



OCCURRENCE OF PARASITIC INFECTIONS IN DOGS IN AND AROUND LUDHIANA, PUNJAB (INDIA)

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ABSTRACT

A total of 634 canines were sampled for both haematological (460) and coprological (174) investigations at Small Animal Clinics, GADVASU, Ludhiana, India during the year 2010. Examination of Giemsa stained peripheral blood smears exhibited 10.21% (47/460) haemoprotozoan comprising of *Babesia gibsoni* (8.26%), *Hepatozoon canis* (1.08%), *B. canis* (0.65%) and *Trypanosoma evansi* (0.21%). *B. gibsoni* infection was significantly higher ($p < 0.05$) in male dogs. Coprological examination revealed that the prevalence of gastro-intestinal parasitic infection was 24.71% (43/174). Among these *Isospora* spp. and *Ancylostoma* spp. were 2.29 and 22.41%, respectively. The present work emphasized that *B. gibsoni* and hookworms were most prevalent blood- and gastro-intestinal parasites in canines in and around Ludhiana, Punjab (India).

Keywords: Canine, gastro-intestinal parasites, haemoprotozoa, Punjab

INTRODUCTION

Parasitic infections comprising haemoprotozoan and gastrointestinal diseases are a major constraint in the well-being and maintenance of pets especially dogs. Canines are continuously exposed to a spectrum of vector-borne haemoprotozoan infections viz., babesiosis, trypanosomosis and hepatozoonosis, due to unchecked annoyance of arthropod vectors. Intestinal parasites, both helminths and protozoa, are most commonly encountered agents and are amongst the principal cause of canine mortality in India (Sharma *et al.*, 2006). Local and updated information is essential to understand the epidemiology of parasitic diseases in dogs and to design rational and effective control strategies. Keeping in view the importance of these parasitic infections, the present study was undertaken to record the pattern of these diseases in relation to various parameters like age and sex of the host from clinical cases in and around Ludhiana, Punjab (India).

MATERIALS AND METHODS

A total of 634 clinical samples, comprising 460 blood and 174 faecal samples were examined from canines presented at Small Animal Clinics, GADVASU, Ludhiana, Punjab (India) during one year period (Jan, 2010 to Dec, 2010). Blood samples from dogs presented with a history of persistent high fever and suspected for haemoprotozoan diseases, were collected aseptically from cephalic vein in vials containing anticoagulant (EDTA). To make a thin blood film, a drop of blood was placed on a clean glass slide, air-dried, fixed in methanol, stained with Giemsa (Coles, 1986) and examined under light microscope by using the oil immersion objective. Faecal samples collected per-rectally or submitted by the owners from canines with history of gastrointestinal disturbances, were processed by faecal floatation technique employing

saturated salt solution (Soulby, 1982). Statistical analysis was performed on data by SPSS 13.0 software by applying χ^2 test and statistical differences ($p < 0.01$ and $p < 0.05$) between various groups were calculated.

RESULTS AND DISCUSSION

Prevalence of haemoprotozoan infections

Examination of Giemsa stained peripheral blood smears revealed that 10.21% (47/460) of canines were infected with haemoprotozoan parasites comprising *Babesia gibsoni* (8.26%), *B. canis* (0.65%), *Trypanosoma evansi* (0.21%) and *Hepatozoon canis* (1.08%) [Table 1]. Age of the host had no significant effect on the prevalence of haemoprotozoan diseases in dogs. Interestingly *B. canis* and *T. evansi* infections were recorded only from dogs above 6 months age whereas higher prevalence of *H. canis* was recorded in younger animals below 6 month age but the variation was statistically non-significant ($p > 0.05$). The prevalence of haemoprotozoan parasites was higher in males (11.70%) than females (7.86%) but the difference was statistically non-significant ($p > 0.05$). However, *B. gibsoni* infection was significantly higher ($p < 0.05$) in males and *T. evansi* infection was recorded only from male dog.

Table 1: Prevalence of haemoprotozoan parasites in dogs

	Group	No. examined	No. positive (%)	<i>Babesia gibsoni</i>	<i>Babesia canis</i>	<i>Trypanosoma evansi</i>	<i>Hepatozoon canis</i>
Age (months)	<6	67	7 (10.44)	5 (7.46)	-	-	2 (2.98)
	>6	393	40 (10.17)	33 (8.39)	3 (0.76)	1 (0.25)	3 (0.76)
	χ^2 value	-	0.005	0.066	0.515	0.171	2.63
Sex	Male	282	33 (11.70)	29 (10.28)	1 (0.35)	1 (0.35)	2 (0.70)
	Female	178	14 (7.86)	9 (5.05)	2 (1.12)	-	3 (1.68)
	χ^2 value	-	1.75	3.94*	0.996	0.633	0.967
	Total	460	47 (10.21)	38 (8.26)	3 (0.65)	1 (0.21)	5 (1.08)

* $P_{0.05}$; The figures in parenthesis are percent prevalence

Babesia species are infecting dogs belong to two distinct species, the large (4–5 μ m) *B. canis* and the small (1.0–2.5 μ m) *B. gibsoni* as per microscopic examination of blood smears. Results indicated that canine babesiosis was most prevalent haemoprotozoan disease in this region. A comparatively lower prevalence of canine babesiosis (2.62%) has been reported by Bashir *et al.* (2009) from Pakistan with male dogs being more prone to disease than female dogs (3.39 vs 1.32%), which is similar to the findings of the current study. Recent report of a comparatively lower prevalence of canine babesiosis (4.63%) has been recorded by Singh *et al.* (2011) from the same region of Punjab state and the difference could probably be due to the variation in sample size as well as time period of the study.

Study in past from this region reported a higher prevalence rate (4.68%) of *T. evansi* infection in dogs (Singh *et al.*, 1993). However, a lower prevalence of surra in dogs recorded in the present study and recent past by Singh *et al.* (2011) from the same area can be attributed to the fact that there has been a substantial improvement in the managerial practices involved in canine keeping. This has decreased the exposure probability of canines to the vector flies thus leading to a decrease in the cases of canine trypanosomosis in the region. Canine hepatozoonosis is a tick borne disease caused by *H. canis*, and transmitted by ingestion of dog tick *Rhipicephalus sanguineus*. A varied rate of incidence, between 3–9%, of the diseases has been reported from India (Sharma *et al.*, 1997). Further, *H. canis* has also been previously documented from Punjab (Juyal *et al.*, 1992; Singh *et al.*, 2011).

Prevalence of gastrointestinal parasitic infections

Results of faecal floatation test revealed that the prevalence of GI parasitic infections was 24.71% in dogs from Ludhiana, Punjab (India). The prevalence of *Isospora* spp. and *Ancylostoma* spp. were 2.29 and 22.41%, respectively (Table 2). The hookworms were the most prevalent GI parasites of dogs.

Table 2: Prevalence of GI parasites in dogs

	Group	No. of samples examined	No. positive (%)	<i>Isospora</i> spp. (%)	<i>Ancylostoma</i> spp. (%)
Age (months)	<6	58	14 (24.13)	2 (3.44)	12 (20.68)
	>6	116	29 (25.00)	2 (1.72)	27 (23.27)
	χ^2 value		0.015	0.512	0.149
Sex	Male	114	24 (21.05)	1 (0.87)	23 (20.17)
	Female	60	19 (31.66)	3 (5.00)	16 (26.67)
	χ^2 value		2.39	2.98	0.952
Total		174	43 (24.71)	4 (2.29)	39 (22.41)

* $P_{0.05}$; The figures in parenthesis are percent prevalence

Similar observations of higher prevalence rates of canine hookworm infections had been reported from various parts of India (Sahai, 1969; Traub *et al.*, 2004; Singh *et al.*, 2011). Whereas, studies involving stray dogs revealed a much higher prevalence of GI parasitic infections from Jodhpur city (Kachawah and Tanwar, 2007) and Himachal Pradesh (Agnihotri *et al.*, 2008) in comparison to the present study mainly because the dogs examined here were pet animals with better health managemental practices. The prevalence of parasitic infections was almost comparable and no significant difference was recorded among the two sexes and different age groups.

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