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Gastrointestinal parasitism in cats: A clinic based study

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Abstract

This study investigates the occurrence of gastrointestinal parasites in cats presented to Veterinary Ambulatory clinic, Kakkavayal, Wayanad district of Kerala from January 2023 to December 2023. A total of 248 faecal samples from cats of all age groups were studied. Occurrence based on season, sex, age, breed and deworming history was analyzed. Among the 248 faecal samples examined, 34 (13.71 per cent) were positive for parasitic ova. *Dibothriocephalus latus* had the highest occurrence rate (32.35 per cent), followed by *Ancylostoma* spp and *Spirometra* spp with an occurrence of 20.59 per cent each and *T. cati* (17.65 per cent), and *isospora* (8.82 per cent). The study revealed a higher occurrence of gastrointestinal parasites (14.09 per cent) in queens compared to tom cats and in cats above one year of age (15.63 per cent). Native/Cross breed cats showed an occurrence rate of 16 per cent followed by Persian cats with an occurrence rate of 11.67 per cent. Based on deworming history, cats with an improper deworming history showed a higher occurrence of 16.04 per cent compared to the cats with a proper deworming history (6.56 per cent). Based on seasonal trends, cats presented at monsoon showed a higher occurrence of 25.45 per cent. Knowledge in the occurrence, transmission routes, and effects of parasites is crucial for effective prevention and treatment strategies of gastrointestinal parasites in cats.

Keywords: Cats, gastrointestinal parasites, occurrence rate

1. Introduction

Cat rearing in India is experiencing a growing trend driven by urbanization, nuclear family structure, post covid loneliness and convenience in handling. Domestic cats (*Felis. catus*) are the sole feline species known for their exclusive close contact with humans (Adhikari *et al.*, 2023) [1]. As companion animals, cats also act as zoonotic reservoirs of the parasites. The role of cats as primary hosts for zoonotic parasites is a major public health issue worldwide (Shantz, 1994; Yamaguchi *et al.*, 1996, Sabu *et al.*, 2018) [3, 2, 24] and also is a serious concern for the pet owners (Hill *et al.*, 2000) [4].

Gastrointestinal parasites are a significant concern in feline health, impacting both wild and domestic cat population globally, leading to varieties of clinical symptoms ranging from mild gastrointestinal upset to severe illness. Cats and other felines can serve as reservoirs, carriers, transmitters, and definitive hosts for numerous intestinal parasites (Shahram *et al.*, 2014) [5]. Parasite prevalences appear to be higher in feral cats than household cats. Infection occurs when cats ingest parasitic eggs. These parasites are a primary contributor to morbidity in domestic cats (Hendrix and Blagburn, 1983; Oluyomi, 2012) [7, 8]. Majority of the endoparasites in cats are causing diseases in humans also. Among the endoparasites, round worms, tape worms and protozoan parasites are more commonly reported (Chen *et al.*, 2012; Baneth *et al.*, 2016; Patil *et al.*, 2024) [9-11].

Among the round worms, *Toxocara cati* (*T. cati*) is ubiquitous in cat populations throughout the world and the prevalence is highest in kittens and lowest in adult cats. Dogs and cats become infected through infective eggs from the environment or through ingestion of the paratenic hosts. Prenatal infection is absent in cats but trans-mammary route is important. Infective eggs in the environment can be a source of infection for human beings and animals. Infections in adult cats are rarely associated with clinical signs.

Respiratory signs, vomiting, loose faeces, cachexia with a distended abdomen are commonly associated with the infection. *Ancylostoma tubaeformae* (*A. tubaeformae*), the common hook worm of cats worldwide is associated with clinical signs of anaemia, lethargy, rough hair coat and blood/mucus in faeces. *A. braziliense* and *A. ceylanicum* have also been reported in cats earlier. Ancylostomiasis in cats can be transmitted perorally and percutaneously. Peroral infection occurs when cats ingest the infective larvae through food or water, whereas in percutaneous infection, the infective larvae penetrate the skin. In humans, the infection is transmitted through contact with soil or moist sand contaminated with the faeces of *Ancylostoma* spp infected cats or dogs.

The tape worms *Dibothriocephalus latus* (*D. latus*) and *Spirometra* spp are also of major concern as they are zoonotic parasites. *Dibothriocephalus latus* is the common tapeworm of cats and causes the disease in cats fed with raw or undercooked fish carrying the larval stages of the worm (Balachandran *et al.*, 2008) [12]. The clinical symptoms include vomiting, diarrhoea, weight loss and ascites and passing of proglottids through faeces (Sivajothi *et al.*, 2025) [13]. *Spirometra* spp also is now increasingly reported in cats (Katoch *et al.*, 2013) [14]. Cats become infected by ingesting the infected larval forms in the second intermediate hosts such as amphibians and reptiles. Adult *Spirometra* spp is found in the small intestine of cats with clinical signs of vomiting, diarrhoea and weight loss. Cats can also become the second intermediate hosts by ingesting an infected copepod, the first intermediate host resulting in proliferative sparganosis.

Understanding the occurrence, transmission routes, and effects of parasites is crucial for effective prevention and treatment strategies. This study aims to understand the occurrence of gastrointestinal parasites in cats, focusing on variables such as age, sex, breed, season, and deworming status. By gaining a thorough understanding of these infections and their control measures, we can better manage the health of feline populations. This research seeks to raise awareness among pet owners and veterinarians about the common parasites found in cats in Wayanad district of Kerala. It will highlight, how deworming status impacts the overall well-being of cats, emphasizing the importance of regular deworming practices.

2. Materials and Methods

A total of 248 faecal samples of cats that were presented at Veterinary Ambulatory clinic, Kakkavayal under Teaching Veterinary Clinical Complex (TVCC), Pookode, Wayanad from a period of January 2023 to December 2023 were analysed. Clinical signs of the sampled animals varied from anorexia, diarrhoea, vomiting and blood in faeces. Faecal samples were processed using centrifugal sedimentation method at 3000 rpm for 5 min for ova concentration, followed by microscopic examination at 10X magnification and confirmed at 40X magnification. Data related to various risk factors like breed, sex, age and deworming status were also documented. Data were entered into a Microsoft Excel spreadsheet, verified for correctness, and imported into IBM-SPSS software 24.0 for the statistical analysis. Comparison between different age groups and also between different seasons was done by using chi square test for multiple proportions. Comparison between Tom and Queen Cats and also between proper and improper deworming was done by using Z-test for two independent proportions.

3. Results and Discussion

Among the 248 faecal samples examined, 34 were positive for parasitic ova (Figure 1-5), with an overall occurrence of 13.71 per cent. Earlier, Vincy *et al.*, 2023 [15] reported an overall occurrence of 19 per cent for gastrointestinal parasites in cats in Northern Kerala. Gennari *et al.*, 2016 [16] reported an occurrence of 18.1 percent in a university veterinary hospital in Brazil. Additionally, the observed prevalence of 13.71 per cent in this study is consistent with findings from Oluyomi (2012) [8], who reported a 14 per cent prevalence in Nigeria, suggesting that environmental and manage mental factors may contribute to similar infection rates across tropical regions. The variation in prevalence rates could be attributed to differences in sampling techniques, diagnostic methods, regional climate, and host management factors (Itoh *et al.* 2012; Zanzani *et al.* 2014) [17, 18].

Among the 34 positive samples, *D. latus* showed the highest occurrence rate of 32.35 per cent, followed by *Ancylostoma* spp and *Spirometra* spp with an occurrence rate each of 20.59 per cent followed by *T. cati* (17.65 per cent), and isospora (8.82 per cent) (Table 1). The study results are not in agreement with the findings of Vincy *et al.* 2023 [15] who reported a higher occurrence for *Ancylostoma* spp; 61 per cent and a lower occurrence for *D.latus*; 4.35 per cent in Kerala, but the occurrence of *Isospora* spp was in agreement. Reported an occurrence of 29.41 per cent for *Toxocara* spp whereas this study reports a slightly lower per cent.

Occurrence of gastrointestinal parasites based on various risk factors was also studied (Table 2). The occurrence of gastrointestinal parasites based on age revealed a higher percentage in cats above one year of age (15.63per cent), followed by cats up to 6 months of age group with an occurrence rate of (13.86per cent) and cats between 6-12 months of age (12.05per cent). Cats above one year of age showed higher parasite occurrence, which might be due to longer exposure to infection and less frequent deworming by owners as the cats grow older. In contrast, some studies found higher infection in kittens because their immune systems are not fully developed (Patil *et al.*, 2024) [11]. A Similar trend with higher prevalence in adult cats was published by Vishruta *et al.*, 2024 [20], who also observed higher prevalence in adult cats, possibly due to prolonged exposure to contaminated environments.

The occurrence of gastrointestinal parasites based on sex, revealed a higher percentage in Queens (14.09per cent) compared to Tom cats (13.13 per cent). A similar trend with the prevalence of gastrointestinal parasites was higher in female was earlier reported (Kibruyesfa *et al.*, 2024) [21], who attributed the difference to physiological stress and hormonal fluctuations, especially in reproductive females.

Native/Cross breed (CB) cats showed an occurrence rate of (16 per cent) followed by Persian cats with an occurrence rate of (11.67 per cent). The increased prevalence in ND/CB cats may be linked to differences in lifestyle and access to the outdoors, increasing their exposure to infective stages of parasites (Gennari *et al.* 2016) [16].

Based on deworming history, cats with an improper deworming showed a higher occurrence rate (16.04per cent) compared to the cats with a proper deworming (6.56per cent). Prevention and control of parasitic infections in cats can be achieved by proper deworming with suitable anthelmintic medication. Analyzing the occurrence of gastrointestinal parasites in cats is essential for implementing more effective

control measures to manage parasitic infections and thus mitigate their impact on both felines and humans. Because cats play an important role in society as integral members of the family environment. However, this proximity can potentially pose health risks to humans, as cats serve as hosts to various zoonotic parasites. The statistical significance of this association ($p<0.05$) underlines the necessity of regular anthelmintic treatment for parasite control, as also emphasized by Vincy *et al.* (2023) ^[15]. Based on seasonal

trends, cats presented during monsoon showed a higher occurrence of 25.45 per cent, followed by cats presented during pre-monsoon (14.29 per cent) and winter (12.86 per cent). Least occurrence was noticed in cats presented during post monsoon with an occurrence of 3.3 per cent. The significant seasonal variation ($p<0.01$) could be attributed to increased humidity and environmental contamination during the monsoon, favouring the development and survival of parasite eggs and larvae (Malangmei *et al.* 2021) ^[22].

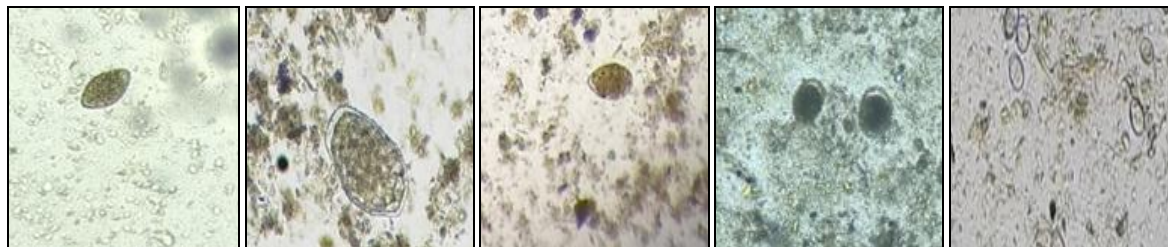


Fig 1-5: Parasitic eggs/oocyst encountered in faecal samples of cat.

Table 1: Occurrence of different gastrointestinal parasites

Species	Total no of positive cases	Occurrence rate (%)
<i>D. latum</i>	11	32.35
<i>Ancylostoma</i> spp	7	20.59
<i>Spirometra</i> spp	7	20.59
<i>T. cati</i>	6	17.65
<i>Isospora</i> spp	3	8.82
Total no. positive cases	34	13.70
Total no examined	248	

Table 2: Occurrence of gastrointestinal parasites in cats based on risk factors

S. No	Variable	Level	Total no presented	Affected cases	Percentage	P-Value
1	Age	Up to 6 month	101	14	13.86	0.821 ^{ns}
		6-12 month	83	10	12.05	
		Above 1 year	64	10	15.63	
2	Breed	Persian	120	14	11.67	-
		Non descriptive (ND)/ Cross breed (CB)	125	20	16	
		British short hair (BSH)	2	0	0	
		Himalayan	1	0	0	
3	Sex	Female	149	21	14.09	0.828 ^{ns}
		Male	99	13	13.13	
4	Deworming status	Proper	61	4	6.56	0.022*
		Improper	187	30	16.04	
5	Season	Pre-monsoon	63	9	14.29	0.008**
		Monsoon	55	14	25.45	
		Post-monsoon	60	2	3.3	
		Winter	70	9	12.86	

** Significant at 0.01 level, * Significant at 0.05 level, NS-Non-Significant

4. Conclusion

The gastrointestinal parasites, *D. latum*, *Ancylostoma* spp, *Spirometra* spp, *T. cati* and *isospora* were identified in the cats presented to Veterinary Ambulatory clinic, Kakkavayal. Most of the identified parasites were proven zoonotic agents. Hence monitoring and screening are important in the healthy existence of both cats and humans.

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Conflict of Interest

Not available

Financial Support

Not available

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