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A case report on *Babesia felis* in a Persian cat and its hemato-biochemical changes

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Abstract

A one and half years old months old female, Persian cat get admitted in a private veterinary clinic, Jaipur. The dog showed the clinical signs of pyrexia, conjunctivitis, muco purulent nasal discharge. Microscopic examination of the Giemsa stained blood smear revealed intra erythrocytic and extra erythrocytic *Babesia felis*. The hemato-biochemical parameters revealed changes in their values from their normal values. The hemogram revealed decreased levels of Hb, TLC, Hematocrit values, RBC count, MCH and platelet count and the serum biochemistry studies revealed elevated ALT only and the other parameters remained intact (Table). Based on the above findings and as per the recommendation, the dog was treated for *B. felis* infection successfully with atovaquone at the dose rate of 3.5 mg/kg body weight administered per OS (PO) every 24 hours with azithromycin at the dose rate of 10 mg /kg body weight PO for 10 days.

Keywords: Canine- *Babesia felis*, Clinical and hemato biochemical, parameters

Introduction

Babesiosis is a tick borne protozoan disease affecting domestic and wild animals and humans worldwide caused by piroplasms. (Alvarado-Rvbak *et al.* 2016) [2]. Birkenheuer (2012) [6] reported the prevalence of feline babesiosis. *B. felis* was reported by Jackson and Dunning (1937) [9] in South Africa. *B. felis sensu stricto* was found in 2.9% healthy cats in Qatar (Alho *et al.* (2017) [1]. Salim *et al.* (2018) [14] studied the prevalence of *B. felis sensu stricto* in Lahore at 45% level. Penzhorn *et al.* (2004) [12] reported *B. felis sensu stricto* in South Africa in severe form. *Babesia panickeri* (clade VI) was described in a 3 months old cat in India with babesiosis clinical signs. (Panicker *et al.* (2020) [11]. Morethan 10 species and subspecies in babesia have been identified and only few of them have been associated with clinical signs. (Penzhorn and Oosthuizen 2020) [10]. Cats infected with *B. felis* usually suffer with high parasitaemia before showing any clinical signs. (Ayoop *et al.* 2010) [3]. Anorexia, lethargy, and weakness were being the most common, and fever, splenomegaly, jaundice, emesis and respiratory signs being rare. (Penzhorn B L, Schoeman T, Jacobson L S, 2004) [12]. Cats with complicated cases develops renal failure, pulmonary edema, hepatitis and neurological alterations. Baneth *et al.* (2004) [4] reported that most positive animals were asymptomatic or showed a mild clinical course, *i.e* fever, weakness, anorexia and anemia. In the present case report a Persian cat, female, one and half years old attended a private veterinary clinic in Jaipur city with the clinical signs of anorexia, dullness, and anemia. The dog was investigated for its etiology followed by its hemato-biochemical changes for better understanding of the infection.

Materials and Methods

A Persian female cat aged one and half years old, brought to a private veterinary clinic in Jaipur, with the history of anorexia and lethargy. The cat was dewormed regularly and vaccinated against Feline pan leucopenia, Feline infectious peritonitis, Feline infectious anemia and Rabies.

Laboratory confirmation studies

Blood smear examination was carried out using Giemsa and the intra and extra erythrocytic forms of the parasites on blood smear examination in cats infected with babesiosis were confirmed as suggested by Schoeman *et al.* (2001) [15]. (Fig1 & 2).

Results and Discussion

Clinical signs

In this case the dog suffered with anorexia, lethargy, hair fall and anemia. Futter *et al.* (1980) [7, 8] reported lethargy, anorexia, and anemia as regular signs and icterus as occasional sign and elevated temperature is not a typical feature. Futter & Belonje, (1980) [7, 8] reported that most clinical signs were secondary to hemolytic anemia and cats cope well with anemia and show mild clinical signs and in some cats' complications of babesiosis occur and the cats suffer with renal failure, pulmonary edema, hepatopathy, and neurological disorders. Salim *et al.* (2018) [14] confirmed *B. felis sensu stricto* by blood smear examination in a cat with clinical signs of lethargy and anemia. Baneth *et al.* (2004) [4] reported mild chronic disease by other babesia species. Bendangla and Varshney, (2006) diagnosed *B. felis sensu stricto* in India by blood smear examination in a cat which suffered with the clinical signs of fever, lethargy, and anorexia and reported successful recovery by primaquine phosphate treatment. The clinical signs correlate with the observations as reported by many authors in this case also.

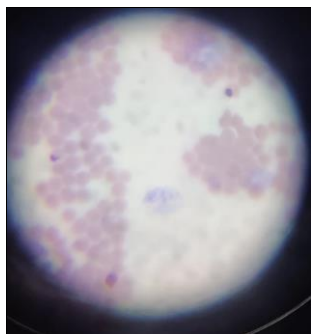


Fig 1: *B. felis* –Extra and intracellular

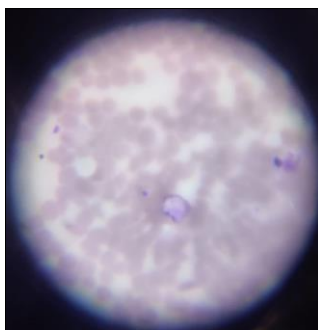


Fig 2: *B. felis* –Extra and intracellular

Hematology

Susana Remesar *et al.* (2022) [16] reported hemolytic regenerative anemia, *i e* hematocrit 12.8%, Hb 4.3 g/dl, thrombocytopenia 26,000 per miclit and leukocytosis 22.100/miclit. Remo Lobetti (2004) [13] reported anemia, thrombocytopenia and leukocytosis. Schoeman *et al.* (2001) [15] reported hemolytic, regenerative, macrocytic and hypothermic anemia, inconsistent thrombocytopenia, without changes in white blood cell counts. Blood smear examination revealed *B. felis*. In this case study, decreased Hb (8.6 g/dl), TLC (14200 thou/mm³), hematocrit (23.4%), RBC(3.79 million/mm³), MCH(17.3 pg), MCHC (30.2 g/dl), and plateletes (16,6000 thou/mm³) were observed (Table) with elevated lymphocytes.

Serum biochemistry

Remo Lobetti (2004) [13] reported elevated urea, bilirubin, hemoglobinuria, and proteinuria and the liver function tests

revealed elevated liver enzymes and serum urea in complicated cases.

Susana Remesar *et al.* (2022) [16] reported elevated ALT and lower level of creatinine.

Schoeman *et al.* 2001 [15]; Penzhorn *et al.* (2004) [12] reported elevated ALT due to liver damage. Schoeman *et al.* (2001) [15] reported elevated total protein, total bilirubin as a result of hemolysis. In this case the Persian cat showed elevated ALT (60.12 U/L against a normal value of 12-42) only as reported by many authors in general and the other biochemical parameters were intact.

Table 1: Hemato-Biochemical Studies

Parameters	Findings	Unit	Normal values	Diagnostic interpretation
Complete blood count				
Hemoglobin	8.6	g/dl	12.0-18.0	Decreased
TLC	14,2000	Thou/cu.mm	6.0-17.0	---
Differential leucocyte count				
Neutrophils	50	%	60.0-70.0	Decreased
Lymphocytes	40	%	12.0-30.0	Elevated
Eosinophil	06	%	2.0-10.0	
Monocytes	04	%	3.0-10.0	
Basophils	00	%	0.0-1.0	
RBC parameters				
RBC	3.79	mill/mm ³	5.5-8.5	Decreased
PCV	23.4	%	37.0-55.0	Decreased
MCV	61.9	fl	60.0-77.0	
MCH	17.3	pg	19.5-24.5	Decreased
Platelet count	166000	thou/cu.mm	200.0-900.0	Decreased
Biochemical profile				
Liver function tests				
Bilirubin total	0.32	mg/dl	0.1-0.3	
Bilirubin direct	0.10	mg/dl	0.1-0.4	
Bilirubin-indirect	0.22	mg/dl	03.0-0.70	
SGOT/AST	60.12	U/L	12-42	Elevated
SGPT/ALT	72.14	U/L	29-145	
Alkaline phosphatase	185.02	U/L	10-72	
Total protein	6.11	g/dl	6.0-7.9	
Albumin	4.12	g/dl	2.4-3.9	
Globulin	3.03	g/dl	2.6-5.1	
Kidney function tests				
Blood urea nitrogen (GLDH)	20.4	mg/dl	8.8-25.9	
Creatinine	1.03	mg/dl	09.2.2	
Serum uric acid (Trinder peroxidase)	0.20	mg/dl	0-2	
Sodium	154.0	mmol/L	150-160	
Potassium	4.11	mmol/L	3.5-5.5	
Chloride (ISE)	115.3	mmol/L	107-123	
Phosphorus	3.98	mg/dl	3.0-6.1	

Conclusion

This study reporting the prevalence of *Babesia felis* infection in feline and its clinical and hemato biochemical changes in a Persian female young cat.

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