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Research Article

Facial Verrucous Sporotricosis: Diagnostic And Treatment Difficulties.

Bruna Lourenço Senise[1], Alessandra Moraes Barros Vieira[1], Lívia Vieira de Almeida[1], César Cilento Ponce[1], José Ângelo Lauletta Lindoso[1], Carol Lee Luna Fernandes[1], Thiago Augusto Rochetti Bezerra[2].

Affiliations

1.Tropical Diseases Outpatient Clinic, Emílio Ribas Institute of Infectious Diseases, São Paulo, SP, Brazil.

2. Ribeirão Preto School of Medicine. University of São Paulo. Ribeirão Preto, São Paulo, Brazil.

Abstract

Sporotrichosis is a subcutaneous mycosis caused by fungi of the *Sporothrix* complex, whose clinical and epidemiological relevance has increased in recent decades, especially in Brazil, due to the expansion of zoonotic transmission and the emergence of atypical clinical presentations. Facial involvement, particularly in the verrucous form, represents an important diagnostic challenge, as it mimics other infectious, inflammatory, or neoplastic dermatoses, often resulting in delayed diagnosis and inadequate management.

Case report: We describe the case of a 55-year-old female patient with a chronic facial lesion, initially interpreted as cutaneous leishmaniasis and pyoderma gangrenosum, which worsened after corticosteroid therapy. The lesion evolved from papules to an extensive infiltrated and verrucous plaque affecting the nose, chin, and upper lip. Initial investigation revealed nonspecific histopathological findings and negative cultures. Persistent clinical suspicion led to a new biopsy, special stains, immunohistochemistry, and serology, which confirmed the diagnosis of sporotrichosis. The patient denied contact with cats, reporting only sporadic gardening. Treatment with full-dose itraconazole was instituted and maintained for 12 months, with favorable evolution, complete healing of the lesions, and recovery of facial anatomy.

Conclusion: This case highlights the diagnostic difficulties of facial verrucous sporotrichosis, especially in the absence of a classic epidemiological link and in the face of initial nonspecific histopathological findings. It reinforces the importance of including sporotrichosis in the differential diagnosis of chronic facial lesions in endemic areas, as well as the clinical-pathological correlation and the use of complementary diagnostic methods to ensure timely and appropriate treatment.

Keywords: Sporotrichosis; Facial sporotrichosis; Subcutaneous mycosis; Differential diagnosis; Itraconazole.

INTRODUCTION

Sporotrichosis is a subcutaneous mycosis caused by fungi of the *Sporothrix* complex, whose clinical and epidemiological importance has intensified in recent decades, especially in urban areas of Latin America, particularly Brazil. The expansion of zoonotic transmission, mainly from infected cats, associated with the high virulence of species such as *Sporothrix brasiliensis*, has resulted in a significant increase in human cases, with more severe and atypical clinical presentations.

In the facial context, the disease is particularly relevant because it affects a region of high aesthetic and functional visibility, often exhibiting verrucous, ulcerated, or infiltrative forms that deviate from the classic lymphangitic pattern and mimic inflammatory, infectious, or neoplastic dermatoses, contributing to significant diagnostic delays[11-15,18,20].

Facial verrucous sporotrichosis therefore represents a diagnostic and therapeutic challenge, especially in hyperendemic settings and vulnerable populations. The clinical similarity to other deep mycoses, such as chromoblastomycosis, tegumentary leishmaniasis, cutaneous tuberculosis, and even inflammatory or malignant diseases of the face, favors diagnostic errors and inappropriate treatments.

The need for prolonged antifungal therapies, limited access to specialized mycological diagnosis, and greater severity observed in the elderly, immunosuppressed individuals, or alcoholics reinforce the complexity of clinical management[14,22-32].

Thus, early recognition of facial verrucous forms and understanding of their epidemiological and clinical particularities are fundamental to reducing morbidity, aesthetic sequelae, and impact on public health.

***Corresponding Author:** **Thiago Augusto Rochetti Bezerra,** Ribeirão Preto School of Medicine. University of São Paulo. Ribeirão Preto, São Paulo, Brazil.
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OBJECTIVES

General Objective

Describe and analyze a case of facial sporotrichosis with atypical clinical presentation, emphasizing diagnostic challenges, key differential diagnoses, and therapeutic strategies adopted, in light of current scientific literature.

Specific Objectives

1. To characterize the clinical, histopathological, and immunological aspects of facial verrucous sporotrichosis presented in the case.
2. Discuss the main differential diagnoses of chronic verrucous facial lesions, especially cutaneous leishmaniasis, chromoblastomycosis, paracoccidioidomycosis, cutaneous tuberculosis, and inflammatory dermatoses.
3. To analyze the diagnostic limitations of isolated laboratory methods, including fungal culture, conventional histopathological examination, and special stains.
4. Evaluate the importance of clinical-pathological correlation and the use of complementary methods, such as immunohistochemistry and serology, in the definitive diagnosis of sporotrichosis.
5. Describe the therapeutic evolution with itraconazole in a prolonged regimen, discussing its efficacy and the need to individualize the duration of treatment in extensive or verrucous presentations.
6. Contribute to the expansion of knowledge about atypical facial presentations of sporotrichosis in endemic areas, reinforcing the importance of early recognition to reduce morbidity and aesthetic sequelae.

METHODOLOGY

This is a descriptive case report study with a qualitative approach and retrospective analysis of clinical, laboratory, and histopathological data from a patient treated at a specialized infectious disease service.

Information was collected from the medical records, including clinical data, temporal evolution of the lesions, initial diagnostic hypotheses, complementary tests performed (histopathology, special stains, immunohistochemistry, serology, and fungal culture), and therapeutic conduct instituted.

The diagnosis was established based on clinical-pathological correlation, considering:

- Clinical findings compatible with chronic subcutaneous mycosis;
- Presence of granulomatous inflammatory process associated with suppurative foci in histopathology;
- Demonstration of yeasts compatible with Sporothrix spp. in special stains (Grocott and PAS);
- Immunohistochemical positivity for Sporothrix spp.;
- Serum serology reactive for sporotrichosis.

Although fungal culture was performed, it remained negative, which was interpreted in light of the literature demonstrating variable sensitivity in chronic or paucifungal lesions.

Additionally, a narrative review of the literature was performed in the PubMed, SciELO, and Google Scholar databases, using the descriptors: “sporotrichosis,” “facial sporotrichosis,” “verrucous sporotrichosis,” “cutaneous sporotrichosis,” “misdiagnosis,” and “Sporothrix brasiliensis,” with selection of articles published between 2014 and 2025, prioritizing clinical studies, reviews, and case reports related to atypical presentations and facial involvement.

The data were analyzed descriptively and compared with recent scientific evidence, allowing the case to be contextualized within the current epidemiological and clinical landscape of sporotrichosis in Brazil and other endemic countries.

The report was prepared in accordance with the ethical principles of confidentiality and anonymization of patient data, with no nominal identification or elements that would allow identification.

CASE REPORT

A 55-year-old female patient sought specialized infectious disease care in December 2021 due to the appearance of a facial lesion that had been evolving for approximately six months, without associated systemic manifestations. Initially, the diagnostic hypotheses of cutaneous leishmaniasis and pyoderma gangrenosum were considered, and systemic corticosteroid therapy was instituted, which resulted in progressive worsening of the lesions. The patient reported that the condition began with papules located in the nasal region and upper lip, progressing to crusty lesions accompanied by local pain, erythema, and nasal discharge, a clinical pattern often described in atypical cutaneous presentations of facial sporotrichosis, which mimic inflammatory and infectious dermatoses, favoring initial diagnostic errors[13–15,18].

At the time of the specialist evaluation, extensive infiltrated plaque with a verrucous surface was observed, with brownish areas and blackened spots, associated with significant edema involving the nose, chin, and upper lip. The patient had previously undergone a biopsy of the nasal lesions at another facility, whose histopathological examination revealed squamous mucosa covered by fibrin-leukocyte crust, granulation tissue, and intense neutrophilic activity, in addition to negative tests for fungi and acid-fast bacilli.

Review of the slide showed chronic granulomatous inflammation associated with ulceration and suppuration, and immunohistochemistry was negative for *Leishmania* spp. and *Herpes simplex* types I and II, findings consistent with the

histopathological pattern frequently described in the early or paucifungal stages of sporotrichosis[14,27].

After ruling out cutaneous leishmaniasis and given the persistence of suspected subcutaneous mycosis, a new biopsy of the crusty facial lesion was performed, and empirical antifungal therapy with itraconazole at a dose of 400 mg/day was initiated, as recommended for extensive or atypical cutaneous presentations of sporotrichosis[1,14].

After one month of treatment, there were still crusted lesions in the nasal region, but with partial improvement in pain and nasal discharge, a clinical evolution consistent with the gradual initial response to itraconazole described in the literature[1,8].

Immunohistochemistry of the first biopsy revealed positivity for *Sporothrix* spp. and negativity for *Histoplasma capsulatum* and *Paracoccidioides brasiliensis*, confirming the fungal etiology.

The second biopsy showed skin with epidermal hyperplasia, hyperkeratosis, chronic inflammation rich in plasma cells, granulomatous outlines, and suppurative foci. Special staining with Grocott and periodic acid-Schiff (PAS) demonstrated yeasts in the dermis with morphology compatible with *Sporothrix* spp., although fungal culture remained negative.

Serum serology reactive for sporotrichosis reinforced the diagnosis. This set of findings illustrates the low sensitivity of culture alone and the importance of clinical-histopathological and immunological correlation in the diagnosis of sporotrichosis, especially in chronic or verrucous lesions[10,14].

From an epidemiological point of view, the patient reported a phobia of cats and denied any contact with felines, reporting only sporadic gardening at her residence, with no history of facial trauma or . Although zoonotic transmission by cats represents the main route of infection in Brazil, national studies show that a portion of patients deny direct contact with cats or a history of traumatic inoculation, which may contribute to delayed diagnosis in endemic areas[7,8].

Treatment was maintained for 12 months, with eight months of itraconazole 400 mg/day, followed by three months of 200 mg/day, with favorable evolution, complete healing of the lesions, and recovery of facial anatomy, a course consistent with the need for prolonged regimens in extensive, chronic, or verrucous forms of sporotrichosis[1,8,14].

The timeline (**FIGURE 1**) chronologically summarizes the main clinical, diagnostic, and therapeutic events in the case of facial verrucous sporotrichosis, from the onset of skin lesions to the completion of antifungal treatment. This temporal organization allows for a better understanding of the clinical evolution, the diagnostic challenges faced, and the response to treatment, highlighting key moments that influenced the management of the case.

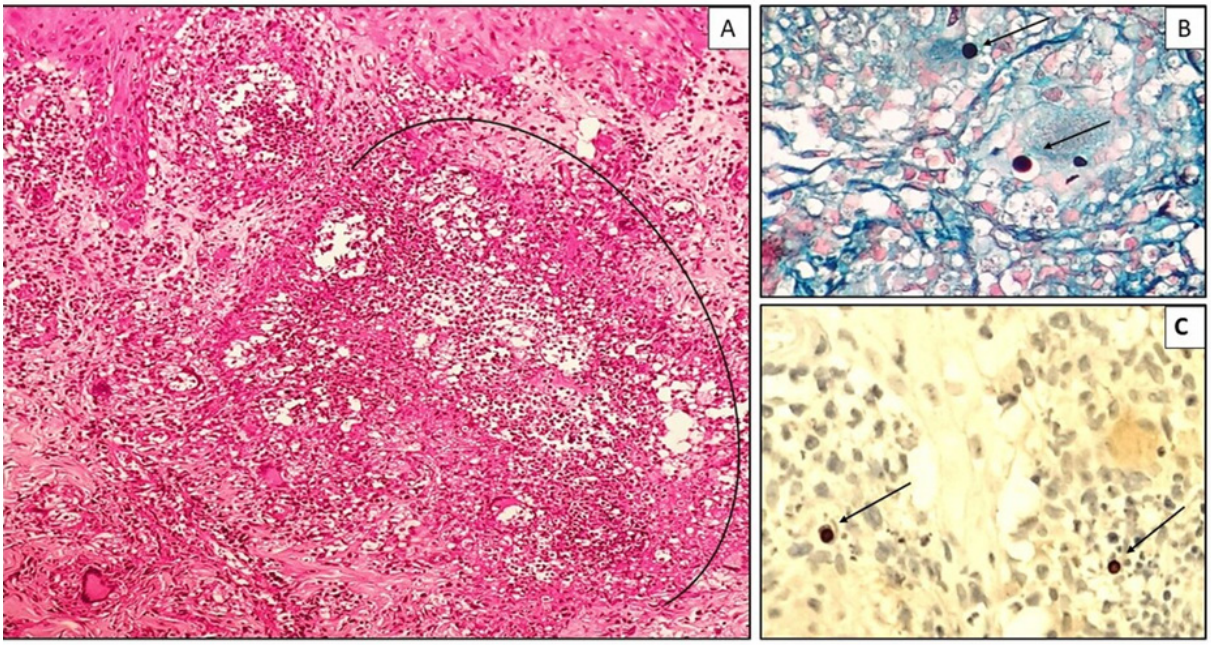
Figure 1. Timeline of the clinical case of facial verrucous sporotrichosis.

June 2021	December 2021	December 2021	January 2022	February 2022	March 2022	February 2023
Onset of facial skin lesions. Appearance of papules on nose and upper lip with progressive evolution.	First specialized evaluation. Initial diagnostic hypotheses: cutaneous leishmaniasis and pyoderma gangrenosum. Corticosteroid therapy with clinical worsening.	First skin biopsy. Initial histopathology nonspecific; tests negative for fungi and AFB.	Initiation of itraconazole 400 mg/day. Empirical antifungal therapy after exclusion of leishmaniasis.	Diagnostic confirmation. Immunohistochemistry positive for Sporothrix spp.; PAS and Grocott positive; Reactive serology.	Progressive clinical improvement. Reduction of edema, infiltration and facial pain.	End of treatment. Complete healing of lesions and recovery of facial anatomy.

Source: Authors

The **FIGURE 2** presents the anatomo-histopathological and immunohistochemical description of the lesion, highlighting the main microscopic findings observed with the different staining techniques employed.

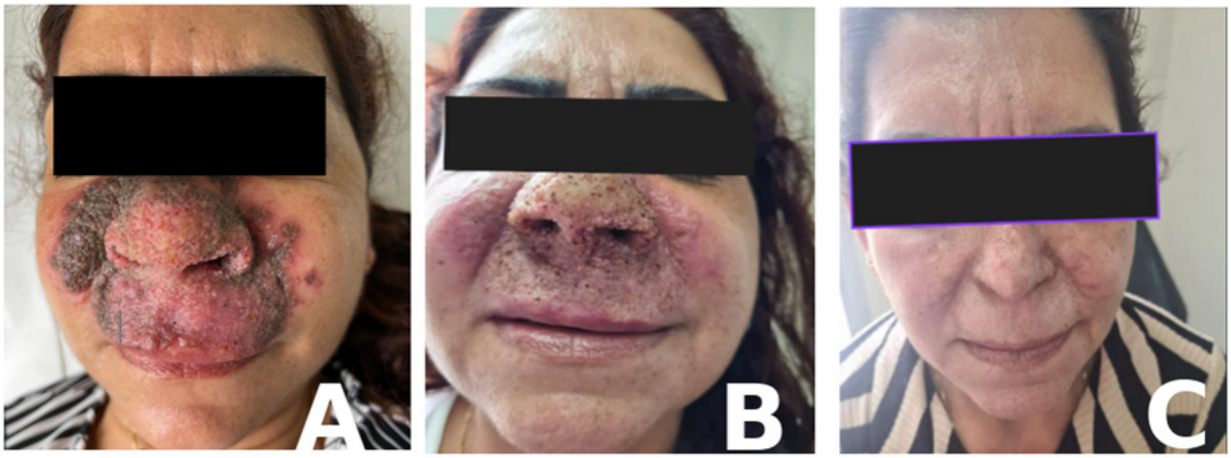
Figure 2. Histopathological and Immunohistochemical Findings of the Lesion



Legend: A) Histological examination of the lesion reveals the presence of granulomas with suppurative centers in the dermis. Hematoxylin and eosin stain, 100× magnification. B) Grocott's methenamine silver stain demonstrates the presence of rare yeast forms (arrows) within the suppurative centers of the granuloma or inside multinucleated giant cells. Grocott stain, 400× magnification. C) Positive immunohistochemistry for Sporothrix spp. antigens (arrows), counterstained with Harris hematoxylin. Immunohistochemistry, 400× magnification.
Source: Authors

The **FIGURE 3** presents photographs of the patient at the beginning of treatment (A), after three months of treatment (B), and at the end of treatment (C).

Figure 3. Clinical Progression and Therapeutic Response of Facial Sporotrichosis



Legend: Clinical photographs of the patient demonstrating the progression of the lesion over the course of therapy: (A) at the beginning of treatment, showing extensive verrucous and infiltrative involvement; (B) after three months of treatment, with marked clinical improvement and reduction of inflammatory activity; and (C) at the end of treatment, showing significant resolution of the lesion with residual post-inflammatory changes.
Source: Authors

The **Figure 3** demonstrates the progressive clinical evolution of the facial lesion throughout the course of antifungal therapy. At baseline (A), a verrucous and infiltrative lesion is observed, with ill-defined borders and a prominent inflammatory component, consistent with the active phase of cutaneous sporotrichosis. The clinical appearance reflects marked inflammatory activity, dermal thickening, and an irregular surface.
After three months of treatment (B), significant regression of the inflammatory process is noted, with reduction in lesion

volume, decreased infiltration, and improvement of the verrucous aspect. The partial therapeutic response suggests adequate sensitivity to the antifungal regimen, along with progressive control of fungal replication and the associated granulomatous reaction.

At the end of treatment (C), substantial clinical resolution is observed, with near-complete disappearance of the infiltrated areas and persistence only of mild residual changes, consistent with post-inflammatory hyperpigmentation and tissue remodeling. This sequential imaging highlights a satisfactory therapeutic response, reinforcing the importance of early diagnosis and proper adherence to antifungal therapy to achieve favorable aesthetic and functional outcomes.

DISCUSSION

Sporotrichosis is a subcutaneous mycosis with worldwide distribution, whose clinical and epidemiological relevance has increased significantly in recent decades, especially in urban areas and in Brazil, due to the expansion of zoonotic transmission and the emergence of atypical clinical presentations[1–8].

The present case illustrates a localized cutaneous form with extensive and verrucous facial involvement, reinforcing the polymorphic nature of the disease and the need for a high degree of clinical suspicion, especially in endemic regions.

Historically attributed to *Sporothrix schenckii*, sporotrichosis has come to be understood as an infection caused by a complex of species, including *S. brasiliensis*, *S. globosa, S. mexicana*, and *S. luriei*, with relevant epidemiological and clinical differences.

In Brazil, *S. brasiliensis* has been associated with more exuberant, inflammatory cases and a higher frequency of atypical presentations, which may explain the severity and extent of the lesion observed in this case[6,7].

The lymphocutaneous form is the most common clinical presentation of sporotrichosis; however, the localized cutaneous form, as observed in the patient, represents a distinct entity, characterized by lesions restricted to the site of inoculation, without lymphatic dissemination[5,14].

The extensive facial manifestation, with infiltrated plaque and verrucous surface, highlights an unusual presentation, described in recent reports as a significant diagnostic challenge.

The involvement of the face is of particular clinical importance, as it can mimic various inflammatory, infectious, and neoplastic dermatoses, leading to diagnostic delays and inappropriate management.

In the present case, the clinical similarity to cutaneous leishmaniasis and pyoderma gangrenosum resulted in the introduction of systemic corticosteroid therapy, with worsening of the lesions, a phenomenon widely described in the literature when deep mycoses are not considered early on.

The verrucous lesions observed in facial sporotrichosis must be differentiated from chromoblastomycosis, paracoccidioidomycosis, cutaneous tuberculosis, and tegumentary leishmaniasis, especially in endemic areas[5,16].

The presence of brownish areas and blackened spots, as observed in this case, may be related to melanin production by the fungus, a characteristic described in species of the *Sporothrix* complex that contributes to the morphological heterogeneity of the lesions[14,27].

From an epidemiological point of view, although zoonotic transmission by cats currently represents the main route of infection in Brazil, the absence of direct contact with cats, as reported by the patient, does not rule out the diagnosis of sporotrichosis[7,8]. Studies show that a significant proportion of patients deny being bitten or scratched, suggesting unnoticed microtraumas or other forms of environmental exposure[7,8].

The sporadic gardening mentioned by the patient remains a possible source of environmental exposure, considering that *Sporothrix* can be found in soil and decomposing plant matter. This aspect reinforces that, even in the current context of zoonotic predominance, classic transmission by plant material should still be considered, especially in the absence of a clear feline epidemiological link[4].

The diagnosis of sporotrichosis remains a challenge, especially in chronic and verrucous cutaneous forms. Although isolation of the fungus in culture is considered the gold standard, its sensitivity is limited, especially in long-standing lesions, as observed in this case, in which the culture remained negative[9,14].

Histopathological examination often reveals chronic granulomatous dermatitis associated with suppurative foci, and direct visualization of yeasts is uncommon due to the low fungal load[10,14]. In the present case, the first biopsy did not show fungal elements, and the diagnosis was only established after histopathological review, a new biopsy, and the use of special stains, highlighting the importance of diagnostic reassessment in the face of strong clinical suspicion[9,10].

Histopathological differentiation between sporotrichosis and cutaneous leishmaniasis is particularly relevant, since the presence of granulomas associated with suppurative foci or microabscesses favors the diagnosis of sporotrichosis, while such a pattern is not typical of leishmaniasis. This aspect was decisive in clarifying the diagnosis of the presented case.

Immunohistochemistry and serum serology proved to be important complementary tools in this case, corroborating the diagnosis in the face of initial inconclusive results. The literature indicates that immunological methods can be particularly helpful in scenarios of negative culture or nonspecific histopathology[14,27].

Systemic treatment with itraconazole is the first-line therapy

for cutaneous sporotrichosis, with high cure rates and a good safety profile[1,14]. The initial dose of 400 mg/day used in this case is in line with recommendations for extensive, verrucous, or prolonged presentations[1,8].

The need for prolonged treatment, totaling 12 months, reflects the extent of the lesions, the chronic nature of the condition, and the significant facial involvement. Studies show that although many cases respond within three to six months, atypical or extensive presentations often require longer regimens to prevent recurrence and ensure complete resolution[1,8,14].

The favorable clinical evolution, with progressive reduction of pain, regression of lesions, and recovery of facial anatomy, confirms the efficacy of itraconazole even in challenging presentations, provided it is instituted appropriately and maintained for the necessary time[1,8]. This outcome reinforces the importance of correct diagnosis and individualized therapeutic management.

In summary, the present case highlights the diagnostic and therapeutic difficulties of facial verrucous sporotrichosis, especially in the absence of a classic epidemiological link.

The clinical overlap with other dermatoses, the low sensitivity of isolated diagnostic methods, and the risk of inappropriate conduct underscore the need for a multidisciplinary approach, rigorous clinical-pathological correlation, and greater awareness among health professionals in endemic areas[1–8,13–18].

CONCLUSION

The case presented highlighted important diagnostic challenges, mainly due to the absence of a classic epidemiological link reported in the initial evaluations, the morphological similarity of the lesions to other infectious dermatoses, such as cutaneous leishmaniasis, and the absence of specific histopathological findings in the first tissue analysis.

These factors contributed to a delay in the etiological diagnosis and to the initial institution of inappropriate therapeutic conduct, with a negative impact on the patient's clinical evolution.

Given this fact, there is a reinforced need for the systematic inclusion of sporotrichosis in the differential diagnosis of chronic facial skin lesions, particularly in states in the Southeast region of Brazil, even in the absence of evident exposure to traditional risk factors.

The identification of a granulomatous inflammatory process associated with suppurative foci, even without direct visualization of the etiological agent, should be considered an alert finding, justifying further diagnostic investigation, repeated biopsies, and the use of complementary methods, aiming at early diagnosis and the appropriate initiation of antifungal treatment.

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