

CASE REPORT

Incidence of Feline Babesiosis and its Diagnosis with Acridine Orange Staining Technique

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ABSTRACT

A two-year-old non-descript tomcat was presented to Small Animal Medicine Unit, TVCC, RIVER, with the history of exercise intolerance and anorexia for the past 10 days. Clinical examination revealed lateral recumbency, sunken eye balls, pale and icteric conjunctival mucous membranes, swollen popliteal lymph nodes and RT: 40.1°C. Haematology revealed severe anaemia and thrombocytopenia and examination of peripheral blood smear by acridine orange staining technique showed positive for *Babesia felis*. Mild elevation in ALT and AST was noticed in serum biochemistry. Cardiac auscultation and electrocardiography revealed tachycardia and presence of ventricular premature complexes. The cat was treated with Primaquine phosphate, Doxycycline, Ranitidine, syrup Himpyrin and syrup Hemobest for 3 days. The animal showed improvement initially but was later succumbed due to debilitation on 3rd day of initiation of treatment.

Key words: Feline babesiosis, *Babesia felis*, Acridine Orange staining, Primaquine phosphate

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INTRODUCTION

Feline Babesiosis is a tick borne protozoal disease caused by an intra-erythrocytic parasite *Babesia felis* and *Babesia cati* with lethargy, anorexia and anaemia as the most consistent findings. In susceptible animals *Babesia* piroplasms cause severe disease [1]. The intraerythrocytic parasites known to cause disease worldwide. Multiple species under the genus *Babesia* were known to cause babesiosis in cats including *Babesia felis*, *B. herpailuri*, *B. cati*, *B. canis subsp. presentii*, *B. canis subsp. canis*, *Theileria annae*, *B. pantherae*, *B. microti*-like, and *B. leo* [2] whereas *Babesia cati* and *B. felis* were known to cause disease in Asia. Out of all, *B. felis* was regarded as small and highly pathogenic species among cats. The size of the organism varies around 0.9 - 0.7 µm and can be commonly seen in erythrocytes as singular or paired annular bodies with pear shape or rarely tetrads (maltese cross). Similar to that of canine babesiosis, parasite induced erythrocyte damage will be seen in infected felines [3] however cats rarely develop intravascular haemolytic crises [4]. Immunocompetence of the host, chronicity of infection, and concurrent disease determines the clinical severity of the disease in *Babesia felis* infection [1]. Depression, inappetance, a roughened hair coat, exercise intolerance, weight loss, weakness, pallor, tachycardia, tachypnea, pica, vomiting, and diarrhea were found to be the common clinical signs in feline babesiosis. According to some recent reports [1] icterus is uncommon or was reported only in 18 - 21 % of naturally infected cats. Direct visualization of the organism under light microscopy was reported to be the traditional methods for diagnosing babesiosis. Examination of Giemsa stained thin blood smears was preferred method. Molecular techniques include PCR and reverse line blot hybridization techniques [1]. Anti-malarial drug Primaquine phosphate was the only proven drug proven to be reliably efficacious in treatment of small feline babesiosis.

MATERIALS AND METHODS

Tom cat of 24-month age presented to the Small Animal Unit of Teaching Veterinary Clinical Campus of Rajiv Gandhi Institute of Veterinary Education and Research was subjected for routine clinical

examination and laboratory examination. Blood smears were collected aseptically from ear tip and were subjected for Giemsa staining [5] and Acridine Orange staining for detection of blood parasites as described by [6]. The cat was subjected for electrocardiography at 25mm/sec and 10mm/mV using ECG 300 G, Concept Bio medicals and Lead II was used to interpret electrocardiogram variables. The cat was treated with Tab. Malirid® (Primaquine phosphate) @ 0.5 mg/Kg PO at 72 hrs interval, Tab. Dr. Doxy® (Doxycycline) @ 10mg/Kg PO for 3 days, Inj. Rantac® (Ranitidine) @ 1mg/Kg, syrup Himpyrin®- 1ml bid and syrup Hemobest®- 1ml bid.

RESULTS AND DISCUSSION:

Clinical examination revealed dull and woebegone state of the animal with pallor (Fig. 1 & 2), slightly swollen popliteal lymph nodes and slight dehydration with RT: 40.1°C. Haematology revealed severe anaemia (Hb: 3.8 g%, PCV: 12.1 %, RBC: 2 million/mm³, MCV: 60.9 fl, MCH: 19.0 pg, MCHC: 31.4%) and thrombocytopenia (25,000 / mm³) with DLC: N-54%; L-38%; M-5%; E-3%. Serum biochemistry revealed BUN: 22mg%, creatinine: 1.0 mg%, ALT: 83 IU/L, AST: 71 IU/L and total bilirubin: 0.5 mg% (direct- 0.1 mg% and indirect-0.4 mg%). Cardiac auscultation and electrocardiography revealed tachycardia and presence of ventricular premature complexes (Fig. 3). Initial blood smear examination by Giemsa staining method was negative for presence of any blood parasites but acridine orange staining of the blood smears showed positive for presence of *Babesia* species in the erythrocytes (Fig. 4) and was subjected for treatment with Primaquine Phosphate and Doxycycline combination. Mild improvement was noticed initially but the cat was succumbed on 3rd day of treatment due to debilitation. As proposed by [6], Acridine Orange staining technique was proved to be a reliable method for identification of blood parasites.

The common haematological abnormalities that could be found in feline babesiosis were anemia, thrombocytopenia and alterations in leukocytic count [1] which were also seen in this present case. Significant elevation in alanine aminotransferase and clinical icterus with severe anaemia can be seen in feline babesiosis [7] were also present in this case. Presence of tachycardia and ventricular premature complexes might be caused due to severe anaemia and poor conductivity of heart.

Even though Primaquine Phosphate was the recommended drug for feline babesiosis, due to severe debilitation the animal was succumbed on the 3rd day of initiation of the treatment.

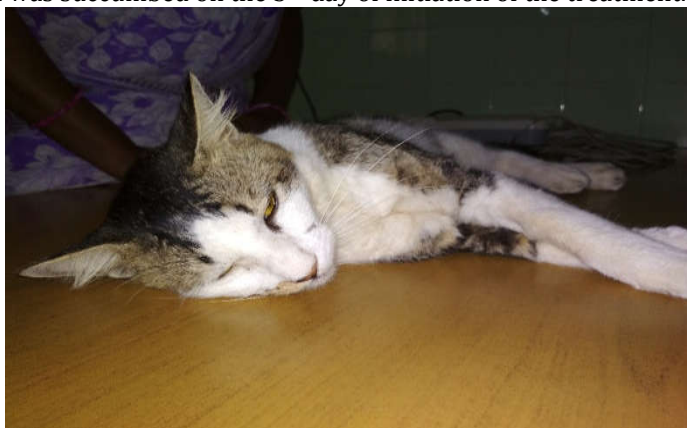


Fig. 1: Tomcat in lateral recumbency with dull and depressed look

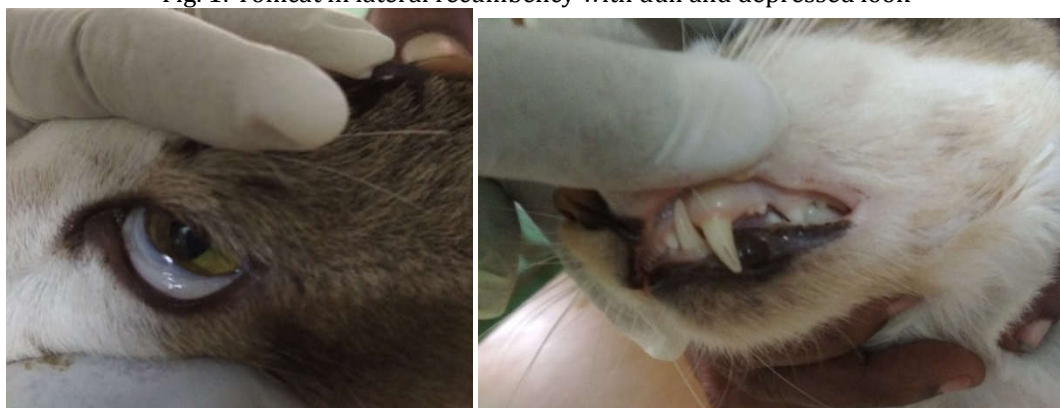


Fig. 2a and Fig. 2b: showing pallor mucous membranes

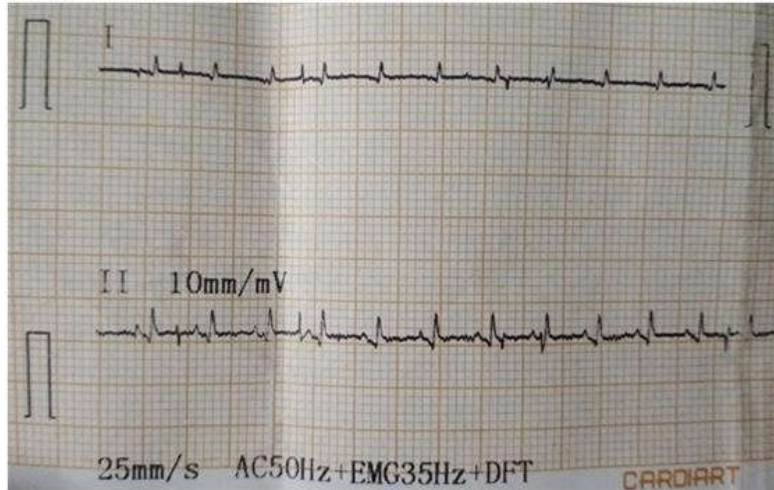


Fig. 3: Electrocardiograph showing tachycardia and ventricular premature complexes

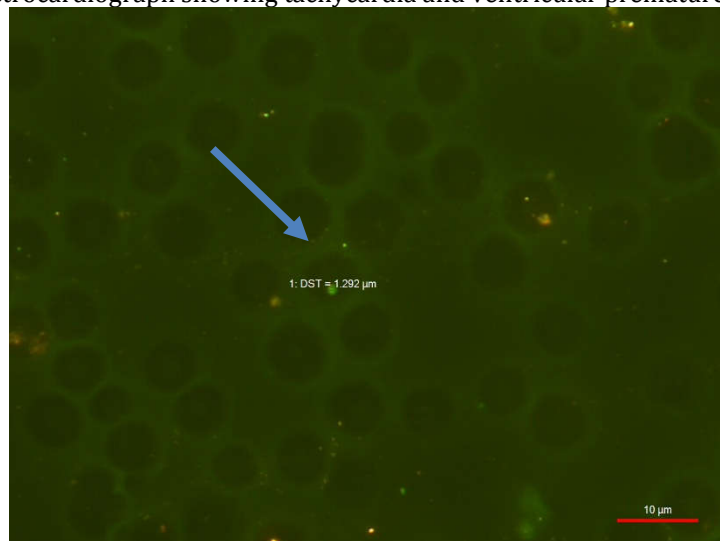


Fig. 4a: *Babesia felis* (1.292 µm) in erythrocyte focused in fluorescent microscope (100X)

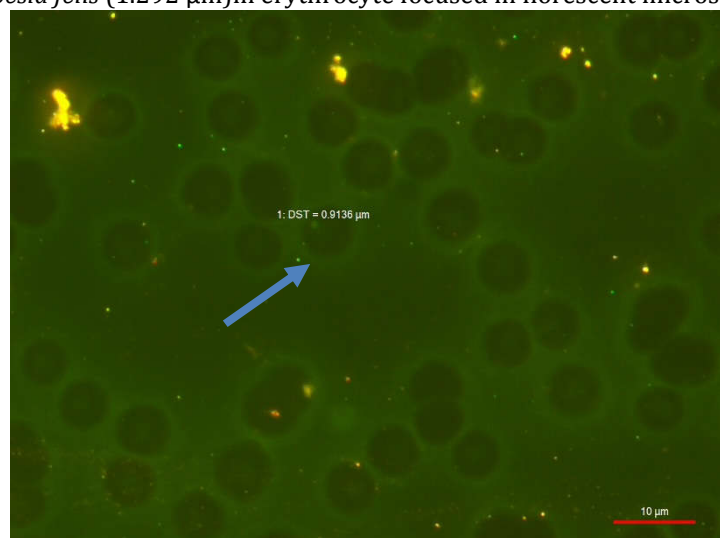


Fig. 4b: Blood smear stained with Acridine Orange stain showing infected Red blood cell

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