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Management of *Microsporum canis* infestation in a five month-old Persian cat: A case report

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Abstract

Microsporum canis is indeed a pathogenic fungus commonly associated with dermatophytosis, also known as ringworm, in cats. Five months old Persian cat was brought to the small animal dermatology outpatient unit of the madras veterinary college teaching hospital with the history of pruritus, hairloss, skin lesions. On detailed physical examination revealed crusty lesions on the nasal planum, ear margins, rough hair coat and rat-tailed appearance. The diagnostic tests performed, such as the Wood's lamp examination and trichogram, helped confirm the diagnosis. The characteristic apple-green fluorescence of the hair shafts under Wood's lamp indicates the presence of *Microsporum canis* infection while the visualization of numerous small, translucent spores around the hair shafts on trichogram further supports the diagnosis. The treatment protocol, which included itraconazole, topical terbinafine cream, and antifungal shampoo, is a comprehensive approach targeting the fungal infection internally, externally, and through cleansing the fur and skin.

Keywords: Persian kitten, *Microsporum canis*, Wood's lamp technique

Introduction

Dermatophytosis, a fungal infection caused by dermatophytes, poses a significant health concern for both humans and animals. Among the pathogenic genera, *Trichophyton* and *Microsporum* are noteworthy, with *Microsporum canis* standing out due to its potential for zoonotic transmission and prevalence among domestic animals. While the prevalence of *Microsporum* infections in dogs ranges from 4 to 10%, it surpasses 90% in cats, albeit subject to regional and epidemiological variations. Seasonal variations can indeed influence the frequency of certain agents causing small animal dermatophytosis, including *Microsporum canis* ringworm. *M. canis* infections tend to be more common during the fall and winter months (Lewis Dt *et al.*, 1991) [4].

Transmission of *Microsporum* can occur through contact with contaminated objects such as furniture or grooming tools, as well as direct or indirect contact with infected animals. The infective spores of *Microsporum* adhere to the host's epidermis, particularly infecting the stratum corneum and hair. Vulnerable hosts such as young, stressed, or elderly animals are more susceptible to infection (DeTar LG *et al.*, 2019) [2]. *Microsporum canis* stands as the primary causative agent of feline infections. However, with appropriate care, the majority of infected cats exhibit mycological recovery within three weeks (Moriello KA *et al.*, 2020) [6].

Case History and Observation

Five months old Persian cat was brought to the small animal dermatology outpatient unit of the madras veterinary college teaching hospital with the history of pruritus, hairloss, skin lesions. On detailed physical examination revealed crusty lesions on the nasal planum (Fig 1), ear margins, rough hair coat and rat-tailed appearance (Fig 2).

Diagnosis

Skin scraping was done to rule out external parasites as a potential cause of the skin condition.

Since no external parasites were found, this helped narrow down the potential causes. Wood's lamp technique was performed, which involves the use of a special UV lamp to examine the skin or hair for fluorescence. In this case, the characteristic apple-green fluorescence of the hair shafts suggested the presence of a specific type of infection, which is often seen in dermatophyte infections like ringworm caused by *Microsporum canis* (Fig 3). Trichogram was performed which involves microscopic examination of the hair and scalp to confirm the diagnosis. The presence of numerous small, translucent spores around the hair shafts, measuring 2.5 x 3.5 µm, indicated an ectothrix infection.

Treatment

The cat received comprehensive treatment for the fungal infection. Itraconazole is a common antifungal medication used to treat various fungal infections in both humans and animals. The dosage of 5 mg per kg body weight per day is typically effective in combating fungal growth while minimizing potential side effects. Topical terbinafine cream is another antifungal agent that can be applied directly to affected areas of the skin to target the infection locally. Antifungal shampoo is likely used to cleanse the fur and skin, helping to remove fungal spores and reduce the risk of spreading the infection to other parts of the body or to other animals or humans.

Combining these treatments helps to address the fungal infection comprehensively, targeting it both internally and externally. However, it's essential to follow the veterinarian's instructions closely regarding dosage, frequency, and duration of treatment to ensure the best possible outcome for the cat's health. Regular monitoring and follow-up appointments with the veterinarian are also important to track progress and adjust the treatment plan if necessary.

Discussion

Microsporum canis belongs to a family of fungi called dermatophytes, which are known for causing skin infection. Microscopically, it exhibits macroconidia with rough, thick walls. On culture medium, it typically grows as a white, cottony colony with a yellow perimeter and a bright yellow-orange coloration on the outer edges. The natural reservoir of *Microsporum canis* is in cats and dogs, making them the primary hosts.

It can be transmitted to humans through direct contact with infected animals or indirectly through contact with contaminated items such as combs, brushes, furniture, linens, etc. Clinical signs are circular lesions, multifocal alopecia, redness and inflammation, scaly and crusty lesions, mild to severe itching. In severe cases or if left untreated, secondary bacterial infections can occur, leading to additional symptoms such as pus-filled lesions or increased inflammation. Diagnosis of *M. canis* infection made by clinical history, physical examination and diagnostic procedures like Wood's lamp, direct microscopic examination of infected hairs and or crusts, fungal culture and biopsy are used (Gross TL *et al.*, 1992; Moriello KA *et al.*, 2019) [3, 7].

Management and prevention of fungal infections, which is crucial for both treatment efficacy and stopping the spread of the infection. Utilizing a combination of oral and topical antifungal therapy is a common approach to effectively tackle the infection from multiple angles (Moriello KA *et al.*, 2017) [5]. Topical treatments for dermatophytosis, including hair clipping, dips, shampoos, and rinses, are often used to target localized infections and help manage symptoms. These

methods can aid in removing infected hair and reducing the spread of fungal spores. Azole or allylamine drugs are commonly used for systemic therapy due to their ability to accumulate in the skin and keratin, making them effective against dermatophytes. The ideal systemic drugs for dermatophytosis are those that are keratinophilic (having an affinity for keratin, the protein in skin, hair, and nails) and lipophilic (having an affinity for fats). Currently, oral itraconazole and oral terbinafine are considered the most efficient systemic treatments for both canine and feline dermatophytosis (Moriello KA *et al.*, 2017) [5]. Ketoconazole, miconazole, and griseofulvin are also used in fungal infection of canine and felines. Continuing treatment until there are two consecutive negative cultures a week apart helps ensure that the infection is fully eradicated.

Additionally, preventing the spread of infection through the environment or contaminated items is essential. Using disinfectants with fungicidal properties can help eliminate fungal spores from surfaces and objects. Minimizing direct contact with infected animals and related items reduces the risk of transmission, and regularly washing or changing bedding helps eliminate potential sources of infection, such as shed skin. Seeking medical attention as soon as infection is suspected is crucial for prompt diagnosis and appropriate treatment. Early intervention can prevent complications and speed up recovery.



Fig 1: Crusty lesions on the nasal planum of persian kitten)



Fig 2: Rough hair coat and rat-tailed appearance of persian kitten)



Fig 3: Apple-green fluorescence of the hair shafts observed by Wood's lamp technique)

Conflict of Interest

Not available

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Not available

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