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Diagnosis and treatment of *Microsporum canis*-induced dermatophytosis in a domestic cat

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ABSTRACT: Dermatophytosis is a common superficial fungal infection in cats, particularly those exposed to outdoor environments. This case study reports a 5-month-old domestic cat named Simon, weighing 1.9 kg, presented with erythematous and scaly skin, partial alopecia, and follicular casts on the head and ear regions. The cat was active, had good appetite, and showed no signs of pruritus. Simon was kept in a semi-outdoor environment with potential contact with stray cats. The diagnosis was based on physical examination, Wood's lamp test, adhesive tape impression cytology, and fungal culture. Macroscopic and microscopic evaluations of the fungal isolate suggested that *Microsporum canis* was the causative agent. Treatment included topical antifungal shampoo containing econazole nitrate (Sebazole) applied weekly and systemic itraconazole at a dose of 7.5 mg/kg body weight once daily for two weeks. Supportive therapy included liver (Curcuma FCT) and skin (Coatex) supplements. After two weeks of therapy, physical re-evaluation showed resolution of erythema and scaling, with visible hair regrowth in previously alopecic areas.

Keywords:
dermatophytosis, fungus, itraconazole, ringworm, cat

■ INTRODUCTION

Dermatophytosis is a contagious superficial fungal infection of the skin and a zoonotic disease. *Microsporum canis* is the most common dermatophyte in cats. Transmission occurs via contact with infected animals, carriers, or contaminated environments. Arthrospores can persist in the environment for up to one year, enabling reinfection (Frymus *et al*. 2013, Moriello 2014, Bajwa 2020). Dermatophytosis presents as a circular lesion with erythematous margins (Frymus *et al*. 2013, Moriello 2014). The diagnosis includes Wood's lamp examination, adhesive tape impression (ATI) cytology, and fungal culture.

Wood's lamp examination is a rapid and cost-effective screening tool, although it has limited sensitivity (approximately 50%), as not all strains of *M. canis* fluoresce under ultraviolet light. A positive result was indicated by characteristic apple-green fluorescence caused by the interaction between UV light and pteridine compounds produced by *M. canis* within the hair cortex and medulla (Gould & Coyner, 2017, Rapti *et al*. 2023, Indrajulianto *et al*. 2014). ATI cytology is a simple yet more sensitive diagnostic method than traditional hair pluck examination, with reported sensitivities of 82.2% and 66.7%, respectively. This technique facilitates the identification of fungal elements, such as arthroconidia and hyphae, as well as the concurrent presence of bacteria and inflammatory cells.

Fungal culture remains the gold standard for the definitive diagnosis of dermatophytosis. Culture using Sabouraud dextrose agar (SDA) or dermatophyte test medium (DTM) allows for both the detection and species-level identification of dermatophytes, thereby guiding appropriate treatment strategies (Rapti *et al*. 2023). This case report describes the clinical presentation, diagnostic approach, and therapeutic management of dermatophytosis in a young domestic cat, highlighting the importance of combined diagnostic methods and targeted antifungal therapy.

■ CASE

Anamneses, Present Status, and Signalement: A 5-month-old domestic cat, Simon, weighing 1.9 kg, was presented with dermatological abnormalities (Figure 1). The cat was maintained in a semi-outdoor environment, which increased the likelihood of environmental exposure and contact with stray animals. Clinical signs include erythematous skin, partial alopecia, scaling, and the presence of follicular casts on the head and ears, forming asymmetrical lesions. **Physical Examination**: Simon showed no evidence of pruritus or discomfort upon palpation of the affected areas. **Diagnostic workup**: Wood lamp examination, adhesive tape impression (ATI) cytology, and fungal culture. For culture, samples were collected from fluorescent lesions, including skin scrapings and hair plucks, and inoculated onto Sabouraud dextrose agar (SDA). The cultures were incubated at room temperature (25–28°C) for up to 21 days and macroscopic and microscopic evaluations were performed to identify fungal growth. **Diagnosis**: Dermatophytosis. **Prognosis**: Fausta.

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Treatment: Combination of topical and systemic antifungal therapies Topical therapy involved bathing the cat with a shampoo containing econazole nitrate (Sebazole®) once every seven days for two weeks. Systemic treatment included oral itraconazole at a dose of 7.5 mg/kg body weight once daily for 14 days. Supportive therapy included hepatoprotective supplementation (Curcuma FCT®) and dermatological nutritional support (Coatex®). Topical antifungal therapy targeted fungal spores present on the hair surface and skin, whereas systemic therapy was administered to eliminate spores residing within the hair follicles, thereby ensuring comprehensive eradication of the infection.

■ RESULTS AND DISCUSSION

Wood's lamp examination showed positive results, with green fluorescence in the head and ear regions (Figure 1A). Adhesive tape impression cytology was performed on the fluorescent lesions using Diff-Quick staining (Indo-Reagent). Microscopic examination revealed arthroconidia (Figure 1B), indicating a dermatophyte infection. Fungal culture involved observing colony morphology, pigmentation, texture, and reverse-side appearance. The colonies showed full growth within 15 days at room temperature (Figure 1C). Microscopic identification using LPCB staining revealed macroconidia, consistent with *Microsporum canis* (Figure 1D).

Macroscopic dermatophytic lesions in cats may not always exhibit a typical circular morphology. Wood's lamp examination, which is valuable for diagnosis, can yield false-negative results because not all dermatophytes fluoresce under ultraviolet light. False positives may occur due to the fluorescence of scales, crusts, or topical product residues (Frymus *et al*. 2013, Moriello 2014). ATI cytology offers improved sensitivity over Wood's lamp or hair pluck methods, although its accuracy depends on proper sampling and staining techniques (Shipstone 2022). Fungal culture remains the gold standard because of its high specificity and sensitivity, requiring extended incubation times and skilled personnel (Rapti *et al*. 2023).

Therapeutic management with topical econazole nitrate and systemic itraconazole has shown favorable outcomes. Topical antifungals eradicate spores on hair surfaces, whereas systemic agents eliminate spores within the follicles. Side effects, such as vomiting, anorexia, diarrhea, and jaundice, should be monitored during therapy. After two weeks of treatment, the cat showed clinical improvement. The lesions resolved and hair regrowth was evident. Given this improvement, the therapy was discontinued. The cat's immune system was deemed sufficient to prevent residual infection. Natural grooming may protect against reinfection (Frymus *et al*. 2013, Moriello 2014, Shipstone 2022).

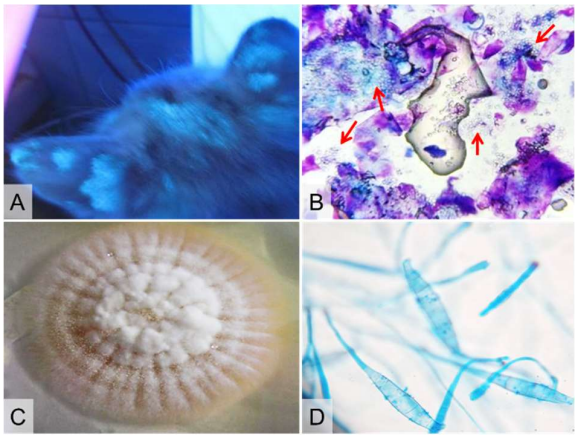

Figure 1 Condition of skin lesions in Simon, a domestic cat, and results of medical examination. (A) Wood lamp examination: Skin lesions were observed by fluorescence. (B) Microscopic examination of skin cytology using the ATI method revealed arthroconidia (red arrows), (C) macroscopic colonies suspected of being *M. Canis*, and (D) microscopic structure of macroconidia at 10 × 40 magnification from an isolate suspected of being *Microsporum canis*.

■ CONCLUSION

An accurate diagnosis of feline dermatophytosis requires a combination of clinical and laboratory examinations. Topical econazole and systemic itraconazole were effective in resolving the clinical signs within two weeks.

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