Localized borderline lepromatous leprosy

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Summary A 48-year-old soldier presented with 3 small leprosy lesions localized over the flexor area of the forearm. There was no nerve thickening and clinically the lesions looked like borderline-tuberculoid leprosy. However, these lesions demonstrated a bacteriological index (BI) of 4+ while no acid-fast bacilli (AFB) could be demonstrated from any other site of the body. A lepromin test was negative. Histologically evidence of borderline lepromatous leprosy was conspicuous. The case was diagnosed as localized borderline lepromatous-leprosy and treated with multidrug therapy. After 1 year of treatment, the lesions regressed, a lepromin test was positive (5 mm) and the BI from the lesions fell to 1+.

Introduction

Leprosy exhibits a wide variation in presentation in different persons ranging from the tuberculoid to the lepromatous spectrum depending upon the immune status of the individual.1 The possibility of bacterial strains of varying pathogenicity was ruled out by Rees.2 Different variants of lepromatous leprosy have also been reported. These are of a diffuse type (Lucio),3 nodular type (histoid)4 and localized type.5,6 It is generally believed that lepromatous leprosy in India often originates from the borderline spectrum.7 We are reporting a case of localized lepromatous leprosy in view of its rarity of presentation.

Case report

A 48-year-old soldier belonging to a moderately endemic leprosy area in India presented with 3 erythematous and infiltrated hypoaesthetic patches with partially defined margins on the upper flexor area of the right forearm of 1 month’s duration. All these lesions were approximately 1 x 1 cm in size (Figure 1). There was no peripheral nerve thickening. A slit-skin smear from the lesions revealed a BI of 4+ (Figure 2) while slit-skin smears taken from the eyebrows, ear lobes, dorsum of the fingers and buttocks were negative. Nasal scrapings were also negative for AFB. A lepromin test was negative. Skin biopsies from the lesions revealed atrophy of rete pegs with a clear subepidermal region. The dermis revealed infiltration of lymphocyte and macrophages along with a few epitheloid cells.
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Figure 1. Three small lesions localized over flexor aspect of right forearm at the time of diagnosis.

Figure 2. Photomicrograph of lesion in Figure 1 showing foamy macrophages with AFB (ZN x 550).

Foamy changes were seen in some of the macrophages (Figure 3). This patient was diagnosed as having localized borderline lepromatous leprosy and put on multidrug therapy consisting of 100 mg of dapsone daily, 100 mg of clofazimine on alternate days together with a monthly pulse of 600 mg of rifampicin and 300 mg of clofazimine (MDT as per WHO recommendations). Six months after treatment the patient had a reactional episode which led to coalescing of the 3 patches and the appearance of 2 satellite lesions. A thickened nerve to the patch could also be palpated. After 1 year of treatment the
coalesced patches flattened (Figure 4); a lepromin test was positive (5 mm); a slit-skin smear from the patch did not reveal any AFB and repeated histology revealed normal epidermis with the dermis showing a few scattered mononuclear cells hugging the epidermis in places (Figure 5). This patient is still under treatment with MDT as per WHO recommendations for multibacillary cases.

**Discussion**

Clinically this case appeared as borderline–tuberculoid leprosy and it was on histology and bacteriology that a diagnosis of borderline–lepromatous leprosy was entertained.

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**Figure 3.** Photomicrograph of lesion in Figure 1 showing atrophy of rete pegs, clear sub-epidermal zone with dermis showing lymphocyte, macrophages and few epitheloid cells (H & E ×120).

**Figure 4.** Coalesced atrophic skin patch with satellite lesion after 1 year of treatment.
This clinical and histological discrepancy has also been reported earlier.\textsuperscript{8,9}

This case is perhaps relevant to the controversy concerning the skin as a possible portal of entry in leprosy and one may postulate that bacilli, after gaining entry through the skin of this lepromin-negative individual, multiplied locally, producing a borderline lepromatous picture. Certain unknown factors (? local) were able to limit the disease locally to 3 lesions only as has been earlier postulated in localized lepromatous leprosy.\textsuperscript{5}

In cases where leprosy has developed following tattooing\textsuperscript{10,11} it was noticed that not all the sites of tattooing developed leprosy. This escape of sites also suggests the possible role of local factors in the pathogenesis of the disease. Biopsies from contacts of leprosy patients have occasionally demonstrated a presence of lepra bacillus in the skin with no evidence of leprosy during the subsequent follow-up.\textsuperscript{12} This may be because of the generalized immune status of the individual or due to certain unknown local factors inhibiting the further spread of the bacilli. The role of local factors is also evident by relative sparing of the midline of the back having a body temperature equivalent to other body areas. It has been postulated that the entry of \textit{Mycobacterium leprae} through the human skin causes paucibacillary disease.\textsuperscript{13} However, in experimental leprosy entry through the skin is known to cause multibacillary disease.\textsuperscript{13,14} As 14\% of lepromin negative healthy persons are known to develop lepromatous leprosy,\textsuperscript{15} possibly the lepromin negative status in this patient produced a multibacillary picture. Nevertheless, this does not explain the localization of the disease.

References

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Un cas limite de lepre lépromateuse localisée

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*Sommaire* On présente le cas d’un soldat de 48 ans avec trois lésions lépreuses de petite taille localisées sur la zone du fléchisseur de l’avant-bras. Le nerf ne montrait pas des signes d’augmentation de grosseur et, au niveau clinique, les lésions se rassemblaient à celles qu’on trouve chez des cas limites de lepra tuberculoid. Néanmoins, l’indice bactériologique (BI) des lésions était de 4+, bien que la présence des bacilles acido-résistants (AFB) n’ait pas été détectée ailleurs dans le corps du patient. L’essai de la lepromine a donné des résultats négatifs. Au niveau histologique, les signes de cas limite de lepra lépromateuse étaient évidents. La maladie a été diagnostiquée cas limite de lepra lépromateuse et le patient a été mis sous traitement à drogues multiples. Un an après le commencement du traitement, les lésions avaient régressé, l’essai de la lepromine a donné résultat positif (de 5 mm), et le BI des lésions avait baissé jusqu’à 1+.

Un caso incierto de lepra lepromatosa localizada

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*Resumen* Se presenta el caso de un soldado de 48 años con tres pequeñas lesiones leprosas localizadas en el antebrazo sobre la zona del flexor. Los nervios no mostraron ningún aumento de grosor y, clínicamente, las lesiones parecían aquellas de los casos limites de lepra tuberculosa. No obstante, el índice bacteriológico (BI) de estas lesiones resultó ser de 4+, mientras que no se detectaron bacilos acidorresistentes (AFB) en ninguna otra parte del cuerpo. Se llevó a cabo un ensayo de la lepromina, que dio resultado negativo. A nivel histológico, los indicios de caso limite de lepra lepromatosa eran amplios. Se diagnosticó como caso limite de lepra lepromatosa localizada y el paciente fue sometido a una terapia de drogas multiples. Después de un año de tratamiento, las lesiones se habían retraído, el ensayo de la lepromina dio resultado positivo (de 5 mm) y el BI de las lesiones había bajado a 1+.