



# Diagnostic and therapeutic challenges in canine sporotrichosis: a case report

Leonardo Sena Santos<sup>1</sup>, Arianne Costa Baquião<sup>2</sup>

<sup>1</sup>Veterinarian.

<sup>2</sup>Universidade Paulista, São Paulo, SP, Brasil

## ABSTRACT

### OBJECTIVE

To describe a case of sporotrichosis in a female dog treated at the Veterinary Teaching Hospital in São Paulo, Brazil, with emphasis on clinical signs, diagnosis, treatment, and prognosis.

### METHOD

This study is a longitudinal descriptive case report of a mixed-breed female dog, rescued by her owner, presenting with cutaneous and respiratory manifestations. The animal was attended at the Internal Medicine Department of the Veterinary Hospital of Universidade Paulista, São Paulo, SP, Brazil. Information was obtained through review of the medical records, diagnostic reports, laboratory findings, and clinical observations. The study was approved by the institutional animal ethics committee under protocol number 8295071222.

### RESULTS

The patient exhibited non-painful, non-pruritic ulcerative lesions, hyperkeratosis, and alopecia on the rostral region and hind limbs, along with nasal discharge and sialorrhea. Cytopathology, histopathology, radiography, and blood and biochemical analyses were performed but proved inconclusive. Due to lack of improvement after antibiotic and corticosteroid therapy, a fungal culture was conducted, confirming infection by *Sporothrix* spp. An antifungal susceptibility test revealed intermediate resistance to itraconazole. Nonetheless, itraconazole was selected for treatment at a dosage of 10 mg/kg once daily for 180 days. After this period, both cutaneous and respiratory lesions resolved completely, and a 30-day extension of therapy was recommended to prevent relapse and ensure full therapeutic success.

### CONCLUSION

Sporotrichosis should always be considered in the differential diagnosis of ulcerated and non-pruritic skin lesions in dogs; and for diagnosis and implementation of treatment and control measures for this subcutaneous mycosis, fungal culture and antifungal sensitivity tests are essential.

### KEYWORDS

Ulcerative lesion; Subcutaneous mycosis; *Sporothrix* spp.

### Corresponding author:

Arianne Costa Baquião

Faculty Member, School of Veterinary Medicine, Universidade Paulista - UNIP

R. Rua General Leite de Castro, 201 - Jardim Santa Cruz, São Paulo - SP, Brasil

E-mail: arianne.baquiao@hotmail.com

ORCID ID: <https://orcid.org/0000-0003-3921-9256>

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## INTRODUCTION

Sporotrichosis is a subcutaneous mycosis caused by saprophytic, thermodimorphic fungi, which belong to a phylogenetically related group known as *Sporothrix schenckii* complex. This complex includes four clinically relevant species- *S. schenckii* sensu stricto, *S. brasiliensis*, *S. globosa*, and *S. luriei*- and two others, *S. mexicana* and *S. albicans*, occasionally isolated from humans. Among these, *S. schenckii* sensu stricto and *S. brasiliensis* are considered the most significant species associated with sporotrichosis. While *S. schenckii* sensu stricto has a global distribution and moderate virulence; *S. brasiliensis* emerged in the state of Rio de Janeiro, remains geographically restricted to Brazil and it is considered the most pathogenic species within the complex.<sup>1,2</sup>

This mycosis can cause cutaneous, lymphocutaneous, subcutaneous, and systemic lesions; and is primarily transmitted via traumatic inoculation of fungal spores by fomites or scratches, especially from felines.<sup>3</sup>

Sporotrichosis is an anthroponozoonosis characterized by insufficient public health policies and limited attention to preventive strategies.<sup>4</sup> Outbreaks have been reported globally, and in Brazil, both human and animal cases have originated primarily in the state of Rio de Janeiro, and subsequent spread to other regions.<sup>5</sup>

Although *Sporothrix schenckii* complex strains affect various mammalian species, particularly cats, sporotrichosis is often underdiagnosed in other animals, as dogs and humans.<sup>6</sup> In dogs, the disease is rare and sporadic, and the cutaneous form is the most frequent. This form presents variable and nonspecific clinical signs, including multiple firm nodules-ulcerated or not-, alopecia and painless, moderated pruritic ulcers, mainly located on the ears, head and body.<sup>3</sup> Disseminated nodular lesions may also appear, often associated to hemorrhagic or hemopurulent scabs and are usually associated to immunosuppression.<sup>7</sup>

Fungal elements are rarely found in dogs and canine diagnosis of sporotrichosis is challenging.<sup>8</sup> Diagnosis is primarily established by isolation and identification of *Sporothrix spp.* in culture, supplemented by cytopathology, histopathology, skin testing, serology, immunohistochemistry, and molecular assays. Fungal culture is considered the gold standard for definitive diagnostic elucidation.<sup>9</sup>

The most common treatment for canine sporotrichosis involves itraconazole<sup>10</sup>, although other antifungal protocols include ketoconazole, potassium iodide, terbinafine, and amphotericin B.<sup>10-13</sup> In Brazil, the first-line treatment is itraconazole at 10 mg/kg, administered until 30 days after complete clinical remission and negative mycological testing.<sup>14-15</sup>

Thus, this study aimed to describe a case of sporotrichosis in a dog and to highlight the key diagnostic and therapeutic aspects observed at a Veterinary Teaching Hospital in the city of São Paulo.

## METHODS

This study is a case report presented in a descriptive and qualitative format. The information was obtained by a review of the medical record, laboratory reports, diagnostic tests, and clinical data provided by the guardian. The study was approved by the Animal Research Ethics Committee of Universidade Paulista (UNIP), under approval number 8295071222.

The data collected were recorded in a descriptive and chronological form, and subsequently analyzed and compared for discussion purposes.

## RESULTS AND DISCUSSION

The patient was rescued from the streets and had no previous clinical history available. It presented ulcerated, crusted, non-painful and non-pruritic lesions, as well as hyperkeratosis in the rostral region, accompanied by alopecia on the face, abdominal and pubic regions, and on the thoracic and pelvic limbs, particularly on the caudal surface of the hind limbs. Additionally, the patient exhibited sneezing, serous nasal discharge, ptialism, and tick infestation (Figure 1).

Figure 1 - Initial lesions in the pubic region, pelvic limbs, and rostral area.

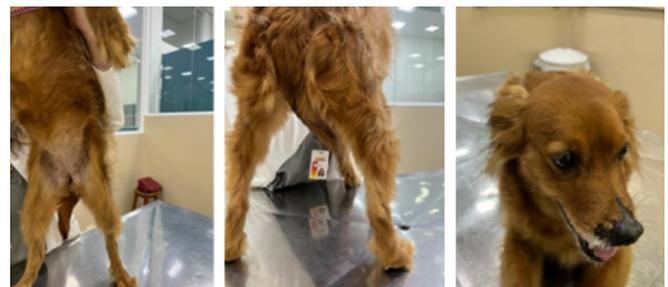


Source: Authors' archive (2025).

Complementary exams were requested, including complete blood count, alkaline phosphatase, alanine aminotransferase (ALT), urea, creatinine, serology for ehrlichiosis, lymph node cytology, and histopathology of the lesion area. Based on the clinical history and physical findings, the initial differential diagnoses included neoplasia and leishmaniasis. However, test results were inconclusive, and treatment was started with topical antiparasitics, oral antibiotic therapy (doxycycline 50 mg every 12 hours for 14 days), topical rifamycin spray on lesions every 12 hours for 14 days, and corticosteroid therapy with prednisone (10 mg every 24 hours until further recommendation).

After 14 days of treatment, with worsening of the cutaneous and respiratory conditions, antibiotic was replaced by amoxicillin associated to potassium clavulanate (175 mg every 12 hours for 21 days). Mycological culture was requested and, after 14 days, identified *Sporothrix spp.*, along with antifungal susceptibility testing, which showed complete resistance to amphotericin B and fluconazole, intermediate resistance to itraconazole, and sensitivity to clotrimazole, econazole, ketoconazole, miconazole, and nystatin. Treatment was initiated with itraconazole (100 mg every 24 hours for 180 days), administered after meals. The animal was reevaluated monthly for clinical monitoring, and gradual lesion remission was observed, leading to complete clinical resolution (Figure 2). A second fungal culture was performed and returned negative. Therefore, medication was continued for an additional 30 days to prevent recurrence. The guardian was instructed to isolate the animal and use gloves during handling to reduce zoonotic transmission risk.<sup>15</sup>

Figure 2 - Resolution of skin lesions after treatment.



Source: Authors' archive.

In this report, the initial cutaneous lesions - characterized by ulcerations with hemopurulent and hemorrhagic scabs - required differential diagnosis with diseases such as leishmaniasis, algomycosis, mycobacteriosis, cryptococcosis, neoplasms, nocardiosis, and sporotrichosis.<sup>15</sup> A conclusive diagnosis was only possible after mycological culture, in agreement with Schubach et al.<sup>3</sup>, who stated that the isolation and identification of *Sporothrix spp.* in culture, based on morphological parameters, remains the gold standard for definitive diagnosis. The diagnostic failure after cytology and histopathology was observed in this case, and it reinforces importance of mycological culture, due the typically low fungal load in canine lesions, which can lead to treatment delays and compromise patient outcomes.<sup>8</sup>

Until diagnosis was confirmed through fungal culture, the patient was treated with corticosteroids (prednisone) and antibacterial agents (doxycycline and later amoxicillin with clavulanate) for 28 days. Corticosteroid therapy was gra-

dually discontinued, and antibiotics replaced by antifungal treatment with itraconazole. The immunosuppressive effect of corticosteroids should be avoided during and after treatment, as clinical recurrence of sporotrichosis has been reported even six months after apparent clinical cure.<sup>16</sup> Moreover, systemic antibiotic therapy should only be prescribed in conjunction with antifungal treatment and in cases of suspected secondary bacterial infection<sup>11</sup>, as inappropriate antibiotic use does not eliminate the fungus and may contribute to antimicrobial resistance- a global public health concern affecting both animal and human populations.<sup>17</sup>

In this study, sporotrichosis treatment was conducted using itraconazole monotherapy. The *Sporothrix* strain isolated showed intermediate resistance to itraconazole, which led to a prolonged prolonged therapeutic approach with high doses until clinical and laboratory confirmation of cure.<sup>18-21</sup> Galhardo et al.<sup>22</sup> demonstrated that Brazilian *Sporothrix* strains remain susceptible to itraconazole, while Gremião et al.<sup>23</sup> reported that combination therapy with potassium iodide may be an alternative in cases of therapeutic failure. The drug was not administered concomitantly with H<sub>2</sub> receptor antagonists, which increased its absorption, as described by Reis et al.<sup>24</sup> Renal and hepatic functions were monitored regularly due to potential nephrotoxicity and hepatotoxicity associated with the drug.<sup>12</sup>

Furthermore, after the complete regression of the lesion, a second fungal culture was performed, which was crucial to consolidate the clinical and laboratory cure. This approach was also adopted in our study to ensure complete elimination of the fungus and therapeutic success against *Sporothrix* spp. infection.<sup>12,15,18,20</sup>

## FINAL CONSIDERATIONS

Although sporotrichosis is not a notifiable disease, its importance should be emphasized to both the medical and veterinary communities due to its zoonotic transmission potential. Common in Brazil, sporotrichosis is an anthroponozoonosis with increasing incidence both nationally and internationally. Therefore, it should always be considered in the differential diagnosis of ulcerated and non-pruritic skin lesions in dogs.

For an accurate diagnosis and subsequent implementation of effective treatment and control measures for this subcutaneous mycosis, fungal culture and antifungal sensitivity tests are essential. These tools allow the identification of the etiological agent and the guidance of therapeutic decisions. In these cases, itraconazole has been the antifungal of choice, presenting satisfactory results in clinical management, even in the face of intermediate resistance.

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