



## Trypanosomiasis in a Dog - A Case Report

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### ABSTRACT

The present case of trypanosomiasis is reported in a five-year-old, male, non-descriptive dog that is presented with the clinical signs of inappetence, lethargy and onset of corneal opacity of both the eyes for three days. On clinical examination, high temperature, congested conjunctival mucus membranes but slightly pale buccal mucus membrane, enlargement of prescapular lymphnode were evident. Hemato-biochemical findings revealed moderate anemia with mild neutrophilia, hypoglycemia, hypoalbuminemia and elevated creatinine values. Confirmation of case was done by microscopic examination of *Trypanosoma sp.*, organism in wet blood smear and also thin blood smear with Giemsa Stain. The dog was put on therapeutic regimen comprised of Diminazine aceturate @ 3.5 mg/kg deep IM two doses on alternative days along with parenteral fluids, Oxytetracycline injection intravenously at the dose rate of 10mg per kg body weight, NSAID, multivitamins and hematinics. The dog responded well on third day of therapy with normal appetite and was active and alert. Hemato-biochemical parameters were back to near normal levels on seventh day and blood smear was also negative for *Trypanosoma sp.* The cornea of both the eyes were clear on seventh day of post therapy.

**Key Words:** Trypanosomiasis, Dog, Bilateral corneal opacity, Diminazine aceturate

### INTRODUCTION

Trypanosomiasis is a hemoprotozoan disease caused by various members of *Trypanosoma sp.*, an extracellular parasite affecting different species of domestic and wild animals. Canine trypanosomiasis is divided into two primary types: The American form (Chagas disease), due to *Trypanosoma cruzi* infection, and the African form (sleeping sickness or surra), provoked by *Trypanosoma evansi*. However, in the Indian sub-continent, trypanosomiasis of dog is mostly due to *T. evansi* (Behera *et al*, 2018). This disease was originally enzootic and affected only wild animals, including mammals and birds, which served as reservoirs. Later, it spread to domestic animals such as horses, cattle and dogs. Dogs are significantly affected, because they participate in the transmission and maintenance cycles of these parasites viz., consumption of fresh animal carcasses that are infected by trypanosomiasis (Eloy and Lucheis, 2009). The disease is reported to be transmitted mainly by various biting flies like Tsetse, Tabanus, Stomoxys, Culicoides

etc. (Green, 2006). Severity of canine Trypanosomiasis ranges from acute, subacute to chronic. In dogs an acute and fatal type is commonly seen and death possibly occurs in 2 - 4 weeks if left untreated. Clinical signs are characterized by weight loss, progressive weakness, anorexia, anaemia, intermittent fever, conjunctivitis, edema of limbs, enlarged superficial lymph nodes, apathy and corneal opacity which are characteristic findings in trypanosomiasis (Thirunavukkarasu *et al*, 2004 and Eloy and Lucheis, 2009). The acute phase of the disease in dogs can be diagnosed by direct demonstration of the presence of parasite in the blood or by a blood smear stained by the Giemsa method. There are a number of effective trypanosomacidal agents for dogs including suramin, quinapyramine and diminazene (Rani and Suresh, 2007). Diminazene aceturate has been shown to be an effective treatment for *T. evansi* in dogs, as it presents a higher therapeutic index than other drugs, in addition to a low incidence of resistance (Doyle, 2006).

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**CASE HISTORY AND OBSERVATION**

A five year old, male, non-descriptive dog was presented to the Department of Veterinary Clinical Complex, College of Veterinary Science (SVVU), Garividi with the history of inappetance, lethargy and onset of corneal opacity of both the eyes since three days. On further questioning, the owner reported that the dog fed on raw mutton offal ten days back. Upon clinical examination, high temperature (103.8°F), congested conjunctival mucus membranes but slightly pale buccal mucus membrane, enlargement of prescapular lymphnode, Skin tenting test <3-4 seconds were evident. Ophthalmic examination revealed

complete cloudiness of cornea of both the eyes (Figure 1). The heart rate, pulse rate and respiratory rate were within the normal range. Examination of peripheral wet blood smear revealed presence of *Trypanosoma sp.* However, whole blood, serum and peripheral thin blood smear were sent for hemato-biochemical analysis. Moderate anemia with mild neutrophilia, hypoglycemia, hypoalbuminemia and elevated creatinine values with normal ALT, AST and ALP values were noted. Slight elevation in total protein was recorded (Table 1). Giemsa Stain blood smear revealed *Trypanosoma sp.*, organism (Figure 2&3).

**Table 1. Hematology and Serum biochemical values of *Trypanosoma* affected dog**

Parameters	Reference range	Day 0 (Pre therapy)	Day 7 (Post therapy)
Hemoglobin (g/dl)	12 -15	9.4	10.1
Total RBC (million/ $\mu$ l) count	5.5 - 8.5	6.2	6.5
PCV (%)	37 - 55	41	42
Total WBC count (thousands/ $\mu$ l)	6 - 17	10.45	10.23
Neutrophils (%)	60 - 77	80	72
Lymphocytes (%)	12 - 30	14	22
Monocytes (%)	3 - 10	0	02
Eosinophils (%)	0 - 9	06	04
Total protein (g/dl)	5.4 - 7.1	7.6	6.9
Albumin (g/dl)	2.3 - 3.8	1.7	2.45
Glucose (mg/dl)	65 - 118	46.17	78.0
Urea nitrogen (mg/dl)	10 - 28	22.5	20.05
Creatinine (mg/dl)	0.5 - 1.5	3.2	0.9
ALT (U/L)	21 - 102	83.74	68.3
AST (U/L)	23 - 66	45.2	39.8
ALP (U/L)	20 - 156	96.74	73.0

## Trypanosomiasis in a Dog - A Case Report



Figure 1: Bilateral Corneal opacity in the affected dog

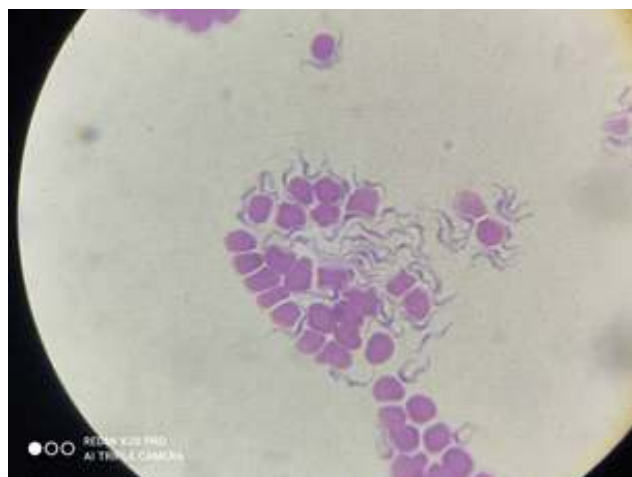
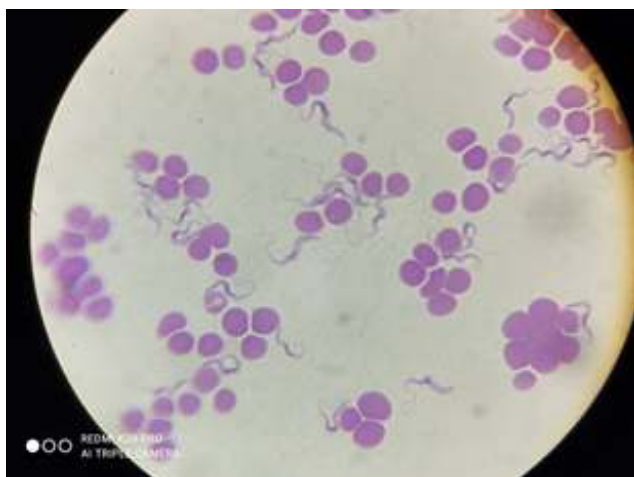


Figure 2 & 3: Giemsa Stain blood smear - *Trypanosoma sp.*, organism

### TREATMENT

The dog was treated with Diminazine aceturate @ 3.5 mg/kg intramuscularly two doses on alternative days along with Inj. DNS @10ml per kg body weight intravenously, Inj. Oxytetracycline injection intravenously @ 10mg per kg body weight, Inj. Melonex® @0.5 mg per kg body weight intramuscularly, Inj. Neuroxin M® @ 1ml intramuscularly and oral hematinics (Syp. aRBCe® @5ml BID peros).

Temperature was normal (101.7°F) on second day and the dog was active and alert. Post therapy on third day dog was back to its normal appetite. Treatment was continued for five days. However, Inj. DNS was discontinued on fourth day of therapy. The dog recovered well on fifth day of therapy. The cloudiness of cornea cleared off on seventh day post

therapy and hemato-biochemical parameters were also back to near normal levels on seventh day. Further, blood smear was negative for *Trypanosoma sp.* both on wet blood smear and also Giemsa stain blood smear.

### RESULTS AND DISCUSSION

Trypanosomiasis is an important and widely prevalent extracellular erythrocytic protozoan disease caused by *T. evansi* in Indian sub-continent which affects a wide variety of domestic, wild and zoo animals and transmitted by biting flies particularly Tse tse, Tabanus, Stomaxys, Culicoides etc (Greene, 2006). However, dogs can also get the infection by ingestion of fresh animal carcasses that died recently from trypanosomiasis and through oral experimental infection (Nwoha, 2013). Higher prevalence of *T. evansi* infection was observed in Mongrel than in

Pomeranian, Cross breeds, German Shepherd, Doberman and Labrador breeds in Andhra Pradesh (Prasad *et al*, 2015). The clinical signs in the present study is in accordance with Behera *et al* (2018) and Saurabh Kumar (2010), who also reported corneal opacity, high temperature and lymphnode enlargement. Moderate anemia, hypoglycemia, hypoalbuminemia, elevated creatinine levels and slightly elevated protein levels are also reported by Ramesh *et al*, (2016) and Eloy and Lucheis (2009), respectively. Microscopic examination of Giemsa stained blood smear and wet film examinations are the tools used for diagnostics purpose (Rjeibi *et al*, 2015). However, it was difficult to distinguish the species of *Trypanosoma*. So there is need of serological and molecular tests for the diagnosis of species of *Trypanosoma*. Anemia was a consistent finding as reported previously in different hosts infected with *T. evansi* due to hemolysis as a result of erythrophagocytosis, hemodilution and depression of erythropoiesis. In the present case mild neutrophilia was evident which is due to secondary bacterial infection. Hypoglycemia is due to utilization of blood glucose by parasites in circulation thereby lowering blood glucose levels. Hypoalbuminemia reported in this study are in agreement with findings of other workers on trypanosomiasis (Nwoha *et al*, 2013, Behera *et al*, 2018 and Ramesh *et al*, 2016). Increased serum protein levels with a reduced albumin/globulin ratio have been reported frequently in various infected hosts. Increased serum total protein in dogs is due to elevated globulin levels and a parallel drop in albumin concentration (Franciscato *et al*, 2007) and may also be attributed to high antigenic stimulation associated with trypanosomiasis (Aquino, 2002). Elevated creatinine levels in this study are in agreement with Kwem *et al* (2000) and Ramesh *et al*, (2016) who reported that elevated BUN and creatinine levels observed could be due to kidney dysfunction due to tissue damage caused by parasitemia. But, in the present study the BUN value was within the range. However, Nwoha *et al* (2013) reported initial increase and subsequent decrease in BUN values in their study on trypanosomiasis.

Most of the literature reported single use of Diminazine aceturate @3.5 mg per kg body weight intramuscularly. However, in the present report two doses of Diminazine aceturate is administered on alternative days. Inj. Oxytetracycline @10 mg per kg

body weight intravenously was given to treat secondary bacterial infection as in the present case mild neutrophilia was evident. Inj. DNS was administered to compensate dehydration and hypoglycemia and NSAIDs was given to control the temperature and any inflammation in the body. Hematinic was advised to tackle anemia in the present case. Vitamin supplement (Neuroxin- M) was administered to support the nutritional losses, neurological support and to aid in faster recovery. The dog recovered uneventfully with improvement in clinical signs in three days and in one week the hemato-biochemical parameters were back to normal in seven days and cornea was clear on seventh day. Himanshu *et al* (2020) and Saurabh (2017) also reported clinical recovery in one week in trypanosome positive dog.

## CONCLUSION

Few diseases can be confused with clinical cases of trypanosomiasis in dogs and these include canine babesiosis, anaplasmosis and confined ophthalmic disorders. So Veterinarians should consider this disease in dogs presented with a history of anorexia, high fever, corneal opacity, anemia and hypoglycemia along with increased creatinine values. In the present study, clinical signs, microscopical confirmation and therapeutic management of *Trypanosoma* sp., has be reported so that it may be included as one of the differential diagnosis in canine medicine with the above said clinical signs.

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## Trypanosomiasis in a Dog - A Case Report

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Received on 9/1/2024 Accepted on 11/2/2024