

Dermatophytosis in cattle in the field: case report

S. S. Leão^{*1} , F. F. Silva Júnior² , B. P. Silva² , J. T. Bandeira² 

Recibido: 29/04/2025 Aprobado: 20/11/2025

ABSTRACT

Bovine dermatophytosis is a zoonotic cutaneous mycosis caused by fungi of the genera *Microsporum* and *Trichophyton*, with a wide global distribution. It most frequently affects young animals and produces characteristic lesions such as circular alopecia, grayish crusts, and scaling, primarily on the head and neck. Transmission occurs through direct contact, contaminated fomites, insects, and ectoparasites. Asymptomatic animals can serve as reservoirs of the fungus, which can survive for long periods in the environment. This report aims to describe a case of dermatophytosis in a mixed-breed Nelore steer raised extensively in the semi-arid region of Pernambuco, Brazil. The animal exhibited typical lesions, and the diagnosis was confirmed by cytology of a skin scraping, in which macroconidia and spores were observed. Treatment consisted of topical glycerinated iodine and systemic Ceftiofur Hydrochloride, resulting in marked clinical improvement and complete recovery within 30 days. Early diagnosis and the combination of antifungal and antibiotic therapies are essential for controlling secondary bacterial infections. Although qPCR is a more modern diagnostic method with high sensitivity and specificity, cytology proved effective and more accessible under field conditions. Prophylactic measures, including the isolation of affected animals, disinfection of facilities, and control of animal introductions, are essential to prevent outbreaks and protect public health, given the zoonotic potential of dermatophytosis. It is concluded that the combined treatment and the preventive measures adopted were effective in the recovery of the animal and in preventing the spread of the disease. Continuous surveillance and appropriate sanitary management are fundamental for the control of dermatophytosis in cattle herds.

Keywords: scaling, epidermis, spore, zoonosis.

Dermatofitose em bovino a campo: relato de caso

RESUMO

A dermatofitose bovina é uma micose cutânea zoonótica, causada por fungos dos gêneros *Microsporum* e *Trichophyton*, com ampla distribuição mundial. Afeta animais jovens com maior frequência, provocando lesões características como alopecia circular, crostas acinzentadas e descamação, principalmente na cabeça e pescoço. A transmissão ocorre

¹ Universidade Federal do Agreste de Pernambuco, Department of Animal Science. Boa vista, Garanhuns- 55292-277, Pernambuco, Brasil.

^{*} Corresponding author: ivansampaioleao38@gmail.com.

² Centro Universitário do Vale do Ipojuca (UNIFAVIP) Wyden, Veterinary Medicine Course. Av. Adjar da Silva Casé, 800- Indianópolis, Caruaru- 55024-740, Pernambuco, Brasil.

por contato direto, fômites contaminados, insetos e ectoparasitas. Animais assintomáticos podem atuar como reservatórios do fungo, que sobrevive por longos períodos no ambiente. Objetiva-se relatar um caso de dermatofitose em um garrote mestiço Nelore, criado extensivamente no semiárido pernambucano. O animal apresentava lesões típicas, e o diagnóstico foi confirmado por citologia de raspado cutâneo, onde se observaram macroconídios e esporos. O tratamento incluiu iodo glicerinado tópico e Cloridrato de Ceftriaxona sistêmico, resultando em significativa melhora clínica e recuperação completa em 30 dias. O diagnóstico precoce e a associação de terapias antifúngicas e antibióticas, controlam infecções secundárias bacterianas. Embora a qPCR seja um método diagnóstico mais moderno, com alta sensibilidade e especificidade, a citologia provou-se eficaz e mais acessível para atendimentos a campo. A profilaxia, incluindo o isolamento de animais doentes, desinfecção de instalações e controle de entrada de novos animais, é essencial para prevenir surtos e proteger a saúde pública, considerando o potencial zoonótico da dermatofitose. Conclui-se que o tratamento combinado e as medidas profiláticas adotadas foram eficazes na recuperação do animal e prevenção de disseminação da doença. A vigilância contínua e o manejo sanitário adequado são fundamentais para o controle da dermatofitose em rebanhos bovinos.

Palavras-chave: descamação, epiderme, esporo, zoonose.

INTRODUCTION

Dermatophytosis is a contagious cutaneous mycosis of chronic course and zoonotic nature, with worldwide distribution (Burd *et al.*, 2007). Among domestic animals, cattle are among the most frequently affected, particularly in intensive production systems or in herds with sanitary deficiencies conditions that favor fungal dissemination and lead to significant economic losses due to hide devaluation, reduced weight gain, and expenses related to treatment and management. The etiologic agents are fungi of the genera *Microsporum* and *Trichophyton*, which are widely distributed in the environment and capable of infecting multiple species, including ruminants, equines, companion animals, swine, birds, wildlife, and humans.

Beyond its productive impact, dermatophytosis represents an important public health concern due to its zoonotic potential, requiring prophylactic measures

and accurate diagnostic approaches to contain outbreaks and protect farm workers and animal caretakers. Young animals are more susceptible to the disease due to immunological immaturity and higher levels of close contact. The characteristic clinical sign is the appearance of alopecic areas with well-defined borders, accompanied by desquamation and grayish crust formation (Riet-Correa *et al.*, 2023). In this context, the reporting of clinical cases under field conditions, particularly in semiarid regions such as Northeastern Brazil, is relevant for understanding the epidemiological dynamics of the infection and for guiding control strategies adapted to local realities.

Asymptomatic animals serve as important reservoirs of dermatophytosis, as the fungus may be present on intact skin even in the absence of visible lesions. This condition facilitates the silent spread of infection within herds, particularly in

production systems with high animal density and inadequate sanitary management. The fungal agent penetrates and colonizes the epidermis when favorable conditions arise, such as high humidity, skin injuries, immunosuppression, or direct contact with contaminated material. These factors help explain the rapid dissemination of the disease in shared environments such as corrals and milking facilities.

The fungus also exhibits high environmental resistance, remaining viable in crusts, hair, and organic debris for more than 42 months. This prolonged environmental persistence poses a challenge for sanitary control, as new outbreaks may occur even after extended periods if strict cleaning, disinfection, and isolation measures are not implemented. Transmission occurs primarily through direct contact between infected and healthy animals but may also occur via fomites and mechanical vectors such as insects and ectoparasites, increasing the risk of infection within and between herds (Riet-Correa *et al.*, 2023; Yeruham *et al.*, 2000).

In cattle, lesions typically affect the head and neck but may spread to the trunk, limbs, and tail. Severely affected animals may exhibit weight loss and widespread crust formation across the body; when these crusts are removed, they exhibit moist and hemorrhagic areas (Riet-Correa *et al.*, 2023).

Diagnosis of dermatophytosis should follow a structured approach that integrates clinical evaluation, proper sample collection, and laboratory confirmation. Initial suspicion arises from the presence of characteristic clinical signs such as circular alopecia, grayish crusts, and desquamation. Sample collection is a critical step for diagnostic accuracy and should

preferably be performed using hairs and crusts obtained from the margins of active lesions, where the concentration of viable fungal structures is highest. Although peripheral blood has been used in some studies, it is not a routine method and offers low sensitivity for diagnosing dermatophytosis, being reserved for specific cases of systemic dissemination.

Among the available laboratory tests, fungal culture on Sabouraud agar is considered the gold standard, as it enables isolation and identification of the fungal genus and species. Histopathological examination contributes to confirming fungal parasitism within tissues and aids in differentiating dermatophytosis from other dermatoses with similar presentations. When interpreted together, these methods greatly enhance diagnostic reliability. In field conditions or in veterinary laboratories with limited resources, direct cytology and potassium hydroxide (KOH) microscopy represent practical, low-cost alternatives that allow rapid and efficient screening of suspected cases (Riet-Correa *et al.*, 2023; Lima, 2019).

Histopathological examination is an important tool for confirming the diagnosis of dermatophytosis and assessing the extent of cutaneous lesions. In the analyzed samples, changes consistent with hyperplastic dermatitis and suppurative folliculitis were observed, which are typical tissue responses to fungal presence. The visualization of septate hyphae and spores within hair structures confirmed the fungal infection and enabled differentiation from other dermatopathies with similar clinical features. These laboratory findings were essential for validating the clinical diagnosis of the reported case, reinforcing the importance of combining clinical observation with

complementary diagnostic tests in veterinary practice (Riet-Correa *et al.*, 2023).

Treatment of bovine dermatophytosis should be conducted in an orderly and well-structured manner with the aim of eliminating the fungal agent, reducing the risk of transmission, and preventing recurrence. In localized and mild infections, topical therapy is generally sufficient, and crusts should be carefully removed prior to applying antifungal medications to ensure greater penetration of the product. Glycerinated iodine or povidone-iodine solutions, as well as ointments containing thiabendazole, have demonstrated clinical efficacy when applied twice daily for two to three weeks, until complete healing of the lesions.

In cases where lesions are extensive or secondary bacterial infection is present, systemic antimicrobials such as Ceftiofur Hydrochloride may be added—not to treat the fungus, but to control bacterial complications that delay cutaneous recovery. This combined approach was effective in the reported case, accelerating healing and preventing additional opportunistic infections.

Prophylaxis plays a crucial role in the control of dermatophytosis and should include the immediate isolation of affected animals; thorough disinfection of facilities, equipment, and fomites using sodium hypochlorite solutions at 0.25% or phenolic compounds (2.5–5%); and the control of insects and ectoparasites that act as mechanical vectors. Quarantine of newly introduced animals, along with improvements in ventilation and hygiene, are also essential measures to reduce the environmental persistence of the fungus and prevent new outbreaks within the herd (Avante *et al.*, 2009; Riet-Correa *et al.*, 2023).

Considering the epidemiological relevance and economic impact of bovine dermatophytosis, especially in extensive production systems located in semiarid regions, it is essential to understand how the disease manifests and is controlled under field conditions. In this context, the present study aims to report a clinical case of dermatophytosis in a bovine raised extensively in the state of Pernambuco, highlighting the diagnostic methods employed, the treatment administered, and the prophylactic measures adopted to prevent disease dissemination. This case report seeks to strengthen understanding of the infection dynamics and provide practical guidance for sanitary management and outbreak prevention in herds within the region.

CASE REPORT

A crossbred Nelore yearling, approximately one year old and weighing 210 kg, was examined. The animal originated from a herd of 30 cattle raised under extensive management in the semi-arid region of the state of Pernambuco, specifically in the municipality of Mirandiba. The main concern of the owner was the appearance of alopecic areas in several animals. Other cattle had previously displayed similar clinical signs, leading the owner to cull some of them, and one neonatal calf had died after developing myiasis in one of these lesions. Seeking a definitive solution for the new animal showing similar symptoms, the owner requested a clinical evaluation.

Physical examination revealed multiple circular, well-defined alopecic areas on the head, accompanied by desquamation and grayish crust formation (Figure 1A), findings suggestive of bovine dermatophytosis.

All other clinical parameters, including heart and respiratory rates, skin turgor, ruminal movements, temperature, and mucous membrane coloration, were within normal limits.

Cytological evaluation was performed by superficially scraping the alopecic areas. The smears were stained using a rapid Panoptic method and examined under an Olen® Basic Binocular Achromatic LED light microscope. Microscopy revealed fungal structures, including abundant thick-walled macroconidia, and in some fields, the presence of spores, crystals, and exfoliated epithelial cells was also noted (Figure 2). Based on the cytological findings combined with the clinical signs, a diagnosis of dermatophytosis was established.

For treatment, the animal was placed in isolation. Topical therapy consisted of applying glycerinated iodine to the lesions using gloves and cotton, taking care to avoid contact with mucous membranes, and continuing until the lesions were resolved. In addition, systemic therapy

with Ceftiofur Hydrochloride (Cef-50) was administered intramuscularly at a dose of 0.02 mL/kg (4.2 mL) for a period of three days.

After 15 days, a follow-up visit was conducted to assess treatment progress. Some affected areas were still present; however, clear signs of regression were observed (Figure 1B). An additional three days of Ceftiofur Hydrochloride therapy were prescribed. During a subsequent visit, 30 days after the initial intervention, the animal showed marked improvement, with evident hair regrowth in the previously affected regions and weight gain (240 kg). With full clinical recovery and complete resolution of the lesions (Figure 1C), the animal was deemed fit to be reintroduced into the herd.

DISCUSSION

Bovine dermatophytosis is a highly transmissible fungal disease that predominantly affects young animals, as described by Abd-Elmegeed *et al.* (2020), and can lead



FIGURE 1. (A: Crossbred Nelore yearling, 1 year old, showing grayish crusts and alopecic areas on the lateral facial and periocular regions, as observed during the initial visit. (B: The same animal 15 days after initiation of treatment, demonstrating reduced crust formation. (C: The same animal at 30 days, at the end of treatment, with resolution of crusts and visible hair regrowth, indicating clinical improvement.

Source: own elaboration.

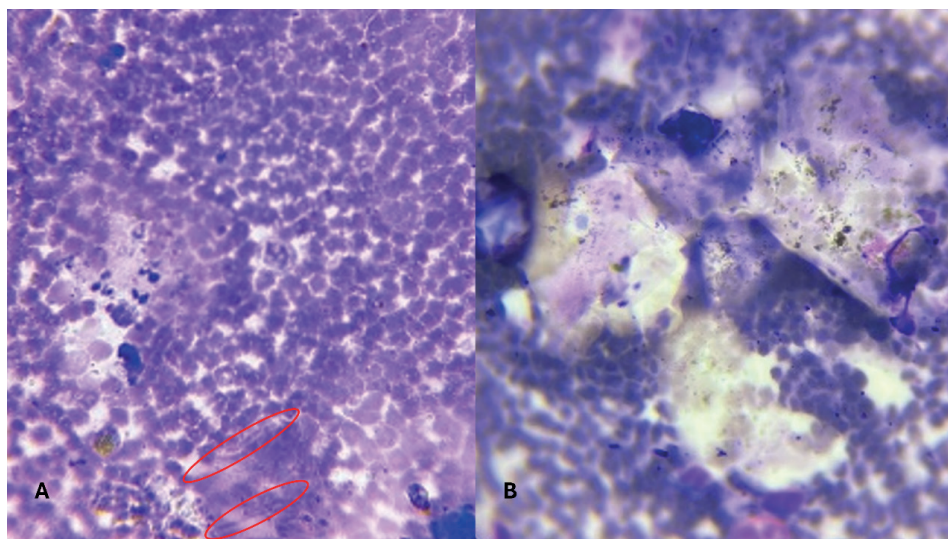


FIGURE 2. Photomicrograph of cytology from a scraped lesion area. (A: Presence of fungal hyphae (red circle). 40×, rapid Panoptic stain. (B: Presence of spores, crystals, and exfoliated epithelial cells on the smear. 40×, rapid Panoptic stain.

Source: own elaboration.

to significant economic losses in extensive production systems (Lima, 2019). Venancio *et al.* (2024) reported that dermatophytosis remains a recurrent condition in cattle in Brazil, particularly in the southern region, with frequent outbreaks recorded between 2000 and 2022. The disease, caused by dermatophyte fungi, compromises the skin of affected animals, resulting in cutaneous lesions that negatively impact on herd health and productivity.

Early diagnosis and appropriate treatment are essential to minimize the effects of the disease (Avante *et al.*, 2009). In the present case, the animal exhibited clinical signs characteristic of dermatophytosis, including alopecia, crusts, and desquamation on the head findings consistent with those reported by Lima (2019), who documented outbreaks in Paraíba in which animals developed

circular, crusted, alopecic, and pruriginous lesions localized to the face and cervical region, particularly in young or recently acquired animals.

The diagnostic confirmation obtained through cytological scraping revealed the presence of fungal elements consistent with the histological alterations typically observed in dermatophytosis, such as septate and branching hyphae, as well as small spherical spores (arthroconidia) located either within the hair shaft or externally. These findings correspond to endothrix (internal) or ectothrix (external) parasitism, in addition to hyperplastic dermatitis and suppurative folliculitis (Riet-Correa *et al.*, 2023).

Diagnosis of bovine dermatophytosis has advanced considerably with the adoption of modern techniques. Traditionally, methods such as direct microscopy and

fungal culture were employed, although they present limitations related to sensitivity and turnaround time. Currently, real-time PCR (qPCR) has emerged as an effective alternative. This technique enables rapid and precise detection of dermatophyte genetic material directly from clinical samples, overcoming the constraints associated with conventional diagnostic methods (Kagowski *et al.*, 2021).

qPCR employs primers specific to dermatophytes, enhancing diagnostic specificity and reducing the time required for detection. Moreover, qPCR is capable of identifying multiple dermatophyte species within a single sample, providing a more comprehensive and detailed diagnostic assessment. The implementation of these modern molecular techniques in veterinary laboratories and specialized clinics has significantly improved the management and control of dermatophytosis in cattle herds, contributing to both animal and public health (Kagowski *et al.*, 2021). Identifying the etiologic agents is essential for selecting the most appropriate therapeutic approach (Avante *et al.*, 2009).

In the case presented, topical glycerinated iodine proved effective, supported by systemic antibiotic therapy with Ceftiofur Hydrochloride, which demonstrated an efficient combination for controlling the infection. Avante *et al.* (2009) also suggest that medications such as iodine solutions or ammoniated mercury ointments may promote satisfactory recovery.

The use of antibiotics in the treatment of fungal infections, such as dermatophytosis, may appear counterintuitive; however, there are specific reasons that justify this approach. Antibiotics, including Ceftiofur Hydrochloride, are primarily administered to manage secondary

bacterial infections that may develop as a consequence of dermatophytosis. When the skin is compromised by fungal infection, it becomes more susceptible to bacterial invasion, which can exacerbate the clinical picture and delay recovery. Therefore, the use of antibiotics helps control these secondary infections, allowing antifungal therapy to act more effectively (Nobre *et al.*, 2002; Macedo, Gherardi, & Almeida, 2023).

In addition, combining topical treatments such as glycerinated iodine with systemic antibiotics may offer a more comprehensive therapeutic strategy, targeting both the fungal infection and any associated bacterial involvement. This integrated approach is essential to ensure full recovery and prevent recurrence (Nobre *et al.*, 2002; Macedo, Gherardi, & Almeida, 2023).

Isolation of the affected animal and the targeted protection of housing and handling environments are essential to prevent the spread of the fungus to other animals and to the surroundings, where the pathogen can persist for extended periods (Riet-Correa *et al.*, 2023).

Dermatophytosis in cattle, caused primarily by *Trichophyton verrucosum*, is a zoonosis of considerable importance due to its impact on both animal and human health. This fungal infection is highly contagious and can be transmitted to humans through direct contact with infected animals or contaminated materials. In humans, bovine-associated dermatophytosis predominantly affects children and adults who work closely with livestock, producing cutaneous lesions that may be challenging to manage. The prevalence of this zoonosis underscores the urgent need for rigorous preventive

measures, such as adequate hygiene and proper sanitary management, to minimize transmission. Furthermore, awareness of the associated risks and the implementation of control strategies are fundamental to safeguarding public health and reducing infection incidence (Piorunek *et al.*, 2024).

Cleaning and disinfection of facilities should be performed using commercial detergents or disinfectant solutions such as 0.25% sodium hypochlorite or phenolic disinfectants at concentrations of 2.5–5% (Avante *et al.*, 2009). In addition, prophylactic measures, including the introduction of animals only after prior health assessment and the maintenance of a clean, controlled environment, are key to preventing outbreaks of dermatophytosis (Riet-Correa *et al.*, 2023; Yeruham *et al.*, 2000).

CONCLUSION

The combination of topical treatment with glycerinated iodine and systemic therapy with Ceftiofur Hydrochloride resulted in the successful recovery of the animal affected by dermatophytosis. Prophylactic measures, including the isolation of infected animals, targeted environmental protection, and the introduction of new animals only after appropriate diagnostic evaluation, are crucial to preventing outbreaks. Proper management practices and continuous surveillance remain essential for effective disease control.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

FUNDING

The diagnosis and treatment were fully funded by the owner of the animal.

USE OF ARTIFICIAL INTELLIGENCE

No artificial intelligence was used for the diagnosis, treatment, or preparation of the manuscript.

REFERENCES

- Abd-Elmegeed, M. *et al.* (2020). Dermatophytosis among ruminants in Egypt: The infection rate, identification and comparison between microscopic, cultural and molecular methods. *Zagazig Veterinary Journal*, 48(2), 116–127, 2020.
- Avante, M. L. *et al.* (2009). Dermatofitose em grandes animais. *Revista Científica Eletrônica de Medicina Veterinária*, Ano VII(12).
- Burd, E. M. *et al.* (2007). Pustular dermatitis caused by *Dermatophilus congolensis*. *Journal of Clinical Microbiology*, Washington, 45(5), 1655–1658, 2007. <https://doi.org/10.1128/JCM.00327-07>
- Real-Time PCR as an Alternative Technique for Detection of Dermatophytes in Cattle Herds. *Animals*. 11(6): 1-13, 2021. <https://doi.org/10.3390/ani11061662>
- Lima, T.S. Caracterização clínico-patológica e epidemiológica das dermatopatias de ruminantes no agreste paraibano. Mestrado em Ciência Veterinária, UFPA, 2019. <https://repositorio.ufpb.br/jspui/handle/123456789/14355>
- Kagowski, D. *et al.* (2021). Real-time PCR as an alternative technique for detection of dermatophytes in cattle herds. *Animals*, 11(6), 1–13. <https://doi.org/10.3390/ani11061662>
- Lima, T. S. (2019). *Caracterização clínico-patológica e epidemiológica das dermatopatias de ruminantes no agreste paraibano* (Master's thesis, UFPA).
- Macedo, M. A., Gherardi, S. R. M., & Almeida, J. C. (2023). Aplicações dos antimicrobianos na medicina veterinária: Histórico, evolução, uso indiscriminado e resistência. *Revista Biodiversidade*, 22(1), 131–144, 2023.

- Nobre, M. O. *et al.* (2002). Drogas antifúngicas para pequenos e grandes animais. *Ciência Rural*, 32(1), 175–184, 2002. <https://doi.org/10.1590/S0103-84782002000100029>
- Piorunekm, M. *et al.* (2024). Superficial zoonotic mycoses in humans associated with cattle. *Patógenos*, 13(10), 1–13, 2024. <https://doi.org/10.3390/pathogens13100848>
- Riet- Correa, F. *et al.* (2023). *Doenças de ruminantes e equídeos*. MedVet, 4(1), 469–472, 2023.
- Venancio, F. R. *et al.* (2024). Cutaneous diseases diagnosed in cattle in southern Brazil from 2000 to 2022. *Pesquisa Veterinária Brasileira*, 44, 1–7, 2024. <https://doi.org/10.1590/1678-5150-PVB-7458>
- Yeruham, I., Elad, D., & Perl, S. (2000). Economic aspects of outbreaks of dermatophilosis in first-calving cows in nine herds of dairy cattle in Israel. *Veterinary Record*, 146(10), 695–698, 2000. <https://doi.org/10.1136/vr.146.24.695>

Forma de citación del artículo:

Leão, I.S.S., Silva-Júnior, F.F., Silva, B.P., Bandeira, J.T., (2025). Dermatophytosis in cattle in the field: case report. Rev Med Vet Zoot. 72(3): e120110. <https://doi.org/10.15446/rfmvz.v72n3.120110>