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Occurrence and emerging trends of *Hepatozoon canis* infection in dogs in Hassan district, Karnataka

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Abstract

The present study reports the recent emergence of *Hepatozoon canis* infection in dogs from Hassan district, Karnataka, India. Blood samples received at the Teaching Veterinary Clinical Complex, Veterinary College, Hassan, were routinely screened for haemoprotozoan parasites. Notably, no cases of *H. canis* had been recorded since the establishment of the college in 2007. However, within a span of six months, three confirmed cases were identified from different locations in Hassan. Clinical manifestations included high fever, inappetence, congested mucous membranes, tick infestation, dullness, depression, and recumbency. Haematological analysis revealed thrombocytopenia, anemia, and reduced erythrocyte counts. Giemsa-stained blood smears demonstrated characteristic gametocytes within neutrophils. These findings indicate a possible emergence of *H. canis* in the region, likely associated with urbanization and increased movement of pets.

Keywords: *Hepatozoon canis*, dogs, haemoprotozoa, emerging disease, Hassan

1. Introduction

Canine hepatozoonosis is an important tick-borne protozoan disease caused by *Hepatozoon canis*, an apicomplexan parasite infecting domestic and wild canids. Unlike many other tick-borne pathogens, transmission occurs primarily through the ingestion of infected ticks, particularly *Rhipicephalus sanguineus*, rather than via tick bites (Baneth *et al.*, 2001).^[3]

The disease is widely distributed across tropical and subtropical regions of the world, including several parts of India, where environmental conditions favor the proliferation of the tick vector. In India, sporadic as well as endemic occurrences of *H. canis* infection have been reported in different states, often associated with high tick infestation and poor management practices. However, the epidemiological pattern may vary considerably depending on geographic, climatic, and host-related factors.

Clinically, canine hepatozoonosis exhibits a broad spectrum of manifestations, ranging from subclinical or asymptomatic infections to severe systemic illness. The severity of clinical signs is largely influenced by the level of parasitemia, immune status of the host, presence of concurrent infections, and overall health condition (Baneth & Weigler, 1997).^[4] Common clinical signs include intermittent fever, lethargy, weight loss, anemia, lymphadenopathy, and musculoskeletal pain. In severe cases, dogs may exhibit marked debilitation and complications involving multiple organ systems.

Several authors have reported the occurrence of *Hepatozoon canis* infection across different regions of India, including Kerala (Priya *et al.*, 2004^[11]; Bindu Lakshmanan *et al.*, 2018^[5]), Uttar Pradesh (Vijayasarithi *et al.*, 2024)^[9], Himachal Pradesh (Devina *et al.*, 2018^[8]), and Tamil Nadu (Murugesan *et al.*, 2018).^[10]

Despite the documented occurrence of *Hepatozoon canis* infection in several regions of India, reports from Karnataka remains limited (Ananda *et al.*, 2005).^[1] Furthermore, since the establishment of the Veterinary College, Hassan, in 2007, there has been no documented evidence of its occurrence in the Hassan district of Karnataka. This absence of reports may be attributed to limited surveillance, subclinical nature of infections, or under diagnosis. In this

context, the present report assumes significance as it documents the recent occurrence of *H. canis* infection in dogs from Hassan district.

Materials and Methods

Study area and sample collection

The present study was carried out at the Department of Veterinary Parasitology, Veterinary College, Hassan, Karnataka, India. The Blood samples were collected from dogs presented for clinical examination with suspected haemoprotozoan infections at Teaching Veterinary Clinical Complex, Veterinary College, Hassan. Approximately 2–3 ml of blood was aseptically collected and transferred into EDTA coated vacutainer tubes and processed immediately or stored at 4 °C and analyzed within 24 hours.

Preparation and examination of blood smears

Thin blood smears were prepared on clean, grease-free glass slides using the wedge technique. The smears were air-dried, fixed in absolute methanol for 2–3 minutes, and subsequently stained with Giemsa stain (1:10 dilution, pH 7.2) for 20–30 minutes, following standard procedures as described by Coles (1986).^[6] The smears were gently rinsed with buffered water, air-dried, and examined under a light microscope under oil immersion (100×) for detection of haemoprotozoan parasites. Identification of parasites was based on morphological characteristics as described by Soulsby (1982)^[12].

Haematological analysis

Haematological parameters, including haemoglobin (Hb), total erythrocyte count (TEC), and platelet count, were estimated using standard veterinary haematological methods. The values obtained were compared with established reference ranges to assess haematological alterations, such as anaemia and thrombocytopenia, associated with haemoprotozoan infections.

Results

During a six-month period, three cases of *Hepatozoon canis* infection were diagnosed in dogs presented to the Teaching Veterinary Clinical Complex, Veterinary College, Hassan. The affected animals originated from three geographically distinct locations within Hassan district, indicating a wider distribution of the infection rather than a localized occurrence. Notably, no cases had been recorded in this region in previous years, suggesting a possible recent emergence or increased detection of the parasite. The diagnosis in these cases was established based on clinical presentation, haematological alterations, and confirmatory microscopic identification of the organism in Giemsa-stained peripheral blood smears.

Affected dogs consistently presented with clinical signs such as high fever, inappetance, congested mucous membranes, tick infestation, dullness, depression, and recumbency. Haematological analysis revealed anaemia, indicated by decreased haemoglobin concentration and reduced total erythrocyte count, along with thrombocytopenia in all cases examined. Microscopic evaluation of Giemsa-stained blood smears showed the presence of intracytoplasmic gametocytes within neutrophils. The organisms were elongated with rounded ends, featuring a centrally located, dark-stained nucleus and pale blue cytoplasm, consistent with the characteristic morphology of *Hepatozoon canis* as described by Soulsby (1982).^[12]



Fig 1: *Hepatozoon canis*

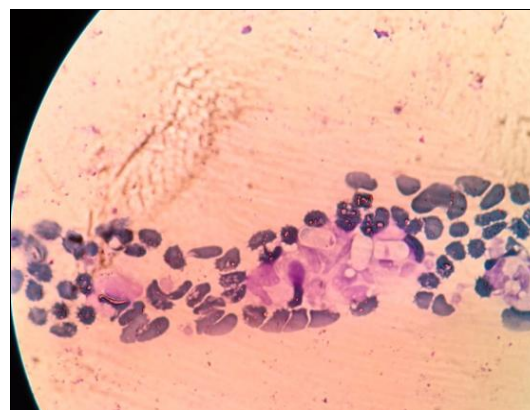


Fig 2: *Hepatozoon canis*

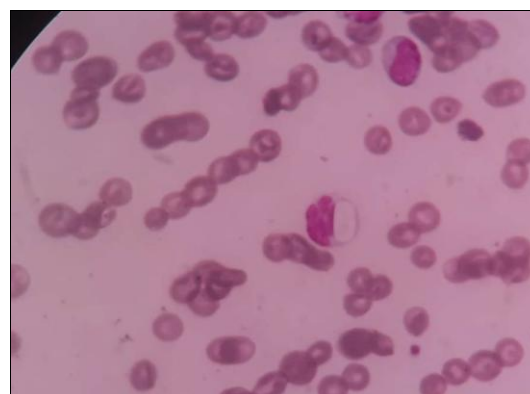


Fig 3: *Hepatozoon canis*

Fig (1-3): *Hepatozoon canis* gamont stages in a Giemsa-stained peripheral blood smear of dogs.

Discussion

The present study documents the recent occurrence of *H. canis* infection in dogs from Hassan district, Karnataka, where no cases had been recorded since 2007, suggesting a possible emerging pattern in this region. The sudden detection of three confirmed cases within a short span of six months indicates a change in epidemiological dynamics. Similar re-emergence or increased detection of *H. canis* infections has been reported from various parts of India, including Kerala, Uttar Pradesh, and Himachal Pradesh (Bindu Lakshmanan *et al.*, 2018^[5]; Vijayasarithi *et al.*, 2024^[9]; Devina *et al.*, 2018^[8]). These reports, along with the present findings, highlight the expanding distribution of the parasite across diverse geographical regions. Factors such as climate change,

increased vector density, and enhanced pet mobility may have contributed to the establishment and spread of the infection in previously unaffected areas (Baneth *et al.*, 2001).^[3]

The clinical signs observed in the present cases, including fever, inappetence, depression, tick infestation, and recumbency, are in agreement with earlier reports describing nonspecific but consistent manifestations of canine hepatozoonosis (Dantas-Torres, F. 2010).^[7] The presence of tick infestation in all affected dogs further supports the role of *R. sanguineus* as a principal vector in disease transmission. Additionally, the observed haematological alterations such as anemia, thrombocytopenia, and reduced erythrocyte counts corroborate previous studies, which attribute these changes to chronic infection, bone marrow suppression, and immune-mediated destruction of blood cells (Antonio *et al.*, 2008).^[2] Microscopic detection of characteristic gametocytes within neutrophils in Giemsa-stained blood smears remains a reliable and widely used diagnostic method in clinical settings. The parasitic stages observed in the present study were consistent with the classical descriptions of *Hepatozoon canis* (Soulsby, 1982).^[12] However, it is important to note that parasitemia may be low in subclinical or early infections, potentially leading to under diagnosis. Molecular techniques such as PCR have been reported to be more sensitive and specific for confirmation of infection (Bindu lakshmanan *et al.*, 2018^[5] and Devina *et al.*, 2018^[8]). The absence of reported cases over a long period followed by recent detection suggests either an emergence of infection or improved surveillance and diagnostic awareness. Urbanization, increased stray dog population, and frequent movement of pets between regions may facilitate the introduction and establishment of infected ticks in new areas. Hassan district, with its changing ecological and socio-economic landscape, may now be conducive for the survival and propagation of the vector, thereby increasing the risk of transmission.

Conclusion

This report documents the emergence of *Hepatozoon canis* infection in dogs in Hassan district, Karnataka. The occurrence of multiple cases within a short period indicates potential epidemiological significance and underscores the need for large-scale surveillance to assess prevalence and risk factors. Continuous monitoring, effective tick control, and increased clinical awareness are essential to limit disease spread. Further studies using molecular diagnostics and larger sample sizes are required to better understand the epidemiology and true prevalence of canine hepatozoonosis in this region.

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Disclosure of potential conflicts of Interest

The authors have no conflict of interest to declare.

References

1. Ananda KJ, D'Souza PE, Puttalakshamma GC, Dhanalakshmi H. Hepatozoonosis and ehrlichiosis in a dog: a case report. *Intas Polivet*. 2005;6(2):226-227.
2. Mundim AV, Morais IA, Tavares M, Cury MC, Santos Mundim MJ. Clinical and hematological findings in dogs

with hepatozoonosis. *Veterinary Parasitology*. 2008;153:3-8.

3. Baneth G, Samish M, Alekseev E, Aroch I, Shkap V. Transmission of *Hepatozoon canis* to dogs by naturally fed or percutaneously injected *Rhipicephalus sanguineus* ticks. *J Parasitol*. 2001;87:606-611.
4. Baneth G, Weigler B. Retrospective case-control study of hepatozoonosis in dogs in Israel. *Journal of Veterinary Internal Medicine*. 1997;11(6):365-370.
5. Lakshmanan B, Jose KJ, George A, Usha NP, Devada K. Molecular detection of *Hepatozoon canis* in dogs from Kerala. *J Parasit Dis*. 2018;42(2):287-290.
6. Coles EH. *Veterinary clinical pathology*. 4th ed. Philadelphia: W.B. Saunders; 1986.
7. Dantas-Torres F. Biology and ecology of the brown dog tick, *Rhipicephalus sanguineus*. *Parasites & Vectors*. 2010;3:26-26.
8. Sharma D, Katoch A, Kalia R, Moudgil AD, Kumar A. First case report of canine infection with *Hepatozoon canis* (Apicomplexa: Haemogregarinidae) in Himachal Pradesh. *Himachal Journal of Agricultural Research*. 2018;44(1-2):98-102.
9. Vijayasarithi MK, Yadav I, Mishra R, Nandini A, Anandu S, Bhand AC. Article title not provided. *Uttar Pradesh Journal of Zoology*. 2024;45(2):1-4.
10. Murugesan K, Saravanan S, Muthusamy PK, Ponnudurai G. Detection of *Hepatozoon canis* in dogs from Namakkal region of Tamil Nadu by conventional and molecular approach. *Int J Curr Microbiol App Sci*. 2017;6:811-817.
11. Priya P, Mathew B, Vijaykumar K, Saseendranath MR. A case report of canine hepatozoonosis. *Indian Vet J*. 2004;81:200-201.
12. Soulsby E. *Helminths, arthropods and protozoa of domesticated animals*. 7th ed. London: Bailliere Tindall; 1982.

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