

# GASTROINTESTINAL HELMINTHES IN STRAY CATS (*FELIS CATUS*) FROM AIZAWL, MIZORAM, INDIA

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**Abstract.** Gastrointestinal helminthes were collected from 27 necropsied stray cats (*Felis catus*) in Aizawl, Mizoram, India from January 2005 to April, 2009. The examined cats showed mixed helminthic infections, with an overall prevalence of 85.2%. Five nematodes, 2 cestodes and 1 trematode were identified. The most common helminthes were *Taenia taeniaeformis* (70.4%), *Toxocara cati* (59.3%), *Physaloptera praeputalis* (44.4%), *Dipylidium caninum* (40.7%), *Spirocerca felineus* (18.5%), *Gnathostoma spinigerum* (11.1%), *Ancylostoma tubaeforme* (7.4%) and *Opisthorchis* sp (3.7%). Co-infection with *T. taeniaeformis* and *T. cati* was seen in 48.1% (13/27), indicating the possibility of these cats were paratenic hosts for toxocariasis in cats.

**Keywords:** stray cats, gastrointestinal helminth, India

## INTRODUCTION

A wide variety of helminth parasites are found in cats, of which several species are of zoonotic importance (Bowman *et al*, 2003; Fischer, 2003; Laberthe *et al*, 2004). The defecating habit (generally buried under soil) of cats facilitates dissemination of parasites to humans, particularly in public parks. Most gastro-intestinal parasites in cats utilize either intermediate or paratenic hosts in their life cycles, where rodents act as an important source for cat helminth infection. A number of scientific studies have found a high frequency of helminthes in stray cats

(McColm and Hutchison, 1980; Engbæk *et al*, 1984; Kirpatrick, 1988; Calvete *et al*, 1998; Changizi *et al*, 2007; Jittapalapong *et al*, 2007; Abu-Madi *et al*, 2008; Schuster *et al*, 2009).

Compared to other countries, few systematic studies of cat parasites have been reported from India. Chandler (1925) reported parasites in 250 cats from Calcutta. Gill (1972) reported the occurrences of several helminth parasites in cats in Delhi. Chhabra *et al* (1984) reported cat parasites from northern India and Rajaveelu and Raja (1988) reported cat parasites from southern India. Islam *et al* (1999) found a helminth infection prevalence of 85.2% from cats in Guwahati, Assam, India. Mamatha *et al* (2005) reported gastrointestinal cat parasites from 100 fecal samples from Bangalore. There are several reports from India of the occurrence of individual helminthes in cats, including *Toxocara cati* (Dubey,

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Table 1

Prevalences and intensities of different gastrointestinal helminthes in 27 stray cats.

Parasites	Infected cat	Prevalence (%)	Intensity Mean $\pm$ SD	Number of worms (range)
<i>T. taeniaeformis</i>	19	70.4	04.5 $\pm$ 1.9	1-8
<i>Toxocara cati</i>	16	59.3	12.6 $\pm$ 6.1	2-23
<i>Physaloptera praeputialis</i>	12	44.4	17.6 $\pm$ 8.6	6-30
<i>D. caninum</i>	11	40.7	3.3 $\pm$ 1.1	1-5
<i>Spirocerca felineus</i>	5	18.5	13.8 $\pm$ 3.8	8-18
<i>G. spinigerum</i>	3	11.1	4.7 $\pm$ 2.5	2-7
<i>Ancylostoma tubaeforme</i>	2	7.4	8 $\pm$ 1.4	7-9
<i>Opisthorchis</i> sp	1	3.7	5 $\pm$ 0.0	-
Total		85.2 (23/27)		

1960), *Taenia taeniaeformis* (Singh and Rao, 1965), acanthocephalan (Balasubramanium, 1972) and *Spirometra* sp (Saleque *et al*, 1990). No studies of cat helminthes have been carried out in northeastern India, therefore, the current investigation was carried out.

#### MATERIALS AND METHODS

The current investigation was a complete parasitological dissection of 27 stray cats from Aizawl, the capital city of Mizoram, India, from January, 2005 to April, 2009. Cats found dead due to road accidents or for unknown reasons were collected, dissected and examined. The contents of their gastrointestinal tracts were examined for the presence of parasites using a 5x magnifying glass. The intestines were opened along their entire lengths and examined for the presence of mature and immature worms. All worms were cleaned with saline, preserved in 70% alcohol, counted and classified. The helminthes were identified using a taxonomic key by Soulsby (1982). Nematode parasites were treated with lactophenol

for 24 hours to make them transparent and some worms were crushed for egg morphology. The sex of the cats was recorded.

#### RESULTS

The overall prevalence of gastrointestinal helminthes in cats from Aizawl was 85.2%. Five species of nematodes were seen: *Toxocara cati*, *Physaloptera praeputialis*, *Spirocerca felineus*, *Ancylostoma tubaeforme* and *Gnathostoma spinigerum*. Two species of cestodes were seen: *Taenia taeniaeformis* and *Dipylidium caninum*. One species of trematode was seen: *Opisthorchis* sp. The prevalences of helminthes were *T. taeniaeformis* in 70.4% (19/27), *T. cati* in 59.3% (16/27), *Physaloptera praeputialis* in 44.4% (12/27) and *Dipylidium caninum* in 40.7% (11/27). Ten cats were parasitized with 3 species, 7 cats were parasitized with 2 species and 2 cats were parasitized with one species. The number of infected cats, the prevalences, and the intensities of infection are shown in Table 1. Thirteen cats had co-infection with *T. taeniaeformis* and *T. cati*, 11 cats were infected with *Toxocara cati* and *Physaloptera praeputialis* and 9 cats

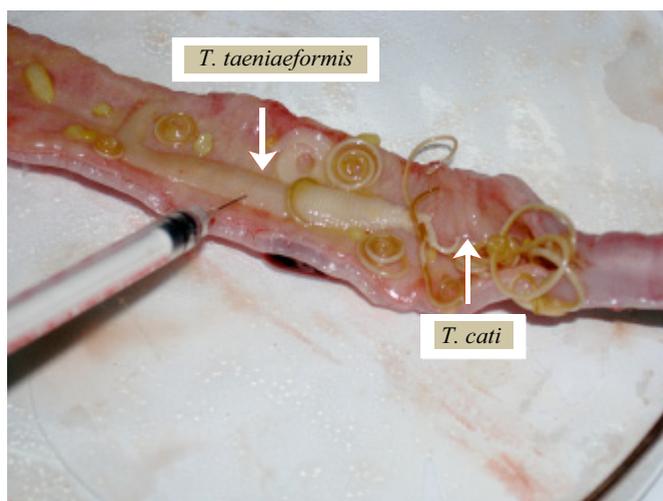


Fig 1—*Taenia taeniaeformis* and *Toxocara cati* in a cat intestine.

were infected with *Taenia taeniaeformis* and *Physaloptera praeputialis*. Most cats with *T. cati* infection were co-infected with *Taenia taeniaeformis* (Fig 1). *P. praeputialis* was mostly found in stomachs. There were no significant differences between male and female cats in terms of parasitic loads, therefore the results of the two sexes were combined.

## DISCUSSION

The overall prevalence of helminth infections from cats in this study was 85.2% similar to the findings of Islam *et al* (1999) from Assam, India (85.7%) who performed a post-mortem examination of 14 cats. Higher prevalences of cat parasites were reported from Mid Ebro Valley, Spain (89.7%) (Calvete *et al*, 1998), Bangkok, Thailand (94%) (Jittapalpong *et al*, 2007) and northern Iran (90%) (Changiizi *et al*, 2007).

The present investigation found *Taenia taeniaeformis* was the most prevalent species (70.4%) in stray cats. This finding correlates with the findings of Abu-Madi *et al* (2008) who found a 75.8% prevalence

of *Taenia taeniaeformis* in stray cats in Qatar. *Toxocara cati* was the second most frequent helminth species (59.3%). This is important, since *T. cati* can cause visceral larva migrans in humans (Fischer, 2003). The prevalence of *T. cati* in cats was found to be 42.9% in a study by Islam *et al* (1999), 39.8% in a study by Rembiesa and Richardson (2003) in Connecticut, USA, 55.2% in a study by Calvete *et al* (1998) in Spain, 79% in a study by Engbæk *et al* (1984) in Copenhagen and 52.8% in a study by Sadjjadi *et al* (2001) in Shiraz, Iran. Our study found *Physaloptera praeputialis* in 44.4%, while Islam *et al* (1999) found it in 85.7% in Assam.

Rodents act as intermediate hosts for *T. taeniaeformis* the same rodent may act as a paratenic host for dispersal of *T. cati* in cats. Co-infection with these two parasites should not be ignored. Cats have a habit of burying their feces which may increase the probability of spread of *Toxocara cati* eggs. Stray cats are generally nocturnal in their hunting habits and rodents fall prey to these cats. From 2006 to 2008 Aizawl District, Mizoram, India received on an average of 2,040 mm of rainfall which facilitated the survival of the parasite.

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