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CASE REPORT

Borderline Lepromatous Leprosy Masquerading as Granuloma Annulare: A Case Report

Birundha B,[1,*] Senthil Kumaran,[2] Kalaiarasan S,[1] Jeya Shambavi[3] and Jawahar R[4]

[1]*Assistant Professor, Department of Pathology, Aarupadai Veedu Medical College and Hospital, Vinayaka Mission's Research Foundation (Deemed to be University), Pondicherry*
[2]*Senior Resident, Department of Pathology, Aarupadai Veedu Medical College and Hospital, Vinayaka Mission's Research Foundation (Deemed to be University), Pondicherry*
[3]*Professor, Department of Pathology, Aarupadai Veedu Medical College and Hospital, Vinayaka Mission's Research Foundation (Deemed to be University), Pondicherry*
[4]*Professor & HOD, Department of Pathology, Aarupadai Veedu Medical College and Hospital, Vinayaka Mission's Research Foundation (Deemed to be University), Pondicherry*

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Abstract

Background: Leprosy is a chronic granulomatous disease caused by Mycobacterium Leprae. Leprosy is a great imitator with its various atypical, unusual and varying clinical presentations which can be confused with many infectious and non-infectious diseases. **Case Report:** A 46-year-old female presented to the dermatology department with complaints of painful raised lesions over face, upper back, upper limbs, lower legs and feet for 12 months. Clinically suspected as a case of Granuloma annulare. Punch biopsy was taken which revealed epidermis with dermis showing nodules of histiocytes and lymphocytes with grenz zone at the dermoepidermal junction. Acid fast stain and Fite Faraco stain was performed which revealed the presence of leprae bacilli with bacteriological index of 4+. **Conclusion:** Detailed history-taking and correlating clinical picture with morphology is required to diagnose atypical presentations of leprosy. Early diagnosis helps to provide appropriate treatment and thus prevent from devastating complications.

Keywords: Lepromatous leprosy, Hansen's disease, Granulomas, Granuloma annulare

*Corresponding Author: Birundha B
Email: bvbrindha693@gmail.com

Introduction

Leprosy, caused by Mycobacterium Leprae is a chronic granulomatous infection affecting mostly skin and mucous membrane. As per World Health Organization, in 2020, 127,558 new cases of leprosy was detected worldwide [1,2]. Even nowadays new leprosy cases were detected in tropical regions like India [3]. Leprosy usually presents with wide spectrum of clinical features, most common being hypopigmented, hypoasthetic skin lesions, thickened subcutaneous nerves, and the diagnosis is confirmed by the presence of acid fast bacilli. Using histopathological findings, skin-slit smear and acid fast staining of the bacteria and the bacterial index, Ridley-Jopling classification of leprosy categorize the disease into 5 types- tuberculoid to lepromatous leprosy [4]. Emerging newer forms of clinical presentation of leprosy includes bullae with hematoma and xanthoma like presentation. The disease can be contagious and can also presents with unusual presentations such as crippling complications, so timely diagnosis and management of leprosy is extremely important [5].

Granuloma annulare (GA) is a benign, self-limited cutaneous disorder seen as either localized or generalized variant. Localized lesion presents as annular groups of skin-colored to erythematous papules and plaques in dorsal hands or feet. Other uncommon variants are disseminated papular GA, and atypical generalized GA, subcutaneous GA, perforating GA, providing a way for wide spectrum of clinical lesions [6].

Based on the cell-mediated immune response of the individual, the types of leprosy vary from tuberculoid to borderline leprosy [7]. To aid in treatment decisions, the World Health Organization (WHO) classified leprosy based on the bacillary index and involvement of skin and nerves, into PB and MB leprosy [7]. Leprosy is currently diagnosed by clinical and microbiological evaluation using SSS [8,9].

Due to unusual presentations, it delays the diagnosis and management. In those cases, histopathology comes to rescue in confirming the diagnosis [10,11].

Here we present a case of Borderline lepromatous leprosy which was masquerading as Granuloma annulare.

Case Report

A 46-year-old female presented to the dermatology department with complaints of painful raised lesions over face, upper back, upper limbs, lower legs and feet for 12 months. The patient was apparently normal before 12 months, later which she developed skin lesion which was insidious in onset. No history of photosensitivity. No history of known comorbidities like Diabetes mellitus and hypertension. General examination and vitals of the patient were normal. On local examination of skin, multiple erythematous and indurated plaques were noted predominantly over Upper arms, forearms, and upper back. A few of the lesions showed central hypopigmentation and sloping periphery mimicking granuloma annulare. Indurated nodules were seen on the back, forearm and lower legs (Figure 1).

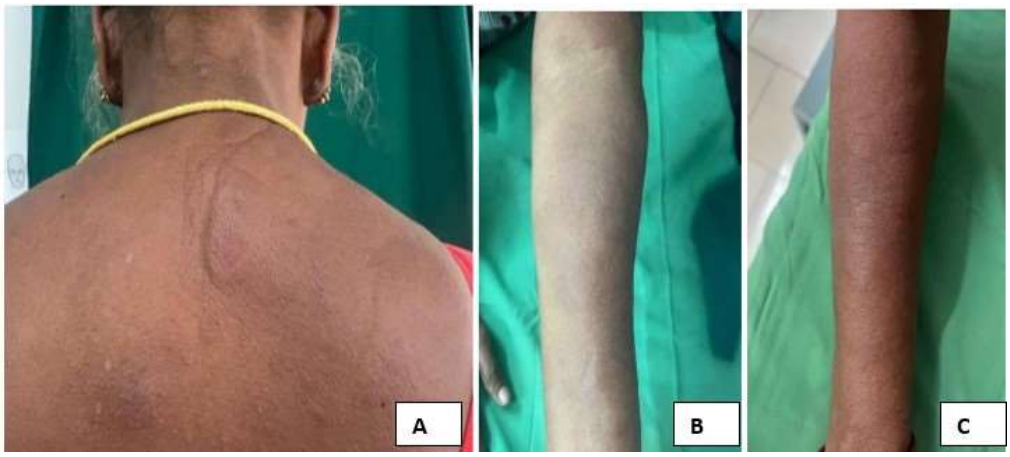

Figure 1. Multiple erythematous plaques over back (A),upper limb (B,C).

Based on the clinical presentation, the following differential diagnoses were considered- Granuloma annulare, Tumid lupus erythematosus, Scleroderma, and lupus panniculitis. Punch biopsy was taken from two different sites, one from medial aspect of left lower leg and another from the upper back lesion. The specimen was examined and processed in the Histopathology laboratory. Microscopically, multiple sections studied showed epidermis with attenuated rete ridges. A clear grenz zone was seen under the epidermis. Dense cellular infiltrate of predominantly histiocytes with scanty lymphocytes were seen destroying the cutaneous appendages extending into the subcutaneous fat. These histiocytes showed eosinophilic to pale foamy cytoplasm. These activated epithelioid cells were seen forming ill -defined granulomas (Figure 2).

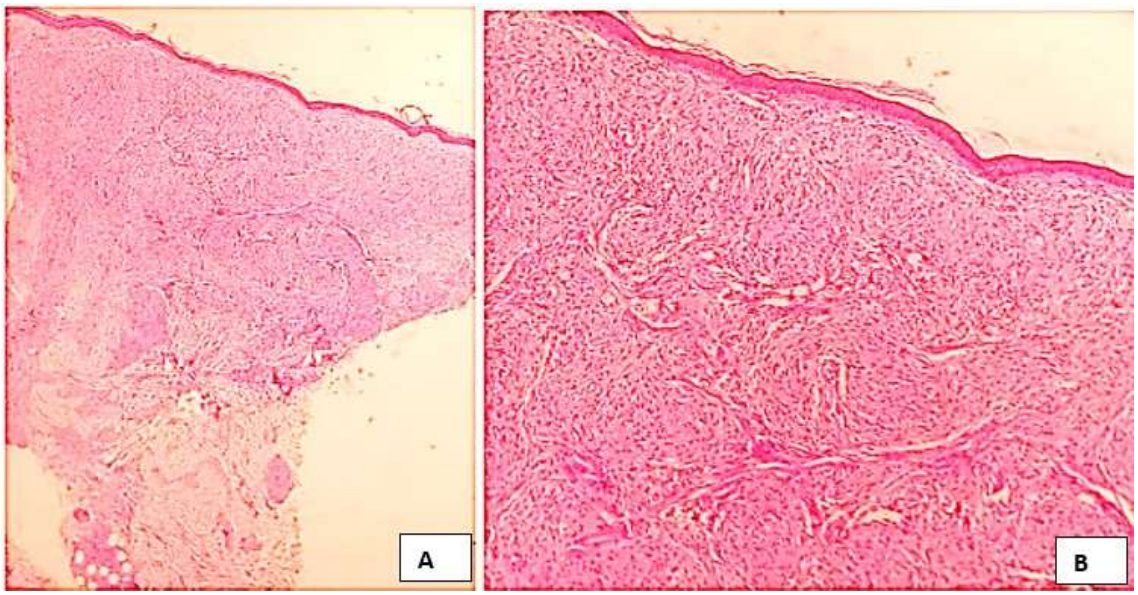

Figure 2. **A:** Histopathology showing thin epidermis, with a narrow grenz zone and dermis showing cellular granulomatous infiltrate. [H&E stain, 100x] **B:** Histopathology showing multiple ill-defined granulomatous infiltrates. [H&E stain, 400x]

Dermal edema and altered collagen were also seen which overlapped with the findings of granuloma annulare, hence Alcian blue stain was performed to rule out the presence of mucin. Alcian blue stain was found to be negative for mucin. Overall findings raised the suspicion of Hansen's disease, so Acid fast stain and Fite Faraco stain was performed for further evaluation. Both stain showed pink rod shaped bacilli with a bacteriological index of 4+ (Figure 3).

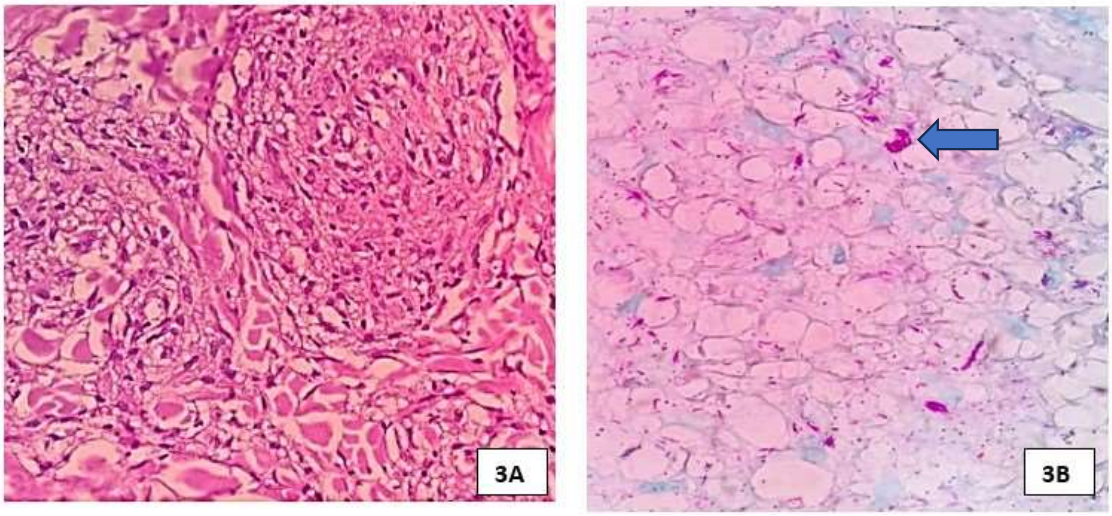

Figure 3. **A:** Histopathology showing ill-defined granuloma with collection of epitheloid histiocytes. **B:** Fite faraco stain showing globi of lepra bacilli [Fite- Faraco stain, 1000x]

Discussion

Leprosy, a chronic granulomatous infection caused by Mycobacterium leprae affects ost commonly the skin and peripheral nerves.[12] Ridley Jopling classification categorized leprosy based on its clinical, histopathological, and immunological findings into 6 groups.[13,14] Borderline leprosy is between tuberculoid and lepromatous leprosy [13,14].

The diagnosis of leprosy needs one of three criteria (1) hypopigmented or erythematous skin lesions, such as macules or plaques, with loss of skin sensation; (2) thickening or enlargement of the peripheral nerves and signs of nerve damage and for microbiological confirmation (3) Presence of acid-fast bacilli (AFB) in scrapings of skin lesions and/or biopsies. Early and diagnosis of leprosy is crucial to prevent permanent damage and further complications [15-17].

Clinical presentation of Leprosy varies, our case presented as indurated erythematous plaques which leads to many differential diagnoses as Tumid LE, Granuloma annulare, lupus panniculitis and scleroderma. Granuloma annulare is histologically characterized by degenerated collagen fibres, interstitial histiocytic collection, and deposition of mucin. Granuloma annulare can present in different histopathological patterns such as interstitial (57.9%), palisaded granuloma (26.3%), sarcoidal granuloma, and mixed [18].

Alcian blue done for mucin was found to be negative, which ruled out the possibilities of Granuloma annulare and Tumid LE. Lymphocytic infiltration around adipocytes were made out, but there was no fat necrosis which ruled out the possibility of Lupus Panniculitis.

Hence we proceeded with AFS and Fite farraco stain which stained the acid fast bacilli as pink. 10-100 bacilli seen in every field giving an bacteriological index of 4+.Due to the presence of grenz zone with multiple granulomas and an bacteriological index of 4+, we concluded this case as Borderline lepromatous leprosy.

Leprosy possess major discrepancy between the clinical findings and histopathological picture due to its varying clinical presentations, especially in Borderline lepromatous leprosy type. This is due to the immune response and the immunological status of the Individual [6].

Conclusion

The correlation of clinical and histopathological features is essential for diagnosis [1]. Due to its wide variation in clinical presentation, all suspected cases should be carefully evaluated for leprosy to prevent misdiagnosis. Histopathology plays a major role in establishing an accurate diagnosis. Both, common as well as uncommon clinical presentations should be kept in mind to avoid untoward delay in diagnosis [6].

Statements and Declarations

Conflicts of interest

The authors declares that they do not have conflict of interest.

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