

Research Note

## Prevalence of *Toxocara cati* Infection in Cats in Ibaraki Prefecture, Japan

KIYOSHI NAKAUCHI

Animal Administrative Guidance Center, 47 Hizawa, Kasama, Ibaraki 309-16, Japan.

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Many surveys have been done on *Toxocara cati* infection of cats in Japan (Ohishi and Kume, 1973; Iseki *et al.*, 1974; Uchida *et al.*, 1982; Fujinami *et al.*, 1983; Uga *et al.*, 1983; Fukase *et al.*, 1984; Asato *et al.*, 1986; Oikawa *et al.*, 1991). Although the prevalence of *T. cati* in cats has been surveyed in Japan, the prevalence has hardly been studied on age and sex of hosts, except the paper by Ohishi and Kume (1973). The present report deals with the prevalence of *T. cati* in a total of 164 cats examined in Animal Administrative Guidance Center of Ibaraki Prefecture from June 1993 to June 1994. The cats were divided into adults and kittens according to an age of 6 months, which was estimated based on external appearance and tooth exchange. The cats were killed with carbon dioxide and necropsied as soon as possible, and then the intestine was removed and examined for the parasite. The worms recovered were preserved in 10% (V/V) formalin and then cleared in lactophenol solution for light microscope. *T. cati* was identified in conformity to Sprent (1956).

All the 358 ascarids recovered were identified as *T. cati* and neither *T. canis* nor *Toxascaris* sp. was detected in this study. Table 1 shows prevalence and worm burden of *T. cati* in the cats with different sexes and ages. The prevalence was similar in each group of cats, although the highest prevalence (42.9%) was obtained from male adult cats and the lowest one (32.7%) from female adult cats. The average number of worms per host was significantly

higher in female adults than in male adults ( $p < 0.05$ ), while the prevalence and number of the worms were not statistically different between kittens and adult cats. The average number of worm per infected cat was 5.7 (Table 2), and the male to female worm ratio was 1:2.6. Twenty nine cases (46.0%) were unisexual infections with female worms.

In previous studies, the prevalence of *T. cati* has been shown to vary from 13.8% (Fujinami *et al.*, 1983) to 59.0% (Iseki *et al.*, 1974) in stray and domestic cats in Japan. The prevalence obtained in the present survey was moderate in level compared to those reported other areas of Japan. Therefore, *T. cati* infections in cats may remain almost the same in frequency at least for recent several years in Japan. Transmammary transmission with infective larvae from dose to kittens would account for the early establishment and high prevalence of the parasite in kittens under 6-month-old (Visco *et al.*, 1978). The prevalence rate of *T. cati* decreased with the age of the cats (Visco *et al.*, 1978; Sprent, 1956) and was higher in kittens than in adult cats (Asato *et al.*, 1986; Fukase *et al.*, 1984). On the other hand, Ohishi and Kume (1973) and Uchida *et al.* (1982) indicated that there was no significant difference in the prevalence rate among cats of different ages. Since no statistically significant difference was recognized in prevalence between kittens and adult cats in this study, age-related resistance such as in *T. canis* infection will not develop in *T. cati* infection in cats. Ohishi and Kume (1973) and Uga *et al.* (1983) reported that no significant difference in

Table 1 Prevalence and worm burden of *Toxocara cati* in cats with different ages and sexes

Age group	Sex	No. of cats examined	Prevalence (%)	No. of worms per infected cat
				Mean±SE
Kittens (<6 months)	Male	29	41.3	5.2±1.0
	Female	48	39.6	3.9±0.8
Adults (>6 months)	Male	35	42.9	2.5±0.5
	Female	52	32.7	10.8±3.4*

\*Significantly different ( $p < 0.05$ ) from that of adult males Welch's *t*-test.

Table 2 Number of *Toxocara cati* in infected cats (n=63)

Sex of worm	Range	No. of worms per infected cat
		Mean±SE
Male	0–15	1.6±0.4
Female	1–37	4.1±0.7
Total worms	1–46	5.7±1.0

infection rate with *T. cati* was observed between cats both sexes. The present results also show that no statistically significant difference was recognized in the infection rate with *T. cati* between both sexes of cats. Therefore, sex distinction seemed to have no effect on prevalence of *T. cati* infection. Average worm burden of *T. cati* in cats has been reported to range from 4.3 to 7.6 in Japan (Ohishi and Kume, 1973; Iseki *et al.*, 1974; Uchida *et al.*, 1982; Uga *et al.*, 1983). In this study, the value was not greatly different from those data, although the number of worms in adult female cats was significantly greater because of very high values in two cats, 41 and 46, respectively. The reason why the value was high in these two cats is not clear, however, the high value in adult cats will bring about the greater chance of transmammary infection to newborn kittens.

Ohishi and Kume (1973) and Iseki *et al.* (1974) noted that the male to female ratio of *T. cati* was 1:1.6 and 1:1.5, respectively. Its value was 1:2.6 in the present results and the difference in the value came from the higher rate of unisexual infection with female worms in the present survey.

The evidences obtained from experimental and natural infection indicate that infection of cats with

*T. cati* always takes place after birth (Sprent, 1956). In addition to this, transmammary passage of *T. cati* larvae is an important route of infection in kittens after birth, and the best control of *T. cati* infection under natural conditions is to maintain cats in areas free of infective eggs (Swerczek *et al.*, 1971). Oikawa *et al.* (1991) surveyed the prevalence of intestinal parasites in cats successively for over 8 years, and the annual detection rate of *T. cati* was almost the same in level through the surveyed period. Therefore, periodical inspection and medication with anthelmintics of cats is necessary for the control parasites.

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