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Clinical management of feline trypanosomiasis (*Trypanosoma evansi*) in six domestic short-haired cats

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Abstract

Trypanosomiasis is a significant zoonotic disease that affects a wide variety of domestic and wild animals, as well as humans. Although cats are generally considered resistant and feline infections are uncommon, when they do occur, they pose notable diagnostic and therapeutic challenges. Six domestic short-haired cats were presented to the Veterinary Clinical Complex (VCC), College of Veterinary Science, Rajendra Nagar, Hyderabad, exhibiting clinical signs including bilateral corneal opacity (83.33%) for 10-12 days, enlargement of lymph nodes (83.33%), fever (66.67%), anorexia (66.67%), pale mucous membranes (50.00%) and dehydration (33.33%). Neurological abnormalities such as incoordination of gait and circling movements were also observed. Wet blood films were prepared and examined under a 10× objective, and additional blood smears were stained with Giemsa stain and observed under oil immersion (100×). Diagnosis of *Trypanosoma* spp. was done based on microscopic findings, clinical signs, case history, and hematological results. All six cats were treated with the trypanocidal drug Diminazene aceturate at a dose rate of 3.5 mg/kg body weight, administered via deep intramuscular injection once daily for five consecutive days. Supportive therapy, including antibiotics and fluid management, was also provided. Noticeable clinical improvement was observed from the third day of treatment onwards. This report emphasizes the importance of considering feline trypanosomiasis as a differential diagnosis in cats showing nonspecific clinical signs such as anemia and fever, particularly in endemic regions. Early diagnosis and prompt treatment can lead to successful recovery and help prevent further transmission of this zoonotic parasite.

Keywords: *Trypanosoma evansi*, feline trypanosomiasis, Diminazene aceturate, cats, anemia, zoonosis

Introduction

Trypanosomiasis is a zoonotic protozoal parasitic disease that affects a wide range of domestic and wild animals as well as humans (Panigrahi *et al.*, 2015) [13]. The disease is caused by protozoan parasites belonging to the genus *Trypanosoma*, of which *Trypanosoma evansi* and *Trypanosoma brucei* are the most common species responsible for animal infections. Transmission occurs primarily through the bites of hematophagous insect vectors such as tsetse flies, *Tabanus* (horse flies), *Stomoxys* (stable flies), and *Triatomine* bugs (kissing bugs). These vectors transmit the parasite by injecting infective trypomastigotes into the skin of the host during blood feeding. (Singh *et al.*, 1993) [15]. Although trypanosomiasis is widely recognized as a disease of large domestic animals such as cattle, camels, and horses in Africa and Asia, (Lun and Desser, 2013) [7], infections have also been reported in other vertebrate hosts (Da Silva *et al.*, 2005a, Dávila and Silva, 2009, Herrera *et al.*, 2004, Joshi *et al.*, Tarello, 2008) [2, 5, 10, 16] including cats. However, feline trypanosomiasis is relatively rare, as cats appear to exhibit a higher degree of natural resistance compared to other vertebrate hosts. In addition to vector transmission, cats may also acquire infection through ingestion of carcasses of infected animals (Nwoha, 2013) [12]. Geographically, feline trypanosomiasis has been documented in several regions including India, Iraq, and Indonesia, suggesting that while uncommon, the disease should be considered in differential diagnoses of feline patients showing signs of anemia, neurological abnormalities, or wasting in endemic areas.

Materials and Methods

Six domestic short-haired cats, aged between one and two years (four males and two females), were presented to the Veterinary Clinical Complex, Rajendra Nagar, with a history of anorexia, fever corneal opacity and progressive weakness were selected for present study. According to the owners, none of the cats had been previously vaccinated or dewormed. Detailed physical and clinical examination done. Based on the clinical presentation and case history, hemoprotozoan infection was suspected. Blood samples were collected

aseptically from the cephalic vein of each cat into EDTA-coated tubes for hematological and parasitological evaluation. Wet blood films and Giemsa-stained thin smears were prepared and examined microscopically under oil immersion (100× magnification) for the detection of trypanosomes. Routine hematological parameters, including total erythrocyte count (TEC), total leukocyte count (TLC), hemoglobin concentration, and platelet count, were analyzed using an automated hematology analyzer to assess the degree of anemia and leukocytic response in the affected cats.



Fig 1: Bilateral corneal cloudiness

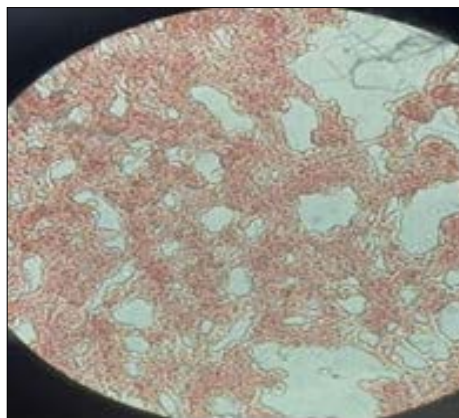


Fig 2: Wet blood film showing transparent Trypomastigotes

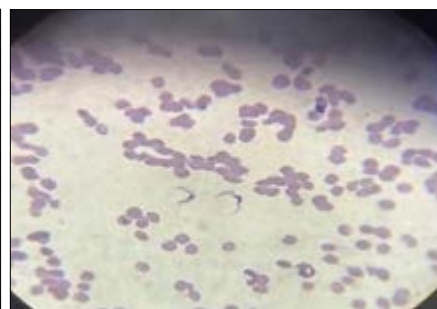
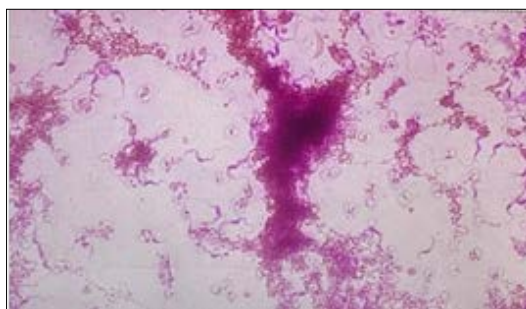


Fig 3: Giemsa stained blood smears showing Trypomastigotes under oil immersion; 100x magnification

Results and Discussion

On clinical examination, four cats were pyrexia, with body temperatures ranging from 103.5°F to 104.2°F, while all six cats showed varying degrees of dehydration, (Dakshinkar *et al.*, 2002, Tarello, 2008) [7, 16] indicated by prolonged skin tenting (>4 seconds). Pale mucous membranes were observed in three cats, suggesting anemia. Bilateral corneal cloudiness (Fig. 1) was evident in five cats, and enlarged lymph nodes were palpable in five cats. Neurological signs, including incoordination of gait (Brandão *et al.*, 2002, Silva *et al.*, 2009, Rodrigues *et al.*, 2005) [5, 2], and circling movement, were noted in several animals, indicating possible nervous system involvement. Microscopic examination of the Giemsa-stained blood smear revealed the presence of extracellular, flagellated trypomastigote forms of *Trypanosoma evansi*, confirming trypanosomiasis (Fig. 2 & 3). The organisms were characterized by an elongated body, a centrally placed nucleus, a posterior kinetoplast, and a free flagellum extending from the undulating membrane. The hematological analysis showed a marked decrease in total erythrocyte count (TEC), hb concentration (Table.1), along with leukopenia. These findings are indicative of hemolytic anemia and bone marrow suppression, which are common hematological alterations observed in trypanosome infections (Da Silva *et al.*, 2009a) [5]. The pathogenesis of trypanosomiasis in cats mentioned in biochemical findings (Table. 2) involves

multiple mechanisms including hemolysis, immune-mediated destruction of erythrocytes, and vascular damage caused by parasite toxins and immune complexes. The resulting anemia, tissue hypoxia, and metabolic derangements contribute to clinical signs such as pale mucous membranes, weakness, neurological manifestations, and dehydration (OIE, 2022).

All six affected cats were treated with Diminazene aceturate at a dose rate of 3.5 mg/kg body weight, administered intramuscularly for five consecutive days. (Da Silva *et al.*, 2009b; (Howes *et al.*, 2011) [6]. Supportive therapy included isotonic fluid replacement to correct dehydration, vitamin B-complex supplementation, and hematinics to enhance erythropoiesis and overall recovery.

Following initiation of therapy, noticeable clinical improvement was observed in all six cats within five days. Appetite and hydration status gradually normalized, body temperature returned to the physiological range, and the mucous membranes regained normal pink coloration. However, mild weakness persisted in a few animals for several days, indicating that complete hematological recovery required additional time. Although felines are generally regarded as relatively resistant hosts to *Trypanosoma evansi* infection, predisposing factors such as physiological stress, inadequate nutrition, or concurrent systemic diseases may compromise their immune response and lead to the clinical manifestation of trypanosomiasis.

Table 1: Mean $\pm$ SE values of Hematological findings in affected cats

Parameter	Infected cats (n=06)	Reference values*
Hb (g/dl)	8.44 $\pm$ 0.32	9.3-15.3
TEC (10 ³ / μ L)	3.92 $\pm$ 0.40	4.6-10
TLC106/ μ L	3.89 $\pm$ 0.45	5.5-19.5
PCV (%)	23.81 $\pm$ 0.53	28-49
PLT (x10 ⁵ / μ L)	2.02 $\pm$ 0.67	2-5
Neutrophils (%)	57.30 $\pm$ 0.44	35-85
Lymphocytes (%)	29.46 $\pm$ 0.35	12-45
Monocytes (%)	8.45 $\pm$ 0.42	2-9
Eosinophils (%)	4.43 $\pm$ 0.54	0

*Reference values taken from Merck Manual

Table 2: Mean $\pm$ SE values of serum biochemical findings in affected cats

Parameter	Infected cats (n=06)	Reference values*
ALT(U/L)	37.04 $\pm$ 1.43	10-100
ALP(U/L)	78.34 $\pm$ 1.87	6-102
AST(U/L)	44.34 $\pm$ 0.62	10-100
Total protein(g/dL)	6.34 $\pm$ 0.85	5.2-8.8
Albumin(g/dL)	2.24 $\pm$ 0.77	2.5-3.9
Total bilirubin(mg/dL)	0.24 $\pm$ 0.66	0.1-0.3
BUN (mg/dL)	18.34 $\pm$ 0.50	10-30
Creatinine (mg/dL)	1.44 $\pm$ 0.72	0.8-1.8
Glucose (mg/dL)	46.34 $\pm$ 1.42	60-100

*Reference values taken from Merck Manual

Conclusion

Feline trypanosomiasis, although relatively uncommon, should be considered as a differential diagnosis in cats presenting with anemia, pyrexia, lymphadenopathy, or neurological signs, particularly in areas where the disease is endemic. The present report underscores the importance of thorough clinical assessment, coupled with wet blood film examination for the definitive identification of *Trypanosoma evansi* infection in cats. Prompt diagnosis and timely administration of Diminazene aceturate, along with appropriate supportive therapy, can result in favorable clinical outcomes. Increasing awareness among veterinary practitioners regarding the occurrence of trypanosomiasis in small animals is vital for early detection, effective management, and prevention of this potentially zoonotic disease.

Conflict of Interest

Not available

Financial Support

Not available

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