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CASE REPORTS ON LEPROSY:
A SHARED PRACTICE

Atypical dermatofibroma simulating hansenoma: case report

Dermatofibroma atípico simulando hansenoma: relato de caso

Dermatofibroma atípico simulando lepra: reporte de un caso

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ABSTRACT

Introduction: dermatofibroma is a benign mesenchymal lesion of uncertain etiology, centered in the dermis, with fibroblastic and histiocytic differentiation. The atypical variant can mimic superficial sarcoma histologically. **Objective:** to describe the clinical and histopathological findings of atypical dermatofibroma in a patient undergoing treatment for leprosy with multiple therapeutic failures. **Case Description:** the report concerns a 39-year-old woman with numerous therapeutic failures for Lepromatous leprosy, who developed an atypical dermatofibroma on the upper limb, which clinically resembled a leproma. **Discussion:** molecular analyses suggest dermatofibroma may be associated with a neoplastic process. However, several studies correlate it to trauma, insect bites, folliculitis, immunological changes, and

treated or reactive leprosy. The association of dermatofibroma and leprosy, especially in the Lepromatous pole, is documented in the literature. However, there are no reports of atypical dermatofibroma associated with leprosy. **Final Considerations:** this case adds to other studies regarding a possible association between the pathogenesis of dermatofibroma and the immunological aspects present in leprosy.

Keywords: *Histiocytoma Benign Fibrous. Leprosy. Pathology. Differential Diagnosis.*

RESUMO

Introdução: dermatofibroma é uma lesão mesenquimal benigna, de etiologia incerta, centrada na derme, com diferenciação fibroblástica e histiocítica. A variante atípica pode simular sarcoma superficial à histologia. **Objetivo:** descrever os achados clínicos e histopatológicos de dermatofibroma atípico que surgiu em uma paciente em tratamento de hanseníase, com múltiplas falências terapêuticas. **Descrição do caso:** o relato trata de uma mulher de 39 anos, com múltiplas falências terapêuticas para hanseníase virchowiana, com presença de dermatofibroma atípico em membro superior, que clinicamente simulava hansenoma. **Discussão:** análises moleculares sugerem que o dermatofibroma esteja associado a processo neoplásico, no entanto, vários estudos o associam a traumas, picadas de insetos, foliculite, alterações imunológicas e hanseníase tratada ou reacional. A associação de dermatofibroma e hanseníase, especialmente no polo virchowiano, está documentada na literatura. Entretanto, não há relatos de dermatofibroma atípico e hanseníase. **Considerações finais:** o caso se soma a outros estudos em relação a uma possível associação da patogenia do dermatofibroma com aspectos imunológicos, presentes na hanseníase.

Palavras-Chave: *Histiocitoma Fibroso Benigno. Hanseníase. Patologia. Diagnóstico Diferencial*

RESUMEN

Introducción: el dermatofibroma es una lesión mesenquimal benigna, de etiología incierta, centrada en la dermis, con diferenciación fibroblástica e histiocítica. La variante atípica puede simular un sarcoma superficial en la histología. **Objetivo:** describir los hallazgos clínicos e histopatológicos de un dermatofibroma atípico que surge en una paciente en tratamiento para lepra, con múltiples fracasos terapéuticos. **Descripción del caso:** el informe trata

sobre una mujer de 39 años, con múltiples fracasos terapéuticos para la lepra virchowiana, que desarrolló un dermatofibroma atípico en el miembro superior, el cual clínicamente simulaba un leproma. **Discusión:** los análisis moleculares sugieren que el dermatofibroma podría estar asociado a un proceso neoplásico. Sin embargo, varios estudios lo asocian a traumas, picaduras de insectos, foliculitis, alteraciones inmunológicas y lepra tratada o reactiva. La asociación entre dermatofibroma y lepra, especialmente en el polo virchowiano, está documentada en la literatura. No obstante, no existen reportes de dermatofibroma atípico asociado con lepra. **Consideraciones finales:** este caso se suma a otros estudios en relación con una posible asociación de la patogénesis del dermatofibroma con aspectos inmunológicos presentes en la lepra.

Palavras clave: *Histiocitoma Fibroso Benigno. Lepra. Patología. Diagnóstico Diferencial.*

INTRODUCTION

Dermatofibroma (DF), or benign fibrous histiocytoma, is a common and frequent benign papular or nodular cutaneous lesion[1]. Leprosy, in turn, is a chronic granulomatous infection caused by *Mycobacterium leprae* and *Mycobacterium lepromatosis*, primarily affecting the nerves[1,2].

Cases of leprosy associated with DF have been reported mainly in patients on the lepromatous pole[3]. However, no cases of atypical DF in patients with leprosy have been reported.

The present report describes a case of atypical DF simulating a hansenoma in a patient undergoing treatment for Lepromatous leprosy with a history of multiple therapeutic failures.

CASE PRESENTATION

This is the case of a 39-year-old woman diagnosed with Lepromatous leprosy in 2014 and treated with the multidrug therapy regimen recommended by the World Health Organization (MDT/WHO) for 24 months. In 2017, she experienced therapeutic failure, leading to the initiation of a monthly home-based ROM regimen consisting of rifampicin (600 mg), ofloxacin (400 mg), and minocycline (100 mg)[4]. After completing this second treatment, signs of persistent disease activity remained, resulting in a new therapeutic failure in 2020, when a biweekly ROM regimen was initiated.

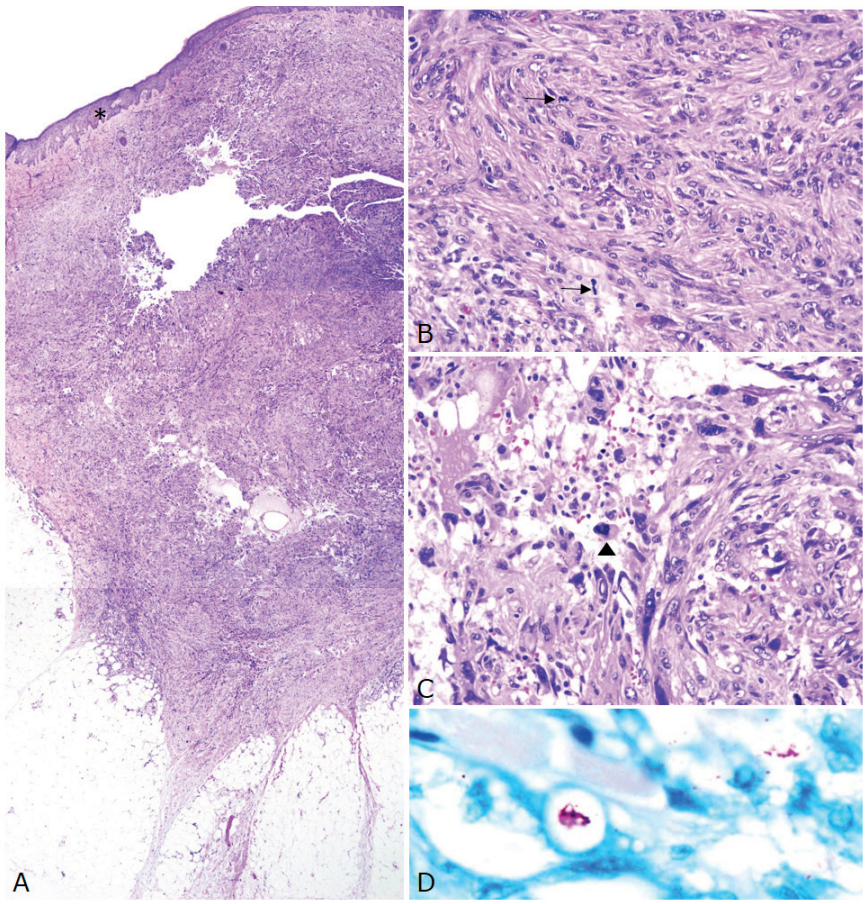
Drug resistance testing conducted in December 2021 and May 2023 showed sensitivity to all three drugs tested (rifampicin, dapsone, and ofloxacin) in both evaluations.

In 2022, during a treatment follow-up visit, the patient reported a firm, painless papule measuring 0.7 x 0.7 cm on the left deltoid region. Clinically, the lesion exhibited characteristics of a hansenoma. Therefore, it was surgically removed for histological evaluation, possible diagnostic confirmation, and to aid in monitoring the therapeutic response.

Histological evaluation revealed a proliferative mesenchymal spindle-cell lesion with prominent pleomorphism, exhibiting a storiform architecture centered in the dermis.

Mitotic figures were frequent, with some atypical forms. The initial histological evaluation raised suspicion of a high-grade superficial skin sarcoma (Figure 1), prompting further immunohistochemical studies. Concurrently, Fite-

Figure 1 – Atypical dermatofibroma.

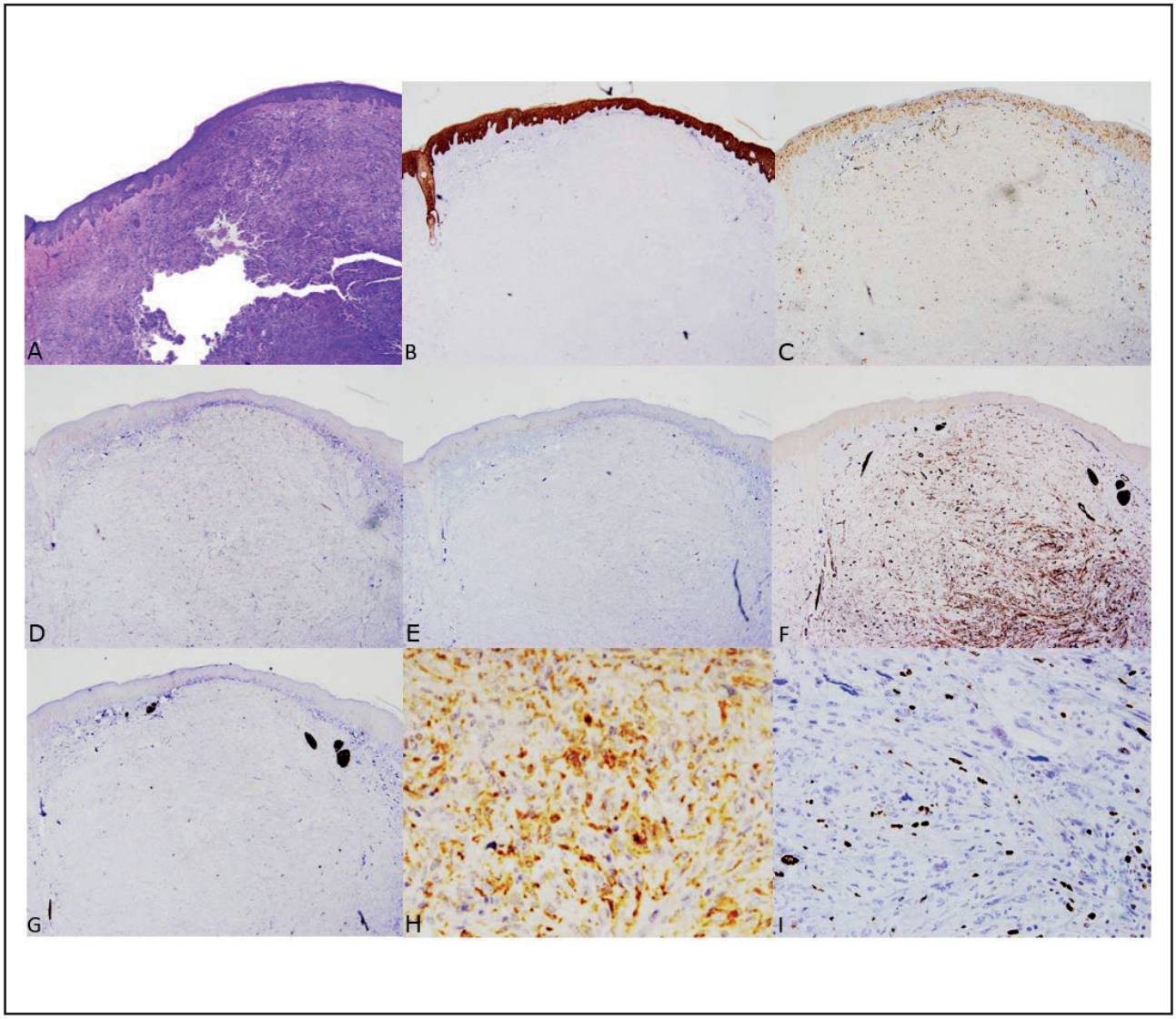


Legend: A) Proliferative mesenchymal lesion centered in the dermis, with irregular borders covered by acanthotic epidermis (asterisk), showing a "grenz" zone (composite image, H&E, 4x); B) Cells arranged in a storiform pattern with frequent mitotic figures (arrows) (H&E, 10x); C) Marked pleomorphism and atypical mitotic figures (arrowhead) observed (H&E, 40x); D) Numerous fragmented and granular bacilli within macrophages at the lesion's periphery (Fite-Faraco, 100x).
Source: Created by the authors.

Faraco staining revealed fragmented and granular bacilli within histiocytes at the lesion's periphery, with a bacilloscopy index of 3+. Immunohistochemical analysis showed strong and diffuse positivity for CD68, strong and focal positivity for smooth muscle actin, and an intermediate proliferative index estimated at 10% by Ki-67 (Figure 2). Negativity for AE1/AE3, CD34, desmin, Melan-A, and S-100 ruled out superficial sarcomas, sarcomatoid carcinoma, and melanoma. Thus, integrating morphological and immunophenotypic findings enabled the diagnosis of atypical dermatofibroma.

The patient continues regular outpatient follow-up at a national reference center for leprosy and is currently receiving a biweekly ROM regimen. At present, she has no complaints or signs of tumor recurrence.

Figure 2 – Immunohistochemical panel.



Legend: A) Atypical dermatofibroma (H&E, 4x); B) Negative for pancytokeratins (AE1/AE3, 4x); C, D, and E) Negative for melanocytic markers (S100, Melan-A, and HMB-45, respectively, 4x); F) Focal positivity for smooth muscle actin (1A4, 4x); G) Negative for myogenic marker (Desmin, 4x); H) Strong and diffuse positivity for histiocytic differentiation (CD68, 10x); I) Proliferative index of 10% (Ki67, 10x).
Source: Created by the authors.

DISCUSSION

Dermatofibroma typically presents as a firm to hard papule, plaque, or nodule with coloration ranging from yellow to brown or purplish. Most lesions measure between 0.5 and 2.0 cm and are located on the extremities or trunk of adults[5]. The etiology of dermatofibroma remains a topic of debate. Molecular analyses have demonstrated gene fusions involving PRKCB and PRKCD, suggesting a clonal process[1]. However, several studies have linked dermatofibroma to trauma, insect bites, folliculitis, immune alterations, and treated or reactional leprosy[6,7]. Its etiopathogenesis may be related to the presence of mast cells, which could induce histopathological changes such as basal melanosis, epidermal acanthosis, and mononuclear leukocyte recruitment. CD14-positive monocytes have been proposed as the precursor cells of dermatofibromas[8].

The primary clinical differential diagnoses of papulonodular lesions in patients with leprosy are hansenomas, Wade's histoid leprosy, annular granuloma, sarcoidosis, and DF[9], making histopathological evaluation essential.

Histologically, DF (dermatofibroma) comprises a combination of fibroblasts and myofibroblasts, surrounded by dendritic cells and reactive macrophages, interspersed among collagen bundles. It is the most common mesenchymal lesion of the skin[1,10]. Numerous histological patterns of DF have been described in the literature, but the WHO recognizes five variants: classic, cellular, aneurysmal, deep, and atypical[1,11]. The latter is characterized by scattered atypical and pleomorphic cells, with atypical mitoses and necrosis also observed[1,12].

Considering histopathology, the differential diagnoses for atypical dermatofibroma include dermatofibrosarcoma protuberans, melanoma, and atypical fibroxanthoma[13], all of which were ruled out based on the immunohistochemical study performed. According to the literature, tumor cells in dermatofibroma are positive for vimentin, with variable staining for CD68 and factor XIIIa, and may be focally positive for smooth muscle actin, desmin, and CD34[10]. However, it is essential to note that CD68 is a histiocytic marker expressed in dermatofibroma and histiocytic lesions related to leprosy, such as hansenoma and Wade's histoid leprosy[10,15].

The clinical spectrum of leprosy directly correlates with histological findings, reflecting the varying degrees of the host's immune response to the bacillus[3,14]. Wade's histoid leprosy presents as multiple infiltrated plaques, skin-colored to reddish-brown papules, or painless, non-pruritic, firm, or elastic subcutaneous nodules, which may be discrete, smooth, or protuberant on normal-appearing skin[15]. It is more commonly associated with treatment failure, relapse, drug resistance, and therapeutic insufficiency due to irregular treatment or dapsone intolerance; however, it can also occur as a primary lesion[16].

The absence of bacilli in the spindle-shaped cells at the center of the skin lesion, along with the presence of bacilli in peripheral macrophages, supports the diagnosis of FD in a patient with leprosy and rules out the possibility of Wade's histoid leprosy[3], as described in this case report.

The literature has reported cases of leprosy associated with FD, particularly among patients at the lepromatous pole who have completed multidrug therapy (MDT) and among those who develop reactional episodes[3]. However, no reports of atypical FD have been found in this context. In this regard, leprosy – especially in the lepromatous form – is inferred to play a possible triggering role in FD, warranting further investigation.

FINAL CONSIDERATIONS

The literature has demonstrated an association between leprosy and FD; however, no descriptions of atypical FD associated with leprosy were found.

Since FD is a typical skin lesion and Brazil, among other endemic countries, still presents a high rate of new leprosy case detection, FD should be included in the differential diagnosis of papulonodular lesions in patients with leprosy. From a pathological standpoint, immunohistochemical analysis becomes essential to rule out malignancies when dealing with atypical FD.

Furthermore, this case adds to other studies suggesting a possible association between FD pathogenesis and immunological aspects present in leprosy.

ETHICAL APPROVAL AND INFORMED CONSENT: *this study was submitted for approval to the Research Ethics Committee of the Federal University of Uberlândia under the Certificate of Presentation for Ethical Appreciation (CAAE) number 78471824.8.0000.5152, following the guidelines of the National Health Council for research involving human subjects (Resolution CNS 466/12). In addition, a letter of consent was obtained from the EBSERH Research Network.*

CONFLICTS OF INTEREST: *the authors declare no conflicts of interest regarding this article.*

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TRANSLATION: *Hansenologia Internationalis: leprosy and other infectious diseases.*

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