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Tridib Ranjan Roy

Department of Veterinary
Medicine, West Bengal
University of Animal & Fishery
Sciences, Kolkata, West Bengal,
India

Tanmoy Rana

Department of Veterinary
Clinical Complex, West Bengal
University of Animal & Fishery
Sciences, Kolkata, West Bengal,
India

Partha Sarathi Jana

Department of Veterinary
Medicine, West Bengal
University of Animal & Fishery
Sciences, Kolkata, West Bengal,
India

Chandan Lodh

Department of Veterinary
Medicine, West Bengal
University of Animal & Fishery
Sciences, Kolkata, West Bengal,
India

Abhijit Nandi

Department of Veterinary
Parasitology, West Bengal
University of Animal & Fishery
Sciences, Kolkata, West Bengal,
India

Shamik Polley

Department of Veterinary
Biochemistry, West Bengal
University of Animal & Fishery
Sciences, Kolkata, West Bengal,
India

Corresponding Author:

Tanmoy Rana

Department of Veterinary
Clinical Complex, West Bengal
University of Animal & Fishery
Sciences, Kolkata, West Bengal,
India

Morphological and clinical evaluation of feline haemoparasites in domestic cats in and around Kolkata, West Bengal

**Tridib Ranjan Roy, Tanmoy Rana, Partha Sarathi Jana, Chandan Lodh,
Abhijit Nandi and Shamik Polley**

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Abstract

Blood-borne protozoans are a serious health problem for Animals, targeting predominantly blood and circulation-related tissues of the body of various animals cause several diseases. These can affect any animal and pose a serious problem in health. In the case of cats, infections caused by haemoprotozoa usually remain unnoticed; however, they can result in serious diseases and even death in those infected with the parasite. The present investigation was conducted to find the prevalence of Haemoprotozoa in cats visiting Veterinary Clinical Complex, West Bengal University of Animal & Fishery Sciences, Kolkata, India. A total of 42 pet cats were screened for the presence of Haemoprotozoa from Feb to September 2025 using microscopic examination of blood smears. Prevalence of Haemoprotozoa was recorded as 0.016% in Cytauxzoon species, whereas Babesia species and Hepatozoon species were not identified. The infected animals also exhibit clinical signs such as depression, anorexia, and anemia, which correlate with the pathogenic nature of Haemoprotozoan infections. This study reveals that there is a Haemoprotozoa infection prevalent in household cats around Kolkata and could create a potential health risk.

Keywords: Blood-borne protozoans, cat, haemoprotozoa, infection, prevalence

Introduction

Across the world, vector-transmitted illnesses in cats are appearing anew and returning, as their range broadens and their frequency increases under the influence of climatic, ecological, population-related, and human conduct drivers (Carli *et al.*, 2012) ^[5]. In domestic felines, infections caused by blood-dwelling parasites are an important health issue, and the resulting illness may span from long-lasting, symptom-light cases to sudden, severe, and sometimes deadly disease (Alvarado-Rybak *et al.*, 2016) ^[2]. To manage these conditions well and to enhance predicted outcomes, prompt and precise identification of the causative agents is crucial. Accordingly, this study set out to assess how common haemoprotozoan parasites are among household cats in Kolkata and nearby areas.

Materials and Methods

Study Area and Period

This investigation took place at the Veterinary Clinical Complex, West Bengal University of Animal & Fishery Sciences, Kolkata, India, from July 2024 to December 2024. In all, 42 pet cats representing different breeds, age groups, and sexes, and considered potentially ill, were chosen at random for assessment. For every cat, a veterinarian performed a thorough general and clinical evaluation. The recorded clinical measures were rectal temperature, breathing rate, heart rate, lymph node (LN) enlargement, and mucous membrane (MM) pallor or icterus.

Sample Collection

About 0.5 ml of blood from the saphenous vein was collected under aseptic conditions and

placed into a labelled EDTA vial for haematology. In addition, for each cat, thin peripheral smears were made aseptically from the ear tip for later microscopic review.

Microscopic Examination

Blood films were made, then fixed and Giemsa-stained by following the routine method cited by Soulsby (1982) [6], after which they were assessed by microscopy.

Using a light microscope (Olympus, Japan) at 100× oil-immersion, the slides were inspected to determine whether haemoparasites were present. Identification relied on morphology, distinguishing organisms located inside red blood cells (*Cytauxzoon* spp., *Babesia* spp.) from those occurring outside red cells (*Trypanosoma* spp.).

Results and Discussion

Review of the peripheral smear microscopy showed *Cytauxzoon* spp., yielding an infection frequency of 7.14%. In three cats (3/42), the *Cytauxzoon* forms were seen within erythrocytes as many minute, rounded, anaplasmod, dot-like piroplasms (Fig. 1). During microscopic evaluation of the blood films, no circulating *Hepatozoon* spp. gamonts were seen. Likewise, none of the samples examined showed *Babesia* spp.-like merozoites.

While collecting samples, several signs were observed among the cats evaluated, including mucous membrane pallor, weakness, dehydration, an unkempt hair coat, and nasal discharge (Fig 2). Table 1 provides the signalment and clinical observations for cats whose smears were positive for *Cytauxzoon* spp.

Sl. No.	Case No.	Breed	Sex	Clinical Presentation
1	Case No. 1	Domestic cat	Female	Dehydration, anorexia, and pale mucous membrane
2	Case No. 2	Domestic Cat	Male	Pyrexia (106.2°F) and weakness
3	Case No. 3	Domestic cat	Male	Dullness, anorexia, and depression

The clinical findings recorded in this report—pyrexia, diminished food intake, debility, and sluggishness—are consistent with what Bauer *et al.* (2008) [4] described, as they observed typical signet-ring forms of *Cytauxzoon felis* inside red blood cells in all specimens they reviewed. Their study indicated that ill cats displayed hallmark cytauxzoonosis signs including marked fever (104–106°F), lethargy, and anorexia, which parallels the observations made in the present investigation.

In the present investigation, the occurrence of *Cytauxzoon* spp. (0.016%) is lower than the figure given by Alho *et al.* (2016) [1]. The lower proportion noted here could be associated with factors such as geographic variation, differences in the sampling period, or minimal parasitemia among infected cats. The findings presented here are in line with Alvarado-Rybak *et al.* (2016) [2], who similarly observed neither circulating *Hepatozoon* spp. gamonts nor *Babesia* spp. merozoites within erythrocytes on smear examination. In contrast, Tasker *et al.* (2009) [7] documented pear-like *Babesia* merozoites on smears from 2 out of 122 domestic cats evaluated for blood parasites, corresponding to 1.64%, and they also confirmed this using polymerase chain reaction (PCR) molecular analysis. The absence of detectable parasitic forms in smears may be attributable to extremely low parasitemia, as suggested by Carli *et al.* (2012) [5], who proposed that very slight parasitemia in felids could account

for *Hepatozoon* gamonts being absent from peripheral blood smears.

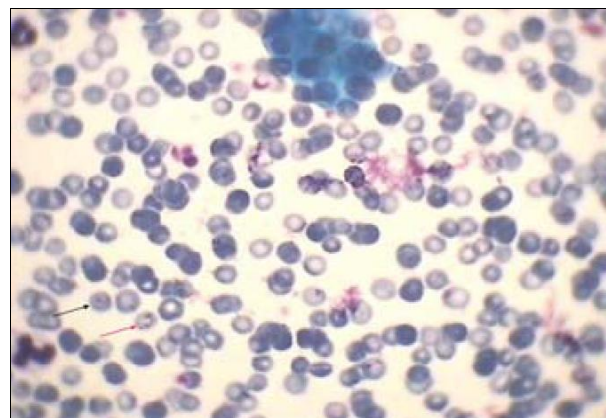


Fig 11: Blood smear showing intracytoplasmic piroplasms of *C. felis* in erythrocytes



Fig 2: Cat tested positive for haemoparasitic infection

Conclusion

These results indicate that infection with *Cytauxzoon* spp. ought to be included in the list of possible causes when assessing feline haemoparasitic disease, even if parasite levels are low and detection by microscopy proves challenging. In addition, they highlight how important regular testing, control of vectors, and increased vigilance are for preventing and managing haemoprotozoan infections in cats, which are frequently discovered by chance while cats are being evaluated for other, unrelated problems.

Conflict of Interest: Not available.

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