

Detailed clinical examination as a key for the differential diagnosis between Leprosy and Necrobiosis Lipoidica: A case report

Exame clínico detalhado como chave para o diagnóstico diferencial entre hanseníase e necrobiose lipoídica: relato de caso

Examen clínico detallado como clave para el diagnóstico diferencial entre Lepra y Necrobiosis Lipoidea: reporte de caso

Rafaela Garcia Pereira¹ , Malu de Aquino Almeida Garcia¹ , Natália Senado Alves de Campos¹ , Ana Thais Machado Moutinho¹ , Josie Eiras Bisi dos Santos¹ , Maria Amélia Lopes dos Santos¹ , Elcilane Gomes Silva¹ , Carla Andréa Avelar Pires¹ 

¹Universidade do Estado do Pará – Belém (PA), Brasil.

Abstract

Introduction: Necrobiosis lipoidica is a rare granulomatous dermatosis that may mimic leprosy, especially in endemic countries. **Case presentation:** We report the case of a 62-year-old woman presenting with pretibial erythematous plaques, without sensory alterations and with an initial histopathological granulomatous pattern. She was treated as tuberculoid leprosy for 12 months, with no clinical improvement. A second biopsy revealed the classical features of necrobiosis lipoidica. Topical corticosteroid therapy was initiated, and the patient remains under outpatient follow-up. **Conclusions:** This case reinforces the importance of detailed clinical evaluation, particularly sensitivity testing, to avoid unnecessary therapies, adverse effects, and the stigma associated with leprosy. It also highlights the strategic role of Family Physicians in the early differential diagnosis of such conditions.

Keywords: Leprosy; Necrobiosis lipoidica; Differential diagnosis; Primary Health Care; Physical examination.

Corresponding author:

Rafaela Garcia Pereira

E-mail: rafaelagarciaa96@gmail.com

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Resumo

Introdução: A necrobiose lipóidica é uma dermatose granulomatosa rara que pode simular hanseníase, sobretudo em países endêmicos. **Apresentação do caso:** Relatamos o caso de uma paciente feminina, 62 anos, com placas eritematosas pré-tibiais, sem alteração de sensibilidade e com histopatológico com padrão granulomatoso, tratada como hanseníase tuberculoide por 12 meses, sem resposta. Nova biópsia evidenciou padrão clássico de necrobiose lipóidica; instituído tratamento tópico com corticoide, mantendo acompanhamento ambulatorial. **Conclusões:** O caso reforça a importância da avaliação clínica detalhada, sobretudo dos testes de sensibilidade, evitando terapias desnecessárias, eventos adversos e o estigma relacionado à hanseníase. Destaca-se, ainda, o papel estratégico do médico de família no diagnóstico diferencial precoce dessas condições.

Palavras-chave: Hanseníase; Necrobiose lipóidica; Diagnóstico diferencial; Atenção Primária à Saúde; Exame clínico.

Resumen

Introducción: La necrobiosis lipoidea es una dermatosis granulomatosa rara que puede simular la lepra, especialmente en países endémicos. **Presentación del caso:** Se presenta el caso de una mujer de 62 años con placas eritematosas pretibiales, sin alteraciones de la sensibilidad y con un patrón histopatológico granulomatoso inicial. Fue tratada como lepra tuberculoide durante 12 meses, sin mejoría clínica. Una nueva biopsia reveló las características clásicas de necrobiosis lipoidea. Se inició tratamiento tópico con corticosteroide y la paciente continúa en seguimiento ambulatorio. **Conclusiones:** Este caso refuerza la importancia de la evaluación clínica detallada, en particular de las pruebas de sensibilidad, para evitar terapias innecesarias, efectos adversos y el estigma asociado a la lepra. Además, resalta el papel estratégico del Médico de Familia en el diagnóstico diferencial precoz de estas condiciones.

Palabras clave: Lepra; Necrobiosis lipoidea; Diagnóstico diferencial; Atención Primaria de Salud; Examen físico.

INTRODUCTION

Necrobiosis lipoidica (NL) is a chronic granulomatous dermatosis first described by Oppenheim in 1929, with an uncertain etiopathogenesis. Although classically associated with diabetes mellitus, up to 40% of cases occur in non-diabetic individuals.¹⁻³ Clinically, the condition presents as erythematous or yellowish plaques with elevated borders and an atrophic center, most commonly affecting the pretibial region.²⁻⁴

In Brazil, where Leprosy remains endemic, chronic granulomatous lesions are often interpreted within this epidemiological context. The diagnosis of leprosy is established based on the presence of at least one cardinal sign: skin lesions with altered sensitivity and/or neural thickening, and/or positive bacilloscopy.^{5,6} The clinical and histopathological overlap between NL and tuberculoid leprosy may lead to diagnostic misinterpretation.

CASE PRESENTATION

A 62-year-old woman presented seven years earlier with the development of two well-demarcated erythematous plaques with elevated borders, bilaterally distributed in the pretibial region. At that time, at another institution, a diagnosis of tuberculoid Leprosy was established, and treatment with single multidrug therapy (MDT) was administered for 12 months.

The patient was referred for specialized dermatologic evaluation because of the persistence of the lesions, even years after completion of MDT, and brought the test results obtained at the time of the initial diagnosis. These included bacilloscopy with a bacilloscopic index of 0.0, negative serology for phenolic glycolipid-1 (PGL-1) antigen, and histopathological findings demonstrating epithelioid granulomas with Langhans-type giant cells, without evidence of bacilli on Fite-Faraco staining. According to the patient's report, skin sensitivity testing performed at that time yielded normal results. Despite these findings, the diagnosis of tuberculoid Leprosy was maintained, and the patient underwent multidrug therapy for 12 months.

At the current evaluation, the patient continued to exhibit the lesions initially described at disease onset. Dermatological examination revealed erythematous-brownish plaques with well-defined borders, slightly elevated and infiltrated peripheries, and centrally atrophic hypochromic areas located in the pretibial region (Figure 1).

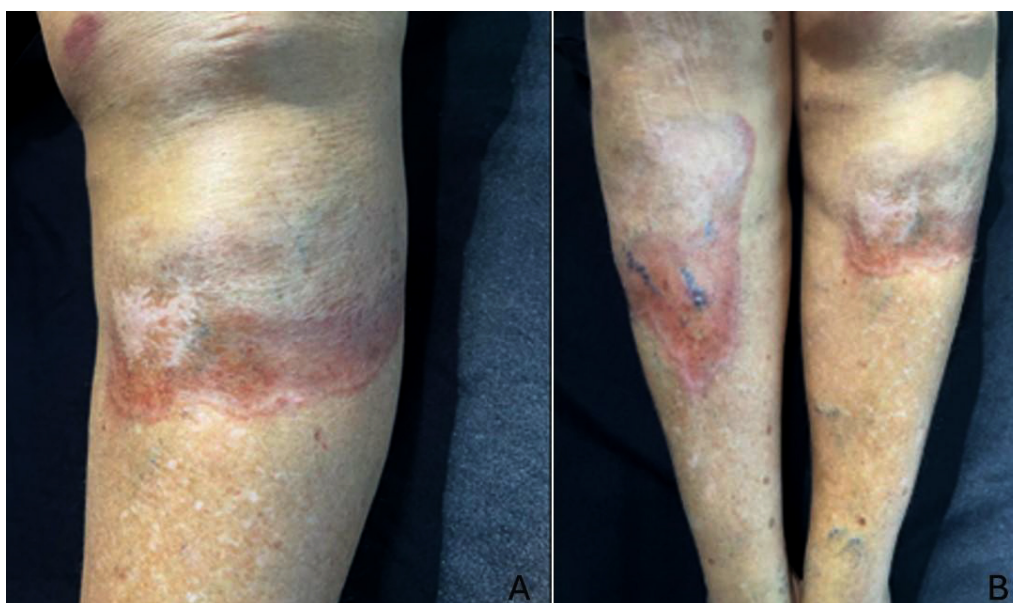


Figure 1. Clinical findings of necrobiosis lipoidica in the patient. (A) Well-demarcated erythematous-brown plaque with circinate contours, slightly elevated and infiltrated borders, and a whitish atrophic central area on the right pretibial region. (B) Similar bilateral and symmetrical lesions located on the pretibial regions. The clinical pattern of pretibial plaques with an atrophic center and infiltrated borders is characteristic of necrobiosis lipoidica and may constitute a differential diagnosis with tuberculoid leprosy in endemic areas. In this case, preservation of cutaneous sensitivity on dermatoneurological examination contributed to ruling out the diagnosis of leprosy.

Source: Archives of the Dermatology Service of Universidade do Estado do Pará.

During the dermatoneurological examination, a systematic assessment of cutaneous sensitivity was performed on both the lesions and adjacent skin areas. Thermal sensitivity was evaluated using two test tubes: one containing a small volume of previously heated water and the other containing a larger volume of water maintained at room temperature and cooled by the office air conditioning. Initially, the examiner tested the tubes and subsequently applied them to the patient's face to confirm the adequacy of the temperatures. Thermal stimuli were then applied alternately to the lesions and to adjacent areas of apparently unaffected skin in a bilateral comparative manner, while the patient was asked to identify the perceived sensation (hot or cold). The patient correctly identified the thermal stimuli in all examined areas, indicating preserved thermal sensitivity in both the lesions and the comparative skin areas.

Pain sensitivity was evaluated through the gentle application of a punctate stimulus using an insulin needle, with light pressure applied alternately to the lesions and adjacent skin areas. The patient was instructed to report perception of the painful stimulus, and no differences in pain perception were observed between the examined regions.

Tactile sensitivity was assessed using a green monofilament (0.05 g) from the esthesiometry kit, applied perpendicularly to the skin over the lesions and adjacent areas, with bilateral comparison. The patient appropriately recognized the tactile stimulus in all evaluated regions, and no alterations in tactile sensitivity were identified.

A new incisional biopsy was performed, revealing a granulomatous inflammatory infiltrate composed of lymphocytes, plasma cells, epithelioid histiocytes, and Langhans-type multinucleated giant cells, arranged in horizontal bands alternating with areas of degenerated collagen and extending into the subcutaneous tissue (Figure 2).

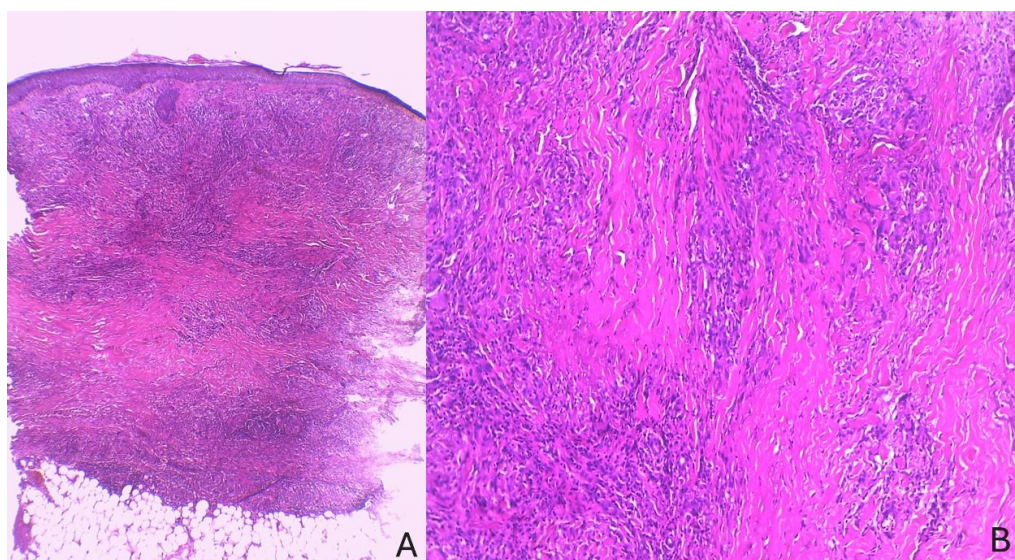


Figure 2. Histopathological findings of necrobiosis lipoidica in the patient. (A) Granulomatous inflammatory infiltrate composed predominantly of epithelioid histiocytes and Langhans-type multinucleated giant cells, arranged in horizontal bands alternating with areas of collagen degeneration (HE, 40×). (B) Detail of the necrobiotic pattern, showing fragmentation and pallor of collagen fibers interspersed with epithelioid histiocytes and multinucleated giant cells (HE, 100×). This histopathological pattern, characterized by collagen necrobiosis associated with granulomatous infiltrate arranged in horizontal layers, is typical of necrobiosis lipoidica and supports this diagnosis over tuberculoid leprosy, in which greater neural involvement and possible identification of acid-fast bacilli would be expected.

Source: Archives of the Dermatology Service of Universidade do Estado do Pará.

Given the characteristic clinical and histopathological findings, together with the absence of response to the previous treatment, a diagnosis of NL was established. Topical corticosteroid therapy was initiated, and the patient remains under regular clinical follow-up.

DISCUSSION

NL is a rare granulomatous dermatosis belonging to the group of dermatoses characterized by a necrobiotic histopathological pattern. Epidemiological studies estimate its prevalence in the general

population to be below 1%, reaching approximately 0.3 to 1.2% among individuals with diabetes mellitus.^{1,4} Although uncommon, its clinical relevance lies in its ability to mimic other granulomatous dermatoses. This aspect is particularly important in countries endemic for Leprosy, such as Brazil, which remains among the countries with the highest absolute number of cases worldwide,^{5,7} with detection rates exceeding 10 cases per 100,000 inhabitants in some regions.⁷

Tuberculoid Leprosy may share clinical and histopathological features with NL, making the distinction between these entities diagnostically challenging in some cases. Tuberculoid leprosy is characterized by epithelioid granulomas and giant cells similar to those observed in NL, although it is generally associated with nerve fiber involvement, which contributes to the differential diagnosis.^{5,6} Furthermore, the demonstration of acid-fast bacilli by Fite-Faraco staining, when present, constitutes a fundamental diagnostic criterion.⁵

In the reported case, none of the cardinal signs of Leprosy were confirmed. Both the initial investigations and the specialized clinical reassessment demonstrated preserved cutaneous sensitivity. In addition, bacilloscopy was negative, anti-PGL-1 serology was non-reactive, and no response to MDT was observed. In light of current recommendations, these findings render a diagnosis of leprosy highly unlikely.⁵

From the perspective of evidence-based medicine, the diagnostic utility of specific clinical findings can be estimated using accuracy measures such as positive likelihood ratios (LR+) and negative likelihood ratios (LR-), which enable assessment of the impact of a given finding on the pretest probability of disease. However, despite the clinical relevance of these parameters, studies providing quantitative estimates of LR+ and LR- for the principal clinical or histopathological findings used to differentiate tuberculoid Leprosy from NL remain scarce in the literature. This lack of evidence highlights a significant gap in the literature and limits the more structured application of probabilistic models in the diagnostic reasoning of these granulomatous dermatoses.⁸

In NL, histopathological examination demonstrates the characteristic pattern of horizontal bands of degenerated collagen interspersed with granulomatous inflammatory infiltrate, in the absence of neural involvement.^{4,9-11} Clinically, case series have shown that oval plaques located on the lower limbs, with an atrophic center and elevated borders, are characteristic of NL and may mimic tuberculoid Leprosy.^{3,12}

In Brazil, Leprosy is a notifiable disease of major relevance to primary health care. Most patients initially access the healthcare system through family and community physicians, making familiarity with differential diagnoses essential. A thorough clinical examination may prevent delayed referrals, unnecessary treatments, and the psychosocial burden associated with the stigma of leprosy.

CONCLUSION

This case highlights the importance of a thorough clinical examination and clinicopathological correlation in establishing the diagnosis of chronic granulomatous diseases. Furthermore, it reinforces the strategic role of the family physician in the front-line management of Leprosy and underscores the unique contributions of this specialty to safer, more effective, and more humane clinical practice.

CONFLICT OF INTERESTS

Nothing to declare.

AUTHORS' CONTRIBUTIONS

RGP: Project administration, Conceptualization, Data curation, Writing – original draft, Writing – review & editing, Visualization. MAAG: Data curation, Investigation. NSAC: Data curation, Investigation. ATMM: Formal analysis, Investigation, Validation. JEBS: Formal analysis, Investigation, Validation. MALS: Formal analysis, Investigation, Validation. EGS: Formal analysis, Investigation, Validation. CAAP: Formal analysis, Conceptualization, Writing – review & editing, Methodology, Supervision.

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