SHORT COMMUNICATION

Prevalence of Feline Dermatophytosis in and around Mhow (Indore), MP

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Abstract

Dermatophytosis (ringworm) is an important feline skin disease primarily caused by the dermatophyte genera *Microsporum* and *Trichophyton*. The present research was aimed at determining the prevalence of dermatophytes in cats in and around the Mhow region (Indore, India). A total of 137 cats were brought into the Veterinary Clinical Complex of the College in Mhow, during the study period of 6-months. The preliminary examination was done by Woods lamp examination and direct microscopy, and the confirmatory diagnosis was made by fungal cultural examination. The overall prevalence of dermatophytosis in cats was found to be 21.1% (29/137). Notably, cats less than 6 months old exhibited a higher prevalence rate of 26.58% compared to adult cats, which showed a prevalence of 13.79%. The sex-wise prevalence revealed a marginal difference, with 20.31% in males and 21.91% in females. Specimens of 29 out of 43 cats exhibiting clinical signs of dermatophytosis collected using Mackenzie's toothbrush technique confirmed dermatophytes positive on culture. In conclusion, the data strongly support the need for a comprehensive report on local epidemiology on feline dermatophytosis with a noteworthy impact observed among cats under six months of age in comparison to other age groups.

Key words: Cat, Dermatophytosis, Prevalence, Wood's lamp,

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Introduction

The burgeoning cat population in India reflects a growing trend in pet ownership, with an increasing number of individuals choosing cats as companions. This surge in feline companionship is accompanied by a rise in dermatological concerns among cats, evident in the escalating visits of pet owners seeking resolution for dermatological issues in their feline companions (Kishorbhai *et al.,* 2019) such as parasitism, bacterial infections, dermatophyte fungi, allergies, immunologic disorders, nutritional-related dermatosis, hormonal imbalances, and certain skin cancers (Soedarmanto *et al.,* 2020). With increased proximity between humans and pets, many of which may harbor zoonotic infections, adds a layer of complexity to public health concerns (Ivaskiene *et al.,* 2016). Feline dermatophytosis stands out as a noteworthy example, representing a condition where dermatophytic fungi can be transmitted from cats to humans (Tuah and Tiwari, 2019).

Dermatophytosis, commonly known as Tinea or ringworm, represents a dermatological affliction arising from superficial fungal infections affecting the keratinized skin structures. This condition is induced by a range of fungal organisms, including zoophilic, geophilic, or anthropophilic species, with *Microsporum canis, Microsporum gypseum*, and *Trichophyton mentagrophytes* being the most prevalent culprits known for their proclivity to target hair shafts and follicles (Ivaskiene *et al.,* 2016). The pleomorphic presentation of clinical signs, coupled with its infectious and contagious nature, underscores the significance of dermatophytosis in small animal medicine (Moriello *et al.,* 2017) and its zoonotic potential. This research was aimed at shedding light on the prevalence of dermatophytosis in cats around Mhow (Indore) and elucidating key factors such as age and sex influencing its occurrence.

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Materials and Methods

Selection of Animals

The cats were selected on the basis of their history, which included details such as the duration of the disease, other pets and their skin problems, zoonoses, the type of lesions and distribution areas, and the hygienic status of the pets along with the clinical lesions suspected for dermatophytosis such as circular alopecia, scabbing, peeling and hyperpigmentation of the skin.

Diagnosis of Dermatophytosis

Woods Lamp Examination: Physical examination was followed by Woods lamp examination, which was carried out in a dark room. This examination is a screening tool and it helps to use the fluorescent hair shafts in direct examination and culture. The lamp was warmed for 5 min before examining the cats and was observed for apple green fluorescence over lesions and non-lesions areas (Newbury and Moriello, 2014).

Collection of Samples: Hair and scale samples were collected for fungal culture using Mackenzie's toothbrush technique in which a sterile toothbrush was used to brush the hair coat for 20 strokes or at least 2 min (Plate 1). The collected samples (Plate 2) were sealed in plastic bags and were subjected to culture within 24 hours.

Plate 1: Collection of hair samples using Mackenzie's Technique

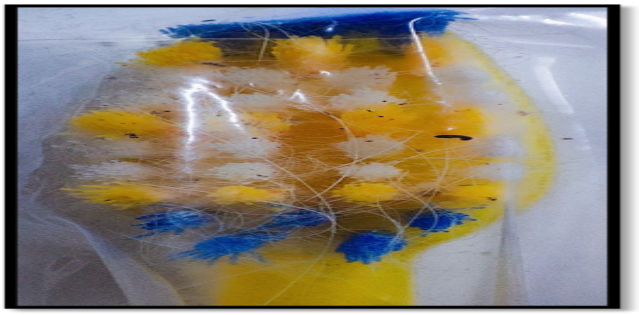

Plate 2: Collected hair sample on toothbrush

Direct Examination: Each sample from infected cat was divided into two parts, one part for direct microscopic examination and the other for culture. The collected samples were subjected to direct examination by KOH mount technique in which hair were taken on a clean glass slide with one drop of 20% KOH solution and lactophenol cotton blue stain and covered with cover slip. The slide was observed under microscope.

Confirmation: For confirmation of dermatophytosis, each sample was inoculated on Sabouraud Dextrose Agar (SDA) and Dermatophyte Test Medium (DTM) and incubated at 37°C and 25°C, respectively, for 5-7 days and observed regularly for any kind of fungal growth. If no growth was established after four weeks, it was taken as negative for the growth of fungi. Macroscopically, the isolates were examined for different colony morphology, pigmentation, and microscopically evaluated by lactophenol cotton blue staining (Quinn *et al*., 1994).

Prevalence of dermatophytosis was calculated using standard formula on the basis of age and sex of cats. The age was considered as 0 to 6 months (Kittens) and >6 months (Adults).

Results and Discussion

The overall prevalence of dermatophytosis in cats in and around Mhow region was found to be 21.1% (29/137). Among the total number of 137 cats examined, 43 cats were screened on the basis of clinical symptoms of dermatophytosis and fungal cultural examination, which confirmed 29 cats with dermatophytes. These findings are in agreement with Debnath *et al.* (2016), Sigirci *et al.* (2019), Tuah and Tiwari (2019) and Chupia *et al.* (2022). However, the results were contradictory to Proverbio *et al.* (2014), this disparity can be due to the variations in humidity and temperature (Zaki *et al*., 2021).

Age-wise Prevalence

Amongst a total of 137 cats were examined, the age-wise prevalence of dermatophytosis was higher in young kittens 0-6 months old (21/79, 26.58%) as compared to adult cats (8/58, 13.79%). These findings aligned with similar observations reported by Zaki *et al.* (2021), Ibrahim *et al.* (2021) and Singh *et al.* (2021). The lower prevalence recorded in higher age group suggests the development of resistance and a more robust immunological response against dermatophytosis compared to young stock. The heightened susceptibility of young cats to dermatophytosis can be attributed to various factors, including the immaturity of their immune system, lack of prior immunity, potential skin microtrauma from interactions with siblings or ectoparasites, and frequent close contact with other cats during socialization periods, as noted by Ovchinnikov *et al.* (2020). Additionally, the increased prevalence in the younger age group may be associated with a deficiency of fungistatic linoleic acid, as suggested by Debnath *et al.* (2016). These collective insights contribute to a comprehensive understanding of the age-dependent prevalence of *M. canis*

in the feline population, emphasizing the intricate interplay between host immunology and environmental factors in the manifestation of dermatophytosis.

Sex-wise Prevalence

Out of total 137 animals, the sex wise prevalence was more or less same in male (13/64, 20.31%) and female (16/73, 21.91%). These findings concurred with the report of Sigirci *et al*. (2019), who found non-significant difference in sex-wise prevalence with *Microsporum canis*.

From the study it is concluded that cats less than 6 months old exhibited a higher prevalence rate of dermatophytosis as compared to adult cats, and that the sex has no predilection for this infection, the prevalence being equal in both the sexes. The data strongly support the need for a comprehensive report on local epidemiology on feline dermatophytosis.

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References

Chupia, V., Ninsuwon, J., Piyarungsri, K., Sodarat, C., Prachasilchai, W., Suriyasathaporn, W., & Pikulkaew, S. (2022). Prevalence of *Microsporum canis* from pet cats in small animal hospitals, Chaiang Mai, Thailand. *Veterinary Science, 9*(21), 1-8.

Debnath, C., Mitra, T., Kumar, A., & Samanta, I. (2016). Detection of dermatophytosis in healthy companion dogs and cats in eastern India. *Iranian Journal of Veterinary Research, 17*(1), 20-24.

Ibrahim, M.A., Abdel-Latef, G.K., Rahim, M.M., & Aziz, S.A.A. (2021). Epidemiologic and molecular characterization of zoonotic dermatophytes from pet dogs and cats in Egypt. *Advances in Animal and Veterinary Sciences, 9*(12), 2225-2233.

Ivaskiene, M., Matusevicius, A.P., Grigonis, A., Zamokas, G., & Babickaite, L. (2016). Efficacy of topical therapy with newly developed terbinafine and econazole formulations in the treatment of dermatophytosis in cats. *Polish Journal of Veterinary Sciences, 19*(3), 535-543.

Kishorbhai, K.A., Nagarajan, B., Jayathangaraj, M.G., & Kirubaharan, J.J. (2019). Antifungal efficacy of itraconazole and terbinafine for treatment of dermatophytosis in cats. *The Indian Veterinary Journal, 96*(3), 55-57.

Moriello, K.A., Coyner, K., Paterson, S., & Mignon B. (2017). Diagnosis and treatment of dermatophytosis in dogs and cats. *Veterinary Dermatology, 28*(3), 266-268.

Newbury, S., & Moriello, K.A. (2014). Feline dermatophytosis: Steps for investigation of a suspected shelter outbreak. *Journal of Feline Medicine and Surgery, 16*(5), 407-418.

Ovchinnikov, R.S., Savinov, V.A., Gaynullina, A.A., Kapustin, A.V., & Laishevtsev, A.I. (2020). Epidemiological survey of ringworm outbreak in cat shelter. *IOP Conference Series: Earth and Environmental Science, 421*(8), 082026.

Proverbio, D., Perego, R., Spada, E., Giorgi, G.B., Pepa, A.D., & Ferro, E. (2014). Survey of dermatophytes in stray cats with and without skin lesions in northern Italy. *Veterinary Medicine International, 2014,* 565470.

Quinn P.J., Carter M.E., Markey B., & Carter G.R. (1994). *Clinical Veterinary Microbiology*. Wolf Publishing Co. London, pp 381-390.

Sigirci, B.D., Metiner, K., Celik, B., Kahraman, B.B., Ikiz, S., Bagcigil, A.F., Ozgur, N.Y., & Seyyal, A.K. (2019). Dermatophytosis isolated from dogs and cats suspected dermatophytosis in Instabul, Turkey within a 15-year period: An updated report. *Kocatepe Veterinary Journal, 12*(2), 116-121.

Singh, A.D., Debnath, C., & Banerjee, A. (2021). Epidemiological investigation, characterization and antifungal susceptibility profile of *Microsporumcanis* isolated from pet animals. *Veterinarski Archiv, 91*(4), 339-347.

Soedarmanto, I., Raharjo, S., Nurrurrozi, A., & Guna, J.C. (2020). Combination of systemic and topical treatment for feline dermatophytosis: A case report. *Acta Veterinaria Indonesiana, 8*(1), 18-23.

Tuah, N.F.B.H.M., & Tiwari, K. (2019). Prevalence of dermatophytic fungi in cats of Shah Alam, Selangor, Malaysia. *Asian Journal of Biological Sciences, 12*(2), 291-294.

Zaki, F.H., Airin, C.M., Nururrozi, A., & Indarjulianto, S. (2021). A review: the prevalence of dermatophytosis on cats in Indonesia and Turkey. In: *Bio Web of Conferences, 33,* 06004.