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Occurrence of otoacariasis in cats

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Abstract
Otodectes cynotis is a major primary cause of otitis externa and act as a predisposing cause to the secondary bacterial and fungal infection. The present work was conducted in the Department of Veterinary Medicine, College of Veterinary Science and Animal Husbandry, Nanaji Deshmukh Veterinary Science University, Jabalpur (M.P.), India. A total of 167 cats underwent physical examination including ear examination with otoscope among them, 55 cats demonstrated clinical signs pertaining to otoacariasis were subjected to microscopic examination for confirmation of presence of *Otodectes cynotis* and out of them 26 cats were found to be suffering from *Otodectes cynotis*. Overall occurrence of *Otodectes cynotis* was recorded to be 15.56% and occurrence amongst the suspected cats was 47.27%. Significantly higher occurrence was recorded in Persian breed of cat (65.62%). Age-wise occurrence was higher in age group >36 month (58.82%) than age group 12-36 month (43.75%) and <12 month of age (40.90%). There was higher occurrence in female (56%) than male (40%). The percent of cats with bilateral ear infection (80.76%) was more as compared to unilateral ear infection and degree of infestation was severe (57.69%) in most affected cats. The most prevalent clinical signs observed in otoacariasis was pruritus (92.30%) followed by ear exudates (84.61%), alopecia (50.00%), presence of otopedal reflex (38.46%), erythema (34.61%), malodour (30.76%), head shaking/tilting (23.07%) and scaling/crusting (26.92%).

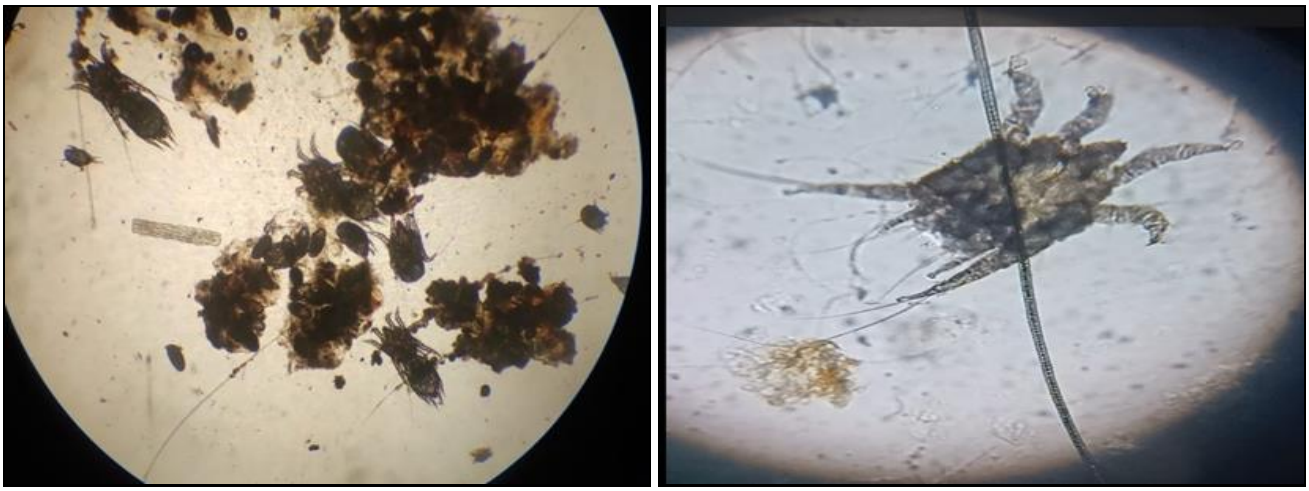
Keywords: *Otodectes cynotis*, ear mites, cerumen, persian

Introduction
Otoacariasis or otodectic mange (ear mites), is a common parasitic disorder of ear canals caused by the mite *Otodectes cynotis* belonging family to Psoroptidae. Ear mites were originally described as *Sarcoptes cynotis* by Hering in 1838 and reclassified as *Otodectes cynotis* by Neveu-Lemaire in 1938. Clinical importance of *Otodectes cynotis* in pets are very high, as it involves in 50% of otitis externa cases in dogs and 85% of cases in cats (Wall and Shearer, 2001) [19]. Ear mite infestation is a contagious disease and is thought to have zoonotic characteristics (Kato *et al.*, 2011) [11]. The disease has a worldwide distribution with a wide host range including dogs, foxes, cats, ferrets and other carnivores (Wilson and Zarnke, 1985; Wall and Shearer, 2001) [20, 19]. Transmission of ear mites is highly contagious by direct contact with an infested host or from dams to their young ones before weaning (Carithers *et al.*, 2016) [4]. The disease is clinically manifested by vertical and horizontal ear canal erythema, dark brown ceruminousotic exudates, restlessness, head shaking, intense ear pruritus, excoriation and crusting of the concha. When mites escape from the ear canals, ectopic infestations of the head, neck, tail and in rare cases trunk can develop in addition to otitis externa (Curtis, 2004) [5]. The information on its prevalence in Madhya Pradesh is still lacking. Hence, the present work was planned to know the status of otoacariasis in cats.

Material and Methods
An epidemiological study was conducted to know the occurrence of otoacariasis in cats at Veterinary Clinical Complex, Department of Veterinary Medicine, College of Veterinary Science & Animal Husbandry, Jabalpur and different private clinic in Jabalpur from August-2023 to January-2024. A total of 167 cats were taken into consideration, out of which 55 cats with visible signs suggestive of dermatological disorders were screened for otoacariasis infestation. Both the ear canal of the suspected cats were examined for visible movement of ear mites by using a otoscope and sample of cerumen/otic discharge was collected with

sterile cotton swab moistened with normal saline then examined microscopically at 4x and 10x for identification of *Otodectes cynotis* (Wall and Shearer, 2001) [19] (Figure 01).

The chi-square test of significance was applied for the data pertaining to the occurrence of the disease.



a) *Otodectes cynotis at* 4X magnification *B) Otodectes cynotis at* 10X magnification

Fig 1: Microscopic examination of ear exudate

Results and Discussion

Overall occurrence

Microscopic examination performed in samples collected from the 55 cats suspected for otoacariasis and out of them 26 cats were found to be affected with *Otodectes cynotis*. The overall occurrence of *Otodectes cynotis* among the suspected cats was 47.27 per cent in present study which is in close agreement with 43.10 per cent reported by Deji *et al.* (2010) [6], 49.00 per cent reported by Souza *et al*. (2013) [17] and 46.15 per cent reported by Akter (2022) [2] (Table 01).

Table 1: Overall occurrence of otoacariasis in cats

Particulars	No. screened	No. affected	Occurrence (%)
Total cat population	167	26	15.56
Suspected cats	55	26	47.27

Age wise occurrence

The age wise occurrence of otoacariasis revealed 58.82% occurrence in cats of more than 36 month of age, followed by 43.75% in 12 to 36 month of age and 40.90% in age group less than 12 month (Table 02).The results of present study corroborated well with findings of Mosallanejad *et al.* (2011) [13] who reported the highest rate of prevalence of *Otodectes cynotis* in cats in age above 3 years.Higher occurrence among the older cats (> 3 years of age) in our study presumably was because of poor maintenance of older cats and degrading body condition, which provide the opportunity to acarides to flourish.

Table 2: Age wise occurrence

Particulars	No. screened (n=55)	No. affected (n=26)	Occurrence (%)	chi-square Value
<12 month	22	09	40.90	x^2= 1.34^{NS}, p value = 0.50 Non-significant at p>0.05
12 to 36 month	16	07	43.75	
>36 month	17	10	58.82	

Gender wise occurrence

In the present study, occurrence of otoacariasis was higher in females (56%) than males (40%) (Table 03). These findings are well supported by Akter (2022) [2] and Acar (2016) [1]. The current investigation, along with the other mentioned studies, did not identify any association between the gender of cats and the prevalence of otoacariasis. Hence, sex was not a risk factor for ear mite infestation in cats.

Table 3: Gender wise occurrence

Particulars	No. screened (n=55)	No. affected (n=26)	Occurrence (%)	chi-square Value
Male	30	12	40	x^2= 0.83^{NS}, p value = 0.36 Non-significant at p>0.05
Female	25	14	56	

Breed wise occurrence

The significantly higher occurrence was reported in Persian breed i.e., 65.62% than Domestic short hair breed i.e., 34.78% (Table 04).The findings in present study correlates with the results of researcher, Akter (2022) [2] and Hosary *et al.* (2022) [10]. Higher occurrence among the Persian in our study presumably was because of owner's breed preferences and over presentation of the breed during the study period.

Table 4: Breed wise occurrence

Particulars	No. screened (n=55)	No. affected (n=26)	Occurrence (%)	chi-square Value
Domestic short hair	23	08	34.78	x^2= 3.944**, p value = 0.04
Persian	32	21	65.62	**Significant at p < 0.05

Degree of infestation of otoacariasis

Most cases of otoacariasis cats were severely (57.69%) affected followed by moderate (34.61%) and mild (07.69%) affection. These observations are similar to the earlier reports of Lefkaditis *et al.* (2009) [12], Mosallanejad *et al.* (2011) [13] and Hiblu *et al.* (2020) [9]. The higher intensity of severe infestation of otoacariasis in cats attributed to the delayed presentation of the cases and negligence of therapy (Table 05).

Table 5: Degree of infestation of otoacariasis in cats

Degree of infestation	No. of affected	Percentage (%)
Mild	02	07.69
Moderate	09	34.61
Severe	15	57.69

Occurrence of ear affections

In the present study the bilateral (80.76%) ear infection was higher in otoacariasis infested cats than the unilateral (19.23%) ear infestation. These observations are similar to the findings of Hiblu *et al.* (2020) [9], Bollez *et al.* (2018) [3] and Deji *et al.* (2010) [6]. As *Otodectes cynotis* is very contagious and migrates easily from one to another part of host so the infestation would not be restricted to one ear canal while will affect both the ear canal and also cause ectopic infestation (Table 06).

Table 6: Ears affected in cats with otoacariasis infestation

Ears affected	No. of cats	Percentage (%)
Bilateral	21	80.76
Unilateral	05	19.23
Right	03	11.53
Left	02	07.69

Clinical manifestations in affected cats

The affected cats exhibited clinical signs such as pruritus was observed in 92.30 per cent of cats (24 out of 26), followed by exudate in 84.61 per cent cats, pain/discomfort in 76.92 per cent cats, alopecia in 50 per cent cats, presence of otopedal reflex in 38.46 per cent cats (Table 07). The observations in present study coincided with the findings of the other authors namely Farkas *et al.* (2007) [7], Deji *et al.* (2010) [6], Nunn-Brooks *et al.* (2011) [14], Roy *et al.* (2012) [15], Souza *et al.* (2013) [17], Acar (2016) [1] and Silva *et al.* (2020) [16]. Development of signs as pruritus, pain, head shaking and presence of otopedal reflex could be attributed to mechanical irritation caused by movement and feeding of ear mites in ear canal of affected cats while dark-brown exudate was observed due to hyper secretion of cerumen gland in ear canal of affected cats.

Table 7: Clinical manifestation in cats affected with otoacariasis

Clinical signs	No. of affected	Occurrence (%)
Exudate	22	84.61
Erythema	09	34.61
Pruritus	24	92.30
Pain / discomfort	20	76.92
Head shaking/tilting	06	23.07
Scaling/crusting	07	26.92
Swelling	02	07.69
Erosion	08	30.76
Malodour	08	30.76
Otopedal reflex	10	38.46
Alopecia	13	50.00

Conclusion

Among cats, the significant presence of otoacariasis was found during the study period. Hence, the due attention of pet parents and physician is needed for diagnosis and treatment of this clinical condition.

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