in deeper dermis and subcutaneous tissue (H&E, 10X).

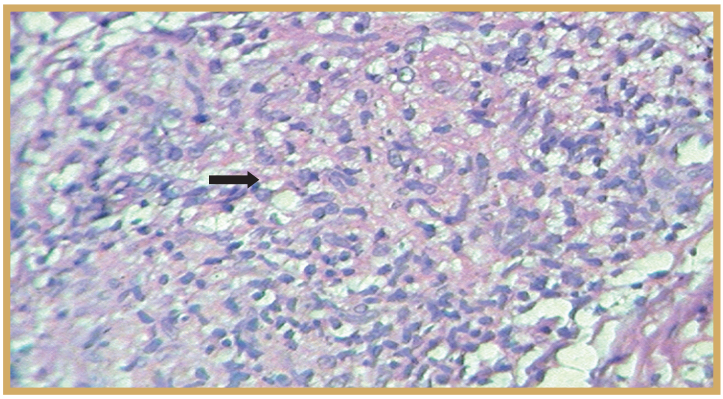

Fig. 3c : Well-formed granulomas composed of lymphocytes and epithelioid cells (H&E, 40X).

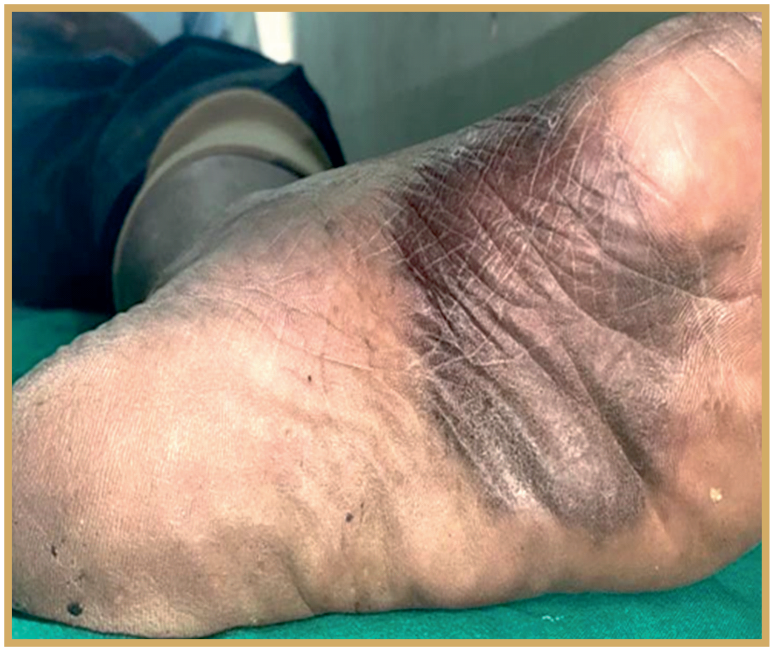

Fig. 4 : Flattening of lesions on sole at end of 4 months.

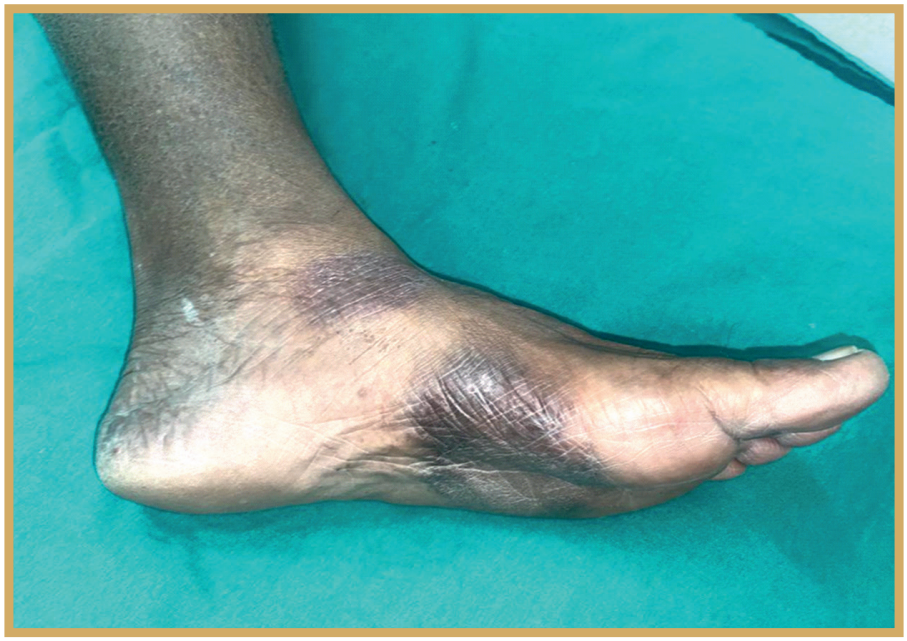

Fig. 4a : Flattening of lesions over ankle at end of 4 months.

epidermis, well-formed granulomas composed of lymphocytes and epithelioid cells in dermis and subcutaneous tissue, with peri appendageal granulomas and moderately dense perivascular lymphocytic infiltrate in papillary dermis (Figs 3, 3a, 3b, 3c). Based on these findings a diagnosis of borderline tuberculoid leprosy was made and multidrug therapy was started with marked flattening of lesions at end of 4 months (Figs 4, 4a). Slit skin smear was negative. Stain for AFB in biopsy was negative. Good response to PB-MDT was seen at end of 4 months.

Discussion

Palmoplantar involvement is not frequent in leprosy (3.6-12.2%), with palmar involvement being more than plantar involvement. Palms are relatively cooler than rest of the body, have rich nerve supply and are more prone to trauma making them more susceptible to development of leprosy. But palmoplantar epidermal thickness is approximately 1.5 mm, being thicker than other skin areas and hence is comparatively warmer. Significant amount of fibrofatty tissue in palms/ soles ensures proper insulation and hence high nerve bed temperature making localization of *M. leprae* less likely (Divyalakshmi et al 2021, Rajashekar et al 2009).

Palmoplantar involvement is seen more in lepra 1 reactions in borderline leprosy (palms more involved than soles). Though cause is unknown, it may be that the lepra reactions cause inapparent lesions to become prominent and clinically more visible (Dabas et al 2021, Divyalakshmi et al 2021).

Palmoplantar involvement has been reported by several authors (Rajashekar et al 2009). Some interesting reports are:

(i) Rajendran (1987) : 3 cases of tuberculoid leprosy with palmoplantar lesion.

(ii) Aggarwal et al (1987) : 3 cases of tuberculoid leprosy with palmar lesions.

(iii) Chattopadhyay et al (1989) : 1 case of borderline tuberculoid leprosy in reaction with lesions on palms and soles.

(iv) Pavithran (1990) : 2 patients, 1 with borderline tuberculoid Hansen's disease and other was nodular lepromatous leprosy mainly on palms and soles.

(v) Baslas et al (1992) : Histoid lepromatous leprosy with palmar involvement.

(vi) Sharma et al (1994) : 3 cases of tuberculoid leprosy on sole.

(vii) Grover et al (1997) : Borderline tuberculoid leprosy with palmar lesions.

(viii) Sajad et al (2015) : Borderline tuberculoid with palmar lesions.

Hopkin et al (1929) studied 245 leprosy patients of which plantar involvement was seen in 5.9% cases. Indira et al (1999) had screened 280 leprosy patients of which plantar involvement was seen in 21.4%. In their study, palmoplantar lesions were seen more commonly in females (14.4%) as compared to males (8.3%), which were found in BT, BL and LL spectrum. Different morphologies reported in their study where hypopigmented, hyperpigmented and erythematous macules, erythematous plaques, annular plaques, arciform lesions and erythema nodosum leprosum lesions.

Our patient was a male patient who presented with borderline tuberculoid Hansen's disease, was not in reaction with a hyperpigmented annular lesion on the left sole with extension to left ankle. There were no other signs of localized or disseminated Hansen's Disease. Clinical suspicion supported by histopathology helped in confirming the diagnosis of leprosy. This awareness is very important in continued challenge of leprosy specially in low endemic

settings when the expertise is expected to become lesser and lesser with the passage of time.

Conclusion and way forward

Leprosy, a protean disease can affect any site, including clinically normal areas, could be a great mimicker and can have atypical and uncommon presentation. Palmoplantar involvement, although uncommon, has been associated with higher risk of reactions and disabilities. Hence a high index of suspicion is necessary to diagnose such unusual presentation of leprosy so as to ensure timely and appropriate management which will help to improve patient's quality of life (Dabas et al 2021).

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