Short Communication
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Feline Otitis Externa in and around Indore, Madhya Pradesh: A Study on Prevalence and Associated Factors

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Abstract

Otitis externa is an inflammation of the external ear canal in cats, caused by various factors such as bacteria, fungi, and parasitic agents. A study conducted at the Veterinary Clinical Complex, College of Veterinary Science and Animal Husbandry in Mhow, assessed the prevalence of otitis externa in cats. Out of 285 cats examined, 28 were diagnosed with otitis externa. The infection rate was notably higher in kittens (12.25%). Persian breeds had the more prevalence (10.88%) than the domestic short hair cats (7.60%). Among the identified causative agents, parasitic infections were the most prevalent (7.36%), followed by bacterial infections (2.10%) and fungal infections (0.35%). Cats infected with *Otodectes cynotis* showed increased levels of neutrophils, eosinophils, basophils, and total leukocyte counts.

Keywords: Otitis externa, Ear canal, Cat, *Otodectes cynotis,* Prevalence.

Introduction:

Otitis externa, a frequent condition affecting cats globally, is characterized by inflammation of the external ear canal; this includes the pinna, vertical and horizontal canals, and the outer surface of the tympanic membrane (Usrina et al., 2023). The disorder mainly affects the domestic animals including cats and has multiple etiological agents (Perego et al., 2014). It is caused by the colonization of various microorganisms, such as bacteria, fungi, and parasites. Yeasts from the *Malassezia* genus, mites like *Otodectes cynotis*, and bacteria such as *Staphylococcus* spp., *Streptococcus* spp., *Proteus* spp., *Pseudomonas* spp., and *Escherichia coli* are frequently involved in the development of otitis externa. Studies have shown that *Otodectes cynotis* is the primary cause of otitis externa in cats (Hiblu et al., 2020). Common symptoms associated with the infection include head shaking, ear scratching or pawing, pain, excessive earwax, and/or a foul odor (Brame and Cain, 2021). Evaluating ear health in cats can provide valuable insights into the regional pathogens that contribute to otitis externa in both stray and domesticated feline populations (Bollez et al., 2018).

Study area

Prevalence of otitis externa infection in cats was assessed in and around Indore. It was assessed based on factors such as age, breed, sex, and the etiological agents involved. A total of 285 cats were selected and examined for the presence of otitis externa. Among these 28 cats were shown the symptoms of otitis externa and found positive.

Diagnosis

The diagnosis was based on symptoms such as auricular discharge, ear pain, ear scratching, erythema of the ear pinna, and head tilting (Figure 2, 4). The selected cats were further examined using an otoscope, with bilateral otoscopy performed to check for the presence of ear mites, the color of the cerumen, and the condition of the eardrum (Coelho et al., 2024). Direct microscopic examination of the cerumen was also conducted by rolling a cotton swab onto a clean glass slide, adding a few drops of mineral oil, and observing the sample under a microscope after applying a coverslip.

For microscopic examination, an ear swab sample from the affected ear was collected aseptically (Figure 1) to identify potential bacterial or fungal infections. The swabs were cultured in brain heart infusion broth and incubated at 37°C for 12-18 hours. A loopful of the broth was then stained using the Gram staining method to check for bacterial presence. To detect fungi, the ear swab sample was inoculated onto Sabouraud's dextrose agar (SDA) and incubated at both 37°C and 25°C for 5-7 days.

Figure 1: Collection of ear swab from otitis suspected cats

Prevalence

The prevalence of otitis externa was found to be 9.82%, with 28 out of 285 cats diagnosed as positive for the condition (Table 1). These findings are in agreement with the (Topala et al., 2007; Foster and Smith, 2009; Cain, 2014; Triakoso, 2016; Paterson et al., 2021).

Table 1: Prevalence of otitis externa in cats in around Indore

No. of cats		Prevalence (%)
Total	Positive	
285	28	9.82

Age wise prevalence

A total of 285 cats were examined, including 128 cats in up to six months age group, 109 cats in the >6 months to ≤2 years age group, and 48 cats over 2 years of age. The prevalence based on age was 12.25% in the 0-≤6 months group, 8.25% in the >6 months to ≤2 years group, and 6.25% in cats older than 2 years (Table 2). These findings were in accordance with the findings of the (Perego et al., 2014; Coelho et al., 2024) reported that the highest findings of the otitis externa were recorded in the young cats followed by adult and then elder cats.

Table 2: Age wise prevalence (%) of otitis externa in cats in and around Indore

Age(months)	No. of cats		Prevalence (%)
	Total	Positive	
Up to 6 months	128	16	12.25
>6months - ≤ 2 years	109	09	8.25
>2 years	48	03	6.25

Breed wise prevalence

Out of the 285 cats, 92 were domestic short hair and 193 were Persian cats. Among them, 7 domestic short hair cats and 21 Persian cats tested positive for otitis externa, with a prevalence of 7.60% and 10.88%, respectively (Table 3). These findings are in the favor with the findings of the (Topala et al., 2007; Waly and Khalaf, 2013; De Araujo et al., 2023).

Table 3: Breed wise prevalence (%) of otitis externa in cats in and around Indore

Breed	No. of cats		Prevalence (%)
	Total	Positive	
Domestic short hair	92	07	7.60
Persian	193	21	10.88

Sex wise prevalence

Of the total 285 cats, 122 were males and 163 were females, with 12 males and 16 females testing positive for otitis externa. Prevalence on the basis of sex showed no significant difference as it was 9.83% in males and 9.81% in females (Table 4). The same results were found by the (Waly and Khalaf, 2013; Bollez et al., 2018), who reported that both males and females were equally affected, showing no significant difference between the sexes. Similarly Topala et al. (2007) found no clear sex predisposition to otitis externa in cats, with both sexes being equally represented in the cases.

Table 4: Sex wise prevalence (%) of otitis externa in cats in and around Indore

Sex	No. of cats		Prevalence (%)
	Total	Positive	
Male	122	12	9.83
Female	163	16	9.81

Prevalence of otitis externa on the basis of etiological agent

During the study period, out of 285 cases, 28 were found to be positive for otitis externa. Among these, 6 cases were positive for bacterial infections, 1 case was positive for a fungal infection, and 21 cases were positive for *Otodectes cynotis* (Figure 3) in cats. The prevalence rates were 2.10%, 0.35%, and 7.36%, respectively (Table 5). Similar findings for *Otodectes cynotis* in cats have been reported by (Ahn et al., 2013; Perego et al., 2014; Tyler et al., 2020; Coelho et al., 2024; El-Dakhly, 2024; Yousef et al., 2024). Brame and Cain, 2021 also observed comparable results regarding bacterial agents responsible for otitis externa. (Nardoni et al., 2014) indicated that mites are primary causes of the condition, while yeasts and bacteria are not considered primary pathogens but rather perpetuating or predisposing factors. Additionally, Sotiraki et al. (2001) and Silva et al. (2020) reported *Otodectes cynotis* as a cause of at least half of feline ear diseases.

Table 5: Prevalence (%) of otitis externa in cats on the basis of etiological agent in and around Indore (n= 285)

Causal agent	No. of cats positive	Prevalence (%)
Bacteria	06	2.10
Fungus	01	0.35
Otodectes cynotis	21	7.36

Figure 2: Erythema of the ear pinna

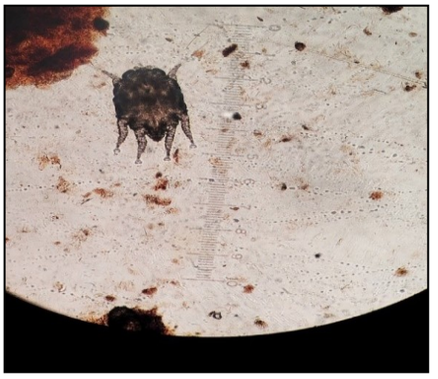

Figure 3: *Otodectes cynotis* (10X)

Figure 4: Pus discharge from otitis affected cats

Conclusion:

The study conducted in and around Indore revealed a 9.82% prevalence of otitis externa among the examined feline population. The condition was more common in kittens (12.25%), with Persian breeds (10.88%) showing a higher predisposition than domestic short hair cats (7.60%). Sex did not play a significant role, as both males and females were almost equally affected. Among the causative agents, *Otodectes cynotis* was the most prevalent, accounting for 7.36% of cases, followed by bacterial (2.10%) and fungal (0.35%) infections.

The findings emphasize the importance of routine otoscopic and microscopic examinations in cats, particularly in young and purebred individuals, to ensure early detection and effective management of otitis externa. Mites are the predominant cause of ear infection in cats; they should be treated with proper therapeutic regimen.

Conflict of Interest:

The authors declare no competing interests.

Data availability:

Data will be made available on reasonable request.

Authors' contribution:

All authors contributed in Methodology, Data curation, Investigation; Conceptualization, Formal analysis, Project administration, Writing – original draft. All authors approved the final version of this manuscript.

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