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Prevalence of Haemoparasitic diseases in dogs in and around Hisar, Haryana

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Abstract

The study was conducted to check the prevalence of the haemoparasitic diseases in dogs. A total of 105 Giemsa stained blood smears were screened on the basis of clinical signs consistent with the haemoparasitic diseases i.e., anorexia, lethargy, lymphadenomegaly, pale mucus membranes, dermal petechiae and ecchymoses, vomiting, malena, epistaxis, cachexia, corneal opacity. Four haemoparasites (*Ehrlichia canis*, *Hepatozoon canis*, *Babesia canis* and *Trypanosoma spp*) were observed in the blood smears under oil immersion and the prevalence was 4.76%, 2.85% and 0.95 for the *Babesia canis* and *Trypanoma spp.* respectively.

Keywords: gamonts, piroplasms, epistaxis

Introduction

Haemoparasitic infections are common in canines in tropical countries. Six canine tick-borne diseases are present out of which canine monocytic ehrlichiosis has been found the second most common tick borne disease affecting dogs following Hepatozoonosis. Hepatozoonosis is caused by *Hepatozoon canis* and ticks belonging to the genus *Rhipicephalus* have been most frequently encountered (AbdRani PAM, Irwin PJ, Coleman GT, Gatne M and Traub RJ 2011) ^[1]. Ingestion of an infected tick *R. sanguineus* causes transmission of *H. canis* to dogs rather than tick bites (Baneth GAD, Samish M, Alekseev E, Aroch I and Shkap V 2001) ^[2]. The commonly occurring *Babesia* species in dogs are the *Babesia canis* and *Babesia gibsoni* which causes Babesiosis in dogs (Taboada J and Merchant SR 1991) ^[12]. Trypanosomiasis is a hemoprotozoan disease of domestic and wild animals, spread by biting tabanid flies. The disease is generally acute and fatal in canines and a cause of fever, anemia, myocarditis and corneal opacity (Soulsby EJL 1982) ^[11]. The blood protozoa which are mentioned above have been reported earlier in the country but there has been a variation in their distribution pattern as a consequence of climatic changes. This distribution change may also be attributed to increase in dog breeding practices, importation of new breeds of dogs and along with it new species of parasites as well. For regular monitoring and to check current prevalence status of haemoparasitic diseases in dogs, this study was performed.

Materials and Methods

The present study was conducted on dogs presented to Medicine Section, Teaching Veterinary Clinical Complex, Lala Lajpat Rai University of Veterinary and Animal Sciences (LUVAS), Hisar with the history of naturally acquired tick infestation and clinical signs consistent with haemoparasitic infection viz. fever, anorexia, lethargy, lymphadenomegaly, pale mucus membranes, dermal petechiae and ecchymoses, vomiting, malena, epistaxis, cachexia, corneal opacity etc. A total of 105 suspected dogs were screened for the haemoparasitic infection from June, 2015 to May, 2016.

A complete clinical history of suspected dogs including breed, age, sex, body weight, type of diet given, nature of illness, clinical signs of haemoparasitic infection, any previous treatment given etc. were collected from the pet owner and thin blood smears from the micro-capillary circulation (ear tip) in duplicate from each suspected cases were prepared on clean, grease free microslides, air dried and fixed using methanol. The fixed blood smears were stained by Giemsa stain using 1:10 dilution for 30 – 40 minutes (Coles EH 1986) ^[3]. The slides were washed under running tap water, air dried and examined microscopically at 1000 times magnification under oil immersion for haemoparasites.

Results and Discussion

A total of 105 suspected dogs from June, 2015 to May, 2016 were screened for the haemoparasitic diseases based upon clinical signs consistent for haemoparasitic diseases and confirmation by blood smear examination. Prevalence of haemoparasitic diseases in dogs presented to TVCC, LUVAS on blood smear examination is depicted in Table 1. Of the 105 dogs, 5 (4.76%) were found positive for *Ehrlichia canis*, 3 (2.85%) for *Hepatozoon canis*, 1 for *Babesia canis* and 1 for *Trypanosoma* spp. on Giemsa-stained peripheral thin blood smear examination. The parasites were identified in blood smears on basis of their morphological characteristics. *E. canis* organisms were observed as intracytoplasmic bodies of varying sizes and shapes in monocytes. The most commonly encountered form was the large spherical morulae (Fig 1 and 2). *Hepatozoon canis* was identified as characteristic ellipsoidal shaped intracellular gamonts in the cytoplasm of neutrophils in stained blood smear examination (Fig 3). *Babesia canis* was identified on the basis of unique tetrad morphology of piroplasms in infected erythrocytes in stained blood smear examination. *Trypanosoma* spp. was identified as intercellular flagellated trypomastigote form in stained blood smear examination.

Table 1: Prevalence of haemoparasitic diseases in dogs presented to TVCC, LUVAS on blood smear examination

Total cases screened	Thin blood smear examination		
	Haemoparasite identified	No. of positive cases	Percent (%) Prevalence
105	<i>Ehrlichia canis</i>	5	4.76
	<i>Babesia canis</i>	1	0.95
	<i>Trypanosoma</i> spp.	1	0.95
	<i>Hepatozoon canis</i>	3	2.85

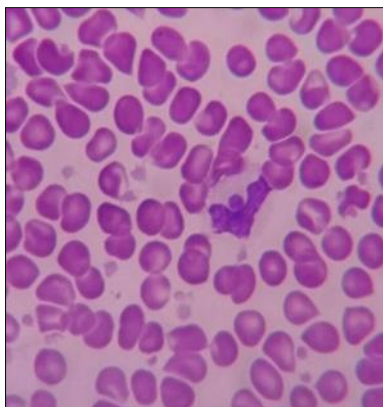


Fig 1: Morulae of *E. canis* in monocytes in Giemsa satined blood smear examination

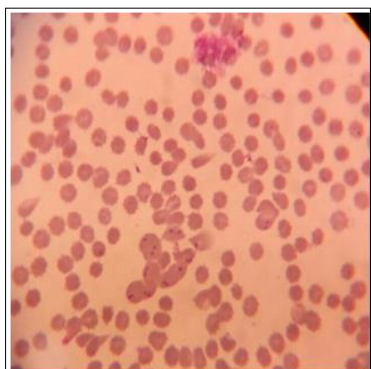


Fig 2: Peripheral blood smear showing large form of *Babesia* spp (*Babesia canis*)



Fig 3: Gamont of *Hepatozoon canis* in neutrophil in blood smear examination

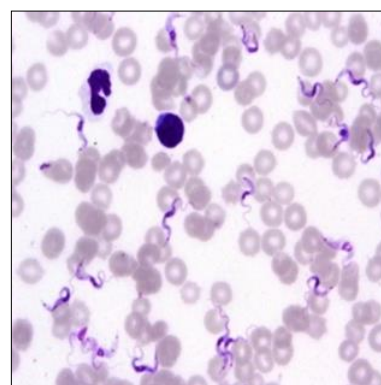


Fig 4: Trypomastigote form of *Trypanosoma evansi* in blood smear

Lakshmanan and John (2007) [7] in Madras observed prevalence of *Babesia canis* and *Babesia gibsoni* 4.34% and concurrent infection of *Ehrlichia* spp. and *Hepatozoon* spp. in 8.69% of dogs. Gadahi *et al* (2008) [4] investigated the overall prevalence of blood-parasites as 11.66%. Senthil Kumar *et al* (2009) studied on haemoprotozoan infections and observed the prevalence as *Babesia gibsoni* 84.9%, followed by *Ehrlichia canis* 6%, *Hepatozoon canis* 4.8%, *Babesia canis* 3.9% and *Trypanosoma evansi* 0.4%. Godara *et al* (2010) [5] reported the overall prevalence of haemoprotozoan infection in dogs as 16.39% out of which the prevalence of *Babesia* spp. (13.1%) and *Ehrlichia canis* (4.9%) was reported. Selvaraj *et al* (2010) [9] reported 11.74% of dogs positive for haemoprotozoan infections in Chennai. Vairamuthu *et al* (2014) reported 13.25% prevalence of the hemoprotozoan infection in dogs as *B. gibsoni* infection was highest accounting 56.65% followed by *E. canis* (23.21%) and *H. canis* (11.23%) at Madras Veterinary College Teaching Hospital during 2006 to 2011. The 4 canine blood protozoan parasites found by Sahu *et al* (2014) [8] were *Babesia gibsoni*, *Babesia canis*, *Hepatozoon canis* and *Trypanosoma evansi* with percentage of incidence 4.81%, 1.66%, 3.33% and 0.74% respectively in Odisha. Bhattacharjee and Sarmah (2015) reported 7 species of haemoparasites i.e. *Babesia gibsoni* (47.16%), *Babesia canis* (1.41%), *Ehrlichia platys* (8.49%), *Dirofilaria immitis* (2.83%), *Ehrlichia canis* (2.12%) and *Ehrlichia ewingii* (0.47%) in single or mixed infections in dogs.

Conclusion

The prevalence for four haemoparasitic diseases *Ehrlichia canis* (4.76%), *Hepatozoon canis* (2.85%), *Babesia canis* (0.95%) and *Trypanoma* spp. (0.95%) were recorded.

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