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Study and Diagnosis of Dermatophytosis Fungi that Infect Cats in Kerbala, Iraq

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Abstract

Background: One of the most common fungal skin conditions affecting pets is dermatophytosis, which is expensive to medicate and manage. The illness also has significant health-related implications. The identification and discovery of the skin-altering fungus Dermatophytosis in cats in Kerbala, Iraq, is the goal of this investigation. **Methods**: The research encompassed several months of the year and contained 151 cats with fungal infections, categorized by age and sex. Both the Karbala Veterinary Hospital and independent veterinary clinics in Karbala conducted laboratory tests on them. Throughout the winter, the investigation ran from November 2024 to August 2025. The presence of apparent lesions on the skin confirmed the initial diagnosis of skin illnesses following a thorough analysis of medical indications. For a laboratory test utilizing a specialized medium to identify fungi, skin specimens have been collected from the patients. **Result**: A total of 151 contaminated specimens were collected for this investigation and categorized by sex and age. The findings indicated that almost all of the population was over one year old (68.21%), with 60% of the population being female and 39.7% being male. The findings indicated that illnesses in the middle ear region are particularly prevalent among cats, and that the percentage of cats diseased with this type of fungus is higher in winter than in summer. **Conclusion**: According to the present investigation, fungal illnesses are frequently responsible for the development of skin conditions in cats. As such, the pandemic's danger and the potential of an epidemiological agent for several diseases should be considered as an additional area for study.

Keyword

Dermatophytosis, Kerbala, skin diseases, and skin lesions

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Introduction

Fungi belonging to the dermatophyte category can infect humans or animals with dermatophytosis, also known as ringworm [1]. Organism lesions occur in damaged tissues such as skin, hair, nails, fingers, and horns. Ophiopogon, Paraphyton, Arthroderma, Nannizia, Epidermophyton, Trichophyton, and Microsporum are the seven genera that contain forty kinds of dermatophytes [2]. Ringworm, also known as dermatophytosis, is a superficial microbial infection of keratinised tissues caused by a class of fungi called dermatophytes. The genus that includes Trichophyton, Epidermophyton, and Microsporum comprises the majority of this fungus.

Microsporum Canis, the primary pathogenic organism in cats, is responsible for the majority of clinical cases worldwide. Microspore Canis is primarily found in cats, and infections in cats can occasionally show no symptoms. Considering a serious infectious illness, this disorder may play a key role in the illness's dissemination to people. Still, hair loss, excessive pigmentation, inflammation, papules, hair growth, or scaly, crusty skin are all examples of symptoms of a cat infection. Since infectious organisms are the primary cause of individual diseases, dermatophytosis in cats, as well as in abandoned animals and pets, is a concern for the community [3]. According to research, epidemics of dermatophytosis on bases for soldiers [4] or within families [3] could appear to be caused by cats. According to several research studies, Microsporum Canis is the primary cause of infection in pets, occurring in up to 97% of cases [5, 6, 7].

Due to their inherent distinctive brushing habits, intimate interactions with others, and occasionally their ability to act as asymptomatic carriers, cats are particularly susceptible to developing this illness. Clinical disease was particularly likely to occur in pets with illnesses, small cats, and long-haired types. Cats may exhibit a range of clinical signs, including skin reddening, scaling, crusting, and circular patches of alopecia. Fortunately, numerous felines continue to carry the disease without exhibiting symptoms, which makes detection and treatment more difficult.[8]

Since dermatophytosis constitutes a known pandemic illness, it is not only a veterinary issue, but also an environmental one. Indirect contact with diseased cats or exposure to contaminated property are the primary ways humans contract the infection [9]. Acute or ongoing infections are more likely to occur in children, elderly individuals, and those with impaired immune systems. Elimination and prevention efforts are made more difficult by the long-term environmental persistence of fungus spores.[10]

Investigating cat dermatophytosis is crucial from both clinical and epidemiological standpoints. Limiting its dissemination among cats and lowering transmission from animals to humans requires early diagnosis, effective therapy, and suitable preventive measures. Developing comprehensive preventive measures to combat this widespread illness can be aided by knowledge of host-related variables and the dermatophyte environment, including its ecological effects. [11,12,13]

Aim of study: Investigation and diagnosis of dermatophytosis in fungi that cause skin infections and hair loss.

Method

One hundred fifty-one specimens of cats of various sexes, ages, and colors with fungal infections were used in this investigation. Between November 2024 and August 2025, a research investigation was conducted at the veterinary clinics in Al-Hindiyah and the veterinary hospital in Karbala. The signs of illness were meticulously documented, and visible cutaneous lesions, such as peeling, evident blisters,

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color changes, or hair loss, were used to corroborate the initial identification of skin illnesses. Subsequently, skin specimens from the patients had been collected for laboratory evaluation. The samples were examined under a microscope at 10X and 40X magnification to identify the underlying causes of dermatological conditions, including fungal infections.

Diagnosis of Microsporum Canis

1. Direct examination: The first part of each sample was treated with 10% potassium hydroxide on a clean slide, then heated for 5-10 minutes and allowed the slide to cool, and covered with a cover slip for identification of fungal elements by using low-power magnification (X10) with low-intensity light low intensity and lowering of the condenser. Then, use a higher magnification (X40) and a higher condenser for better illumination to identify the morphology of the fungus [14] 2. Isolation and Identification of M. Canis: The other part of each sample was cultivated on Sabouraud dextrose agar (SDA) and incubated at 25°C for up to 2 weeks. The fungal growth was examined macroscopically and microscopically, which included large septated Macroconidia, which were observed by taking a small part from the fungal growth, mixing it with one drop of lactophenol cotton blue, covering it with a cover slip, and examining it under a Microscope using an X40 lens according to [15,16].

Result

A total of 151 samples were collected from cats infected with fungi, comprising 91 females and 60 males, as shown in Table 1. The cats varied in age, with some older than one year and others less than or equal to one year. The number of cats older than one year was 48 and less than or equal to 103 years. The sample collection period spanned the months from November 2024 to August 2025. The winter period had the highest infection rate, specifically December 1 and 2, as shown in Table 3. The infected areas of cats were distributed on the face, ear, neck, and back, as shown in Table 4. The factors associated with infection by this type of fungus were studied, including repeated pregnancies, antibiotic use, and multiple infections, as shown in Table 5. Samples were taken and cultured in the laboratory, and dermatophytosis was diagnosed.

Table 1: Prevalence of dermatophytosis in cats according to sex:

Sex	Number of cat infections	percentage
Female	91	60,264%
Male	60	39,735%
Total	151	100%

Table 2: Prevalence of dermatophytosis in cats of different ages:

Age	M. Canis in Cats	percentage
≥ 1 year	103	68.21%
< 1 year	48	31.788%
	151	100%

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Table 3: prevalence of dermatophytosis of cats according to months

NO	months	No. of infected animals	Percentage of infected animals
1	November	16	10.5%
2	December	25	16.5%
3	January	30	19.8%
4	February	25	16.5%
5	march	18	11.9%
6	April	16	10.5%
7	may	9	5.9%
8	June	6	3.9%
9	July	4	2.6%
10	August	2	1.3%
		151	100%

Table 4: Dermatophytosis infection in cats based on Anatomical site.

Site of infection	M. Canis in Cats
Face	15
Ear	65
Neck	49
Back	22

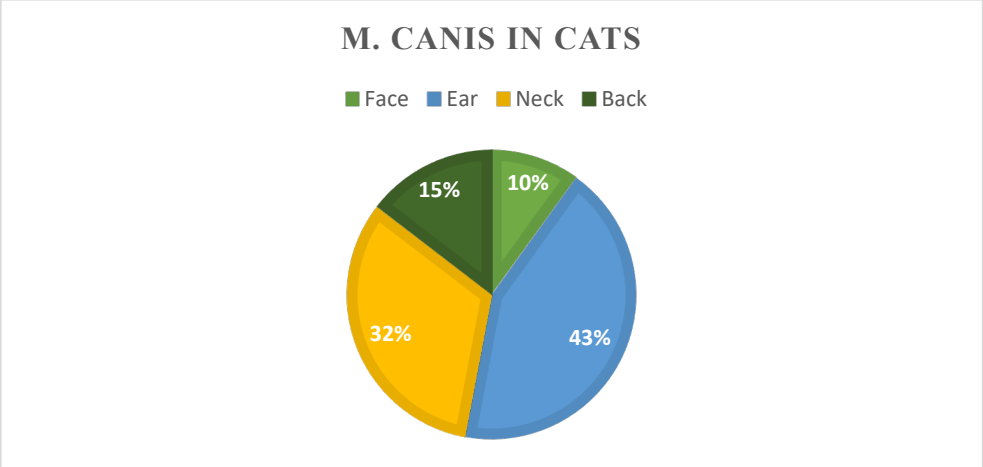

Figure 1: Dermatophytosis infection in cats based on Anatomical site.

Table 5: predisposing factors of dermatophytosis

Predisposing factors	Total number of cases
Prolonged antibiotic therapy	33
Pregnancy and recent parturition	22
Ear mites	66
Feline lower urinary tract diseases	30

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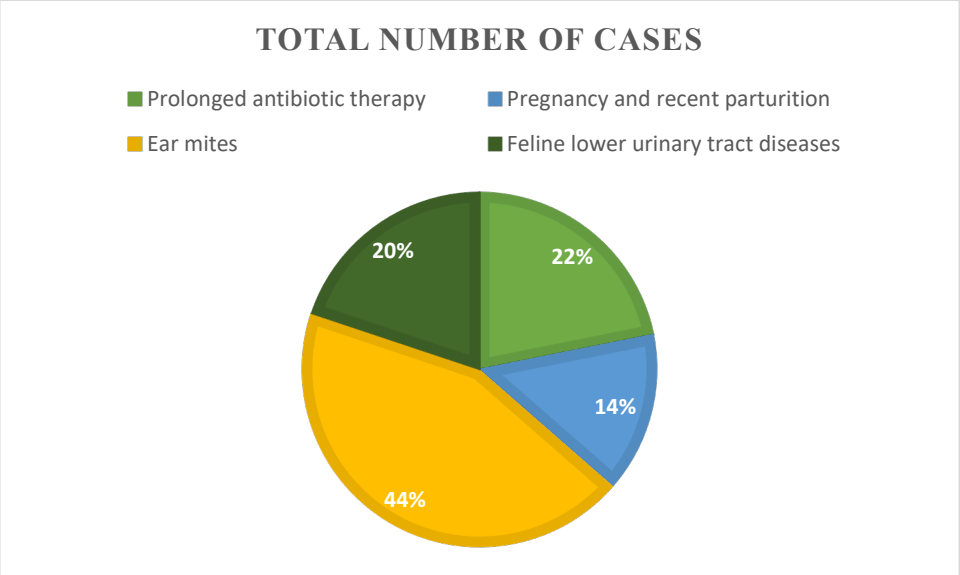

Figure 2: predisposing factors of dermatophytosis

Figure 2: Fungal infection in a less than one-year-old cat. Figure

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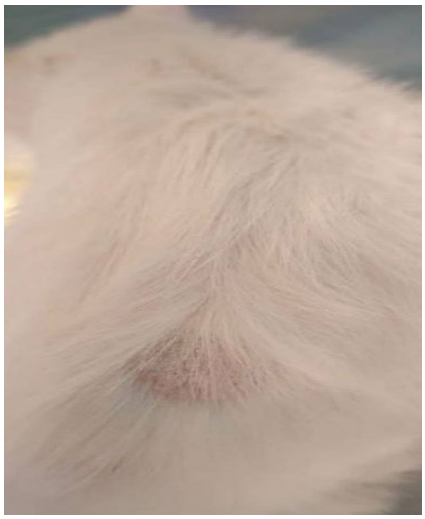

3: Fungal infection in the back of a less than one-year-old cat.

Figure 4: Dermatophytes infection in a cat more than one year old.

Figure 5: Dermatophytes infection more than one year old

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Figure 6: diagnosis of dermatophytosis in the microscope

Discussion

Cats with dermatophytosis exhibit additional polymorphic lesions. Typical lesions are multiple patches of complete alopecia accompanied by blistering and peeling, typically on the scalp or forelimbs. Hyperpigmented skin lesions could occur. [17].

The time of year of exposure plays a significant role in disease transmission. The investigation typically takes place during the fall and winter, when low temperatures prevail on days in December, January, and February, as well as moisture-laden conditions that may indicate a prolonged presence, contributing to the development of these diseases. Additionally, conditions have a significant impact on the hygiene of a cat's organs, as owners of pets often refrain from leaving their animals outside due to concerns about diseases that could lead to skin infections or other health issues. These findings replicate the findings made by [18]

On the other hand, several investigators have found that the occurrence of dermatophytosis is not correlated with the season [19,20]. According to our investigation, the seasons with the highest and lowest risk of infection by dermatophyte included November and summer, respectively; this is consistent with [21, 22, 23]. In addition to humidity, elevated temperatures promote spore development, which may contribute to the higher prevalence of dermatophytosis in Iraq. Poor management, an increased cat density, inadequate confinement for ill cats, and insufficient feeding may have contributed to the elevated rate of infection with protected cats [24].

Previous illnesses can impair the patient's immune system, increase epidermal dampness, and induce microtrauma on the skin. The fungus species then invades the keratin of the hair and skin, establishing a nidus of infection and creating a disease [25]. According to the investigation's results, experimental animals younger than one year old were found to be most severely impacted, aligning with earlier research by [26]. Young animals are more susceptible to the condition due to several factors, including the development of defences, the absence of prior immune function, and skin microtrauma from microbes or siblings, as previously discussed [27].

According to our findings, female cats had greater infection rates than male cats, which is consistent with previous research [27]. Nonetheless, several studies, including those published by [28, 29], have revealed that males exhibit a significantly higher occurrence of dermatophytes than females. They explained this characteristic as distinct from the characteristics of male sebum as opposed to female sebum. Our research, though, did not align all these findings. In contrast, [30, 31] found that there was indeed no association between sex and the prevalence of diseases, suggesting that dermatophytosis may affect people of both sexes. Our findings could be explained by the reality that these females were

regularly encountering several stressors, such as estrus, pregnancy, nursing, and living in close quarters among kittens, all of which increase the risk of illness.

The current investigation identified several risk variables, including long-term antibiotic use (22%), feline lower urinary tract conditions (20%), pregnancy and recent parturition (14%), and ear mites (44%). These risk variables were concurred by [23], who stated that associated risks include factors such as stress, inadequate diet, crippling illness, weakened immunity, or youth. Insufficient oversight, a high animal concentration, inadequate quarantine for ill cats, and inadequate feeding may have contributed to the elevated rate of infection within protected cats [13]. According to [31], our research has shown that nearly all feline diseases are caused by M. Canis, T. mentagrophytes, and M. gypseum. M. Canis constituted the most frequently encountered species across the isolates examined [31, 13].

Conclusion

In this study, dermatophytosis was diagnosed, which is the most common fungal infection that affects cats. According to the results shown, females were more affected, and the number of cases is higher in winter. Additionally, those under one year old are more susceptible to infection. Additionally, several factors contribute to fungal infections.

Recommendation

1. **Early diagnosis:** To minimise delivery, veterinarians should regularly conduct laboratory testing (which may involve cultures and Wood's lamp inspection).

2. **Promotion of Knowledge and Prevention:** Inform pet owners about the dangers of dermatophytes, how they can spread to people through zoonotic transmission, and the importance of following treatment recommendations in their entirety.

3. **Comprehensive Therapies:** Apply topical as well as systemic antifungals along with

4. **Prevention strategies:** Keep animals with illnesses apart from those that are healthy in households or hospitals until they have fully recovered.

5. **Periodical Monitoring:** To guarantee total fungal destruction as well as avoid instances of recurrence, undertake periodical examinations following therapy.

6. **Extending Research:** To determine the epidemiological distribution of dermatophytes in cats, further research should be conducted, encompassing additional Iraqi cities.

7. **Research on Alternative Treatment Methods:** To reduce dependency on conventional medications, more research should be conducted on alternative therapies, such as plant extracts with antifungal properties, sanitation practices, and environmental cleanliness measures.

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