A POINT PREVALENCE STUDY OF *TOXOCARIOSIS* IN STRAY CATS IN AND AROUND BHUBANESWAR, ODISHA

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ABSTRACT

A cross sectional study was conducted from April, 2012 to July, 2012 to determine the prevalence rate and influence of different risk factors on *Toxocariosis* in stray cats in and around Bhubaneswar, Odisha. The overall prevalence rate was found to be 56.2% with highest prevalence rate recorded in slum area (73%) followed by village area (52.1%) and least in urban area (33.3%) (P<0.05). It was revealed that the prevalence rate of the disease is inversely related to the degree of health status (P<0.01) and age (P<0.05) of the animal. There was no significant sexwise variation (P>0.05) although slight higher infection rate was observed in females. Surprisingly, pregnant queen were found to possess higher infection rate than non-pregnant ones (P<0.05).

KEY WORDS: Prevalence rate, *Toxocariosis*, stray cats, Bhubaneswar.

INTRODUCTION

Toxocariosis, a serious zoonotic disease (Schantz,1989; Barbosa-Martinez *et al.*, 2003) and is cosmopolitan in distribution which may cause visceral larva migrans, occular larva migrans (Schantz, 1989) and neouronal degenearation (Magnavel *et al.*, 1997) in the untreated infected individuals due to erratic migration of the nematode larvae (*Toxocara* spp.). Children are the most vulnerable for this parasitic disease due to unhygienic feeding habits (Barbosa *et al.*, 2003). Considering the importance of the disease, the present study was designed to determine the current status of the prevalence of *Toxocariosis* in stray cats in and around Bhubaneswar and influence of different risk factors on it.

MATERIALS AND METHODS

A total of 64 faecal samples were collected from stray cats in different regions in and around Bhubaneswar from April, 2012 to July, 2012 and brought to the laboratory of Department of Parasitology, College of Veterinary Science and Animal Husbandry, Bhubaneswar. The stool samples were processed by floatation method (Soulsby, 1982) and examined under microscope for the presence of *Toxocara cati* eggs based on the key identifying morphology as mentioned by Zajac and Conboy (2012).

The influence of different risk factors like type of habitat, health condition, age, sex and pregenancy on the prevalence rate of *Toxocariosis* was planned to be studied. The study area was divided into three broad type, i.e., urban, village and slum area based on the socio economic status and cultural practices of the humans and their vicinity with the stray animals was noticed. The subjects were divided into three types, i.e., good, medium and poor body conditioned animals based on the gross visual appearance, degree of alertness and appetite, approximate body weight and condition of the body coat. Agewise, the animals were also grouped into three groups (below 6 months, 6-12 months and above 1 year age). All the collected data were entered to MS excel 2007 spread sheet and analyzed using chi square test by SPSS 17.0 version software.

RESULTS AND DISCUSSION

Out of 64 faecal samples examined, only 36 samples were found positive for *Toxocara cati* eggs. Quite similar findings were observed by Borthakur and Mukharjee (2011) who reported 59.3% infection rate of *T. cati* in stray cats of Aizal, Mizoram. Similarly, Islam *et al.* (1999) reported 42.9% prevalence of *T. cati* in cats of Guwahati, Assam which is comparable to our result. But, Borkataki *et al.* (2013) recorded 32% prevalence of *Toxocara* spp. eggs in Jammu which is quite lower than the previous reports. This low infection rate may be due to better hygienic practices, more efficient animal control programme and public awareness of the local region. *Toxocara* spp. eggs were noticed by many researchers from the soil samples of public health importance in different parts of India (Singh *et al.*, 1997; Kumar and Hafeez, 1998; Sudhakar *et al.*, 2013). This may be due to unrestricted roaming and defecation of the stray dogs and cats in the public parks, play grounds and roadsides which establishes the biology and life cycle of the nematode and spread of the disease gets ameliorated.

 In the present study, the prevalence rate was found to vary significantly (P<0.05) with the change of habitat (anthropologic) with highest prevalence rate in slum area (73%) followed by village area (52.1%) and least in the urban area (33.3%) (Table-I). Higher incidence in the slum areas can be attributed to unhygenic environment and more prevalence of paratonic host (rodents). Also, cats have a habit of burying their faeces which helps in the survival of *T.cati* eggs from desication and this phenonmenon may be enhanced in the moist soil (Sudhakar *et al.*, 2013) of the slum areas due to inefficient drainage facility and gathering of the polluted waters road side. Lack of public awareness may also contribute a major role in the above process (Das *et al.*, 2007).

Table-I : Statistical analysis of influence of different risk factors on the prevalence of *Toxocariosis* in stray cats in and around Bhubaneswar

Risk Factors	Conditions	NE	NI	P%	df	X²-value	P-value	Remark
1. Habitat	a. Slum	26	19	73%	2	6.348	P<0.05	S
	b. Urban	15	5	33.3%				
	c. Village	23	12	52.1%				
	Overall %	**64**	**36**	**56.2%**				
2. Health	a. Good	14	3	21.4%	2	11.053	P<0.01	HS
	b. Medium	34	20	58.8%				
	c. Poor	16	13	81.3%				
3. Age	a. < 6 month	22	17	77.3%	2	7.014	P<0.05	S
	b. 6 mth-1 yr	23	12	52.2%				
	c. > 1 yr	19	7	36.8%				
4. Sex	a. Male	29	16	55.1%	1	0.025	P>0.05	NS
	b. Female	35	20	57.1%				
6.Pregnancy	a.Non-pregnant	21	9	42.8%	1	4.375	P<0.05	S
	b. pregnant	14	11	78.5%				

(**NE**: Number Examined, **NI**: Number Infected, **P%**: Prevalence%, **df**: Degree of freedom , **X²** : Chi Square Value, **P**: Tail Probability, **HS**: Highly Significant, **S**: Significant and **NS**: Non Significant)

It was also observed that the prevalence rate is inversely related to the age (P<0.05) of the animals. The highest (77.3%) infection rates was recorded in 0-6 months followed by 6 months-1year (52.2%) and lowest (36.8%) in above 1 year aged cats (Table-I). These findings are in agreement with the results of various workers (Charleston, 1977; Nichol *et al.*, 1981; Shaw *et al.*, 1983; Shabbir *et al.*, 2010). Higher incidence rate in younger cats than older was also reported by Sadjjadi *et al.* (2001) but the difference was not significant. Higher incidence in younger age may be due to transmammary route of infection (Swerczek *et al.*, 1971) while lower infection in older age might be due to strengthening of immune system with the advancement of age. A similar pattern of variation (but with a high singnficance i.e., P<0.01) of prevalence of disease with the degree of health status of animal was also recorded with 21.4%, 55.8% and 81.3% prevalence in good, medium and poor health conditions of the animals, respectively (Table-I).

Sex-wise, higher (57.1%) prevalence rate was observed in females than males (55.1%) but the variation was non-significant (P>0.05). This result is consistent with the findings of O'Lorcain (1994) and Sadjjadi *et al.* (2001). But Shabbir *et al.* (2010) reported a sex dependent prevalence in cat with higher incidence in queen.

An interesting finding in this experiment was that pregnant queen possess significantly higher (P<0.05) infection rate (78.5%) than non-pregnant ones (42.8%). This might be due to weakening of immunity during pregnancy or after parturition and habbit of eating faeces of kittens as reported by Douglas and Baker (1959) and Sprent (1961), respectively in case of dogs.

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