

# PHYSIO-BIOCHEMICAL ALTERATIONS IN TRYPANOSOMA INFECTED DOG

R.B. Ambade<sup>1</sup>, R.R. Rohi<sup>2</sup>, and P.V. Meshram<sup>3</sup>

<sup>1</sup>Assistant professor of Biochemistry, <sup>2</sup>Hospital Surgeon, TVCC  
and <sup>3</sup>Assistant professor of pathology, Bombay Veterinary College, Goregaon, Mumbai-400065  
Maharashtra Animal and Fishery Sciences, University.

Trypanosomosis is a disease caused by a flagellate protozoan known as *Trypanosoma evansi*, transmitted by hematophagous insects. It parasites showed a large diversity of mammalian hosts. Dogs may show clinical changes such as weight loss, progressive weakness, anorexia, anemia, intermittent fever, conjunctivitis, swelling of limbs and increased of superficial lymph nodes. Treatment of trypanosomosis relies on the use of diminazene aceturate which is effective for the treatment of disease in infected animals. However, a single dose of drug are not effective for horses, mules and dogs, since drug neither cross the blood-brain barrier or has insufficient doses to control the *T. evansi* infection. Therefore, the present study aimed to report the curative efficacy of a new therapeutic protocol, based on diminazene aceturate, for dogs infected with *T. evansi*. In the present study, *Trypanosoma* infection is reported in a male Labrador dog of three years age at TVCC, Goregaon, Mumbai. Clinical signs and symptoms of infection are recorded. Confirmation of case was done by microscopic examination of *Trypanosoma* organism in thick blood smear and serum biochemistry. Furthermore, their effect on certain hematological parameters was studied and concluded that there was decrease of hemoglobin (Hb) concentration and packed cell volume (PCV) and Total protein while erythrocytes sedimentation rate (ESR), SGOT and SGPT levels were increased in the infected dog.

**Key Words:** Trypanosoma, Hb, PCV, ESR, Total Protein, SGOT, SGPT, dogs Treatment.

## Introduction

Trypanosomosis is a disease caused by a flagellate protozoan known as *Trypanosoma evansi*, transmitted by hematophagous insects of the genus *Stomoxys* and *Tabanus* (Hoare, 1972.) It parasites showed a large diversity of mammalian hosts and is an important disease producing agent throughout the tropical and subtropical areas (Herrera et al, 2004, Hoare, 1972). Male Labrador dog of three years age was brought at TVCC, Goregaon, Mumbai may show clinical changes such as weight loss, progressive weakness, anorexia, anemia, intermittent fever, conjunctivitis, swelling of limbs and increased of superficial lymph nodes. Treatment of trypanosomosis relies on the use of diminazene aceturate which is effective for the treatment of disease in cattle, buffalo, sheep, pigs and camels (Peregrine et al., 1993). However, a single dose of drug are not effective for horses, mules and dogs (Da Silva et al., 2008). since diminazene aceturate neither cross the blood-brain barrier or has insufficient doses to control the *T. evansi* infection (Jenings., 1977). Therefore, the present study aimed to report the curative efficacy of a new therapeutic protocol, based on diminazene aceturate, for dogs infected with *T. evansi*.

Soulsby (1982) revealed number of effective trypanosomacidal agents for dogs including suramin, quinapyramine and diminazene but single dose of diminazene diacetate is effective in eliminating the natural trypanosomiasis infection in canine (Rani and Suresh 2007). The present report describes a case of trypanosomiasis in a Labrador dog, its effect on some blood parameters and treatment with diminazene diacetate.

## History of Case

Male Labrador dog of three years age was brought to TVCC, Goregaon, Mumbai with history of anorexia, dullness and persistent fever for three days. On clinical examination, there was high rise of rectal temperature (40.8°C), pale mucous membrane, bilateral lacrimation and generalized debility. The dog was tested for the presence of hemoparasites through blood smears (Coles 1986). For this purpose, hair was clipped from the outer surface of the pinna of ear near the margin. The marginal ear vein was pricked with sharp sterilized needle after disinfection with spirit. A drop of blood was placed on a clean glass slide and smear was made and air-dried. The smear was stained with the Giemsa stain (Coles 1986) and examined under light microscope by

using the immersion objective. Microscopic examination revealed the presence of *Trypanosoma* organism outside the RBC's.

#### Hematological and therapeutical study

After confirmation of *Trypanosoma* through blood smear, hematological examination included hemoglobin estimation (Hb), packed cell volume (PCV) and erythrocytes sedimentation rate (ESR) using the methods as described by Benjamin (1978) and spectrophotometric estimation of total protein and serum activity of SGOT and SGPT was carried out by using Prietest diagnostic kit to check the severity of infection. For this purpose, five ml of blood was collected from cephalic vein in heparinized vacutainer tube containing anti-coagulant.

#### Discussion

In the present study, microscopic examination revealed the presence of *Trypanosoma* organism outside the RBC's (Fig. 1). The reported clinical signs and symptoms were high rise of temperature (40.8° C), pale mucous membrane, bilateral lacrimation, and generalized debility. These observations were in agreement with the findings of Rani and Suresh (2007) who reported *T. evansi* organism in peripheral blood with history of in appetite, dullness and persistent fever since five days it was also observed bilateral corneal opacity which is a characteristic finding in chronic trypanosomiasis (Thirunavukkarasu et al. 2004).

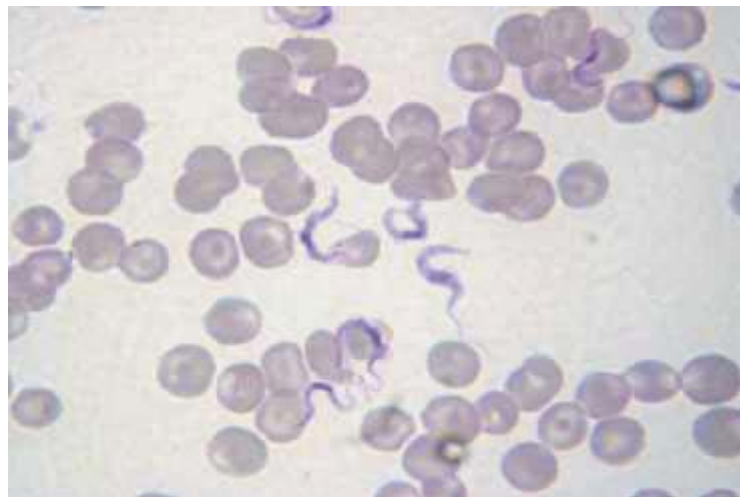


Fig.1. Blood smear showing abnormalities in erythrocytes with *Trypanosoma* parasites

#### Hemato-Biochemical and therapeutical study

Blood smear showing abnormalities in erythrocytes with *Trypanosoma* parasites (Fig1.) Hematological examination included Hb, PCV and ESR were carried out and concluded that there was decrease of Hb and PCV while ESR was increased in the infected dog (Table 1.) The results of the present study are in accordance to Kjos et al. (2008) who studied clinical hematology of canine disease in

Texas. Biocheical parameters viz, total protein levels shown as decreased (Table 1) which was in closed accordance with Kjos et al. (2008) reported hypoproteinemia, hypoalbuminemia, anemia (decrease packed cell volume) and thrombocytopenia in infected animals However, Serum glutamate oxaloacetate transaminase (SGOT) activity and Serum glutamate pyruvate transaminase (SPOT) were found elevated (Table 1) which was in agreement with Feldman et al., (2000).

Table1. 1

Sr. No.	Physio-Biochemical Prameters	Normal range	Range in infected dog
1.	Hb gm%	12-15 gm%	10.5 gm%
2.	PVC %	45-50 %	38 %
3.	ESR Unit	1-2 Unit	4 Unit
4.	Total protein gm/dl	7.64 gm/dl	5.82 gm/dl
5	SGOT U/L	30-75 U/L	82.67 U/L
6	SGPT U/L	10 -60 U/L	78..90 U/L

Diminazene diacetate given IM once at a dosage of 3.5 mg/kg was effective for trypanosoma infections in Labrador dog intramuscularly along with supportive therapy including oral preparation of liver tonic (Hepamerz) and vitamin E for 5 days and animal showed good clinical improvement after treatment. Similar results were observed by Rani and Suresh (2007) who treated trypanosomiasis in Pomeranian dog with a single dose of diminazene diacetate.

#### Conclusion:

Clinical signs and symptoms along with the microscopic examination of *Trypanosoma* organism through peripheral blood smear suggested the case of trypanosomiasis. However, it was difficult to distinguish the species of *Trypanosoma* at clinic so there is need of some serological and molecular tests for the diagnosis of species of *Trypanosoma*. Moreover, it was also concluded that single dose of diminazene diacetate successfully treated the dog with trypanosomiasis.

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