

PREVALENCE OF HAEMOPROTOZOANS IN CANINES IN CHENNAI CITY

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ABSTRACT

A total of 4190 blood smears were collected between January and December 2007 from dogs exhibiting clinical signs of haemoprotozoan infections. On blood smear examination 485 blood smears were found to be positive for various haemoprotozoa and rickettsia. Among the positive cases, the majority of haemoprotozoans identified were Babesia gibsoni 84.9%, followed by Ehrlichia canis 6%, Hepatazoan canis 4.8%, Babesia canis 3.9% and Trypanasoma evansi 0.4%. The high prevalence of haemoprotozoan infection was observed during monsoon season. However B.gibsoni was at a higher prevalence during summer and winter. The highest infection was in adults 63.1% but evenly distributed amongst all breeds of dogs. No significant difference was recorded amongst sex.

Key words: prevalence, haemoprotozoan, canine

INTRODUCTION

Haemoprotozoan infections are common in canine in tropical countries. Amongst them, Canine babesiosis is a disease of worldwide significance, where members of the genus *Babesia* readily parasitise red blood cells causing progressive anemia. Canine *Babesia* are morphologically classified into large and small forms. *Babesia canis* (large), *Babesia gibsoni* (small) have been documented to infect dogs. (Johan Schoeman and Andrew Leisewitz, 2006). The smaller parasite *B.gibsoni* has been detected more often amongst dogs and very often *Rhipicephalus sanguineus* is incriminated as the main vector. This paper attempts to exhibit the prevalence of haemoprotozoan infection in dogs, which is found to occur at a higher frequency in canine populations in Chennai city with special

emphasis to prevalence of *B.gibsoni* infection.

MATERIALS AND METHODS.

In this study, a total of 4190 peripheral blood smears from dogs brought to Madras Veterinary College Teaching Hospital were collected. The peripheral blood smear from ear tip was collected from dogs exhibiting all or one of the following clinical signs – progressive anemia, haemoglobinuria, icterus, tick infestation, pyrexia or enlarged lymph nodes. The sampling period was between January to December 2007. The demographical details were also recorded. The peripheral blood smear examination was carried out as per standard protocols (Benjamin, 1985). The identification of blood protista was based on description by Soulsby (1982).

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RESULTS AND DISCUSSION

The screening of blood parasites for haemoprotozoan infections revealed 485 (11.6%) positives out of a total of 4190 examined. The majority of blood protozoans identified was *B.gibsoni* 412, (84.9%) followed by *Ehrlichia canis* 29, (6%), *B.canis* 19, (3.9%) *Hepatozoan canis* 23, (4.8%) with the least being *Trypanasoma evansi* 2 (0.4%). It was observed that 16.2% of the haemoprotozoan positive cases occurred in November (Fig. 1). In general the incidence of all haemoprotozoans showed two peaks of occurrence, one in November and another in April. The highest incidence of haemoprotozoan infection was observed during monsoon. The incidence of *B.gibsoni*, individually showed highest incidence during summer and winter. (Table 1) .

Of the 485 positive samples for haemoprotista the highest percentage of incidence was amongst the adults (63.1%). A similar picture was observed among *B.gibsoni* positive cases (67.7%). (Table.2). When all haemoprotozoan infections were taken into consideration, the incidence was evenly distributed among exotic breeds and non descript dogs, however, at a much lower level of incidence noticed among non hairy breed dogs. (Table3). No distinct difference in the incidence was observed between the sexes. (Table2).

In this study the overall incidence of haemoprotozoans was only 11.6% as compared to an earlier observation by Samradhni *et al.* (2005), who recorded a very high number of ie 63.12% positives for haemoprotozoan infections and reported that this high incidence was accounted with maximum temperature and relative humidity, as there appears to be increased tick activity during the period. In another observation, Bansal *et al.* (1985) also recorded high incidence during monsoon and post monsoon season in Haryana. While Bhaskara Rao *et al.* (1986) reported frequent infections between May to September in Andhra Pradesh, in the present

study the incidence of haemoprotzoans in April and November was slightly elevated at 15.6% indicative of higher vector activity. Among positive cases there was a higher incidence of *Babesia* infection (.88 %) observed in the present study in comparison to the other blood parasites like *E.canis*, *H.canis* and *T.evansi*.

This observation was in accordance with Samradhni *et al.* (2005) who reported 64.28 per cent for *Babesia* infections. Among the overall hemoprotozoa infection, *B.gibsoni* (9.8%) was highly prevalent in comparison to *B.canis* (0.5%), In contrast Sundar *et al.* (2004) in an earlier observation recorded a very low incidence of 0.08% in Chennai in one year.

In the observation of several authors the prevalence of haemoprotozoans is highest in dogs below one year of age (Abulljahi *et al.* 1990, and Samradhni *et al.*, 2005,). However, in this study dogs above three years of age were involved to a greater extent (63.1%). It can be assumed that vector activity in the younger age group could be lesser due to greater attention by the pet owners at this age. With regards to prevalence of haemoprotozoan infections in various breed dogs, it was observed that there was no significance difference in the occurrence of this infection amongst the different breeds and sex. This was in agreement with the authors who reported similar findings. (Abullahi *et al.* 1990 and Samradhni *et al.* 2005,). Though there was no significant difference in prevalence between the breeds, the number of positives was higher among Non Descripts and Spitzs. The former could be due to poor management and the latter might be due to the hair coat, which prevents easy access and removal of the vector.

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Table .1 Season wise distributions of Haemoprotozoans infection (in percentage)

Season	Total sample	Overall hemoprotozoan	<i>Distribution of hemoprotozoa</i>				
			<i>B.gibsoni</i>	<i>B.canis</i>	<i>E.canis</i>	<i>H.canis</i>	<i>T.evansi</i>
Summer (Apr-Jun)	1007	10.7	94.4	0.9	3.7	-	0.9
Monsoon (Jul-Nov)	1715	12.0	78.7	6.8	8.2	5.8	0.5
Winter (Dec-Mar)	1468	11.5	86	2.3	4.7	7	

Table 2. Age and sex wise distribution of Haemoprotozoans.

	Total Samples	Over all Haemoprotozoans		B.gibsoni	
		+ve	%	+ve	%
< 1 year	522	50	10.3	39	9.4
1-3 year	1054	129	26.5	94	22.8
>3 year	2614	306	63.1	279	67.7
Male		260	53.6	228	55.3
Female		225	46.3	184	44.6

Table 3. Breedwise distribution of Haemoprotozoans

Parameter	Total Sample	Over all Haemoprotozoans		B.gibsoni	
		+ve	%	+ve	%
Hairy Breeds (Spits,GSD,Lhasapso, Cocker spaniel)	1507	188	12.4	164	88.7
Non hairy breeds (Doberman, Labrodor, Great Dane, Dashchund, Pug,Boxer,Rotweiller)	1870	171	9.1	158	92
ND	813	106	13.0	86	81

Fig.1 Month wise distribution of Haemoprotozoans