Case Report

POST THERAPEUTIC NEUROLOGICAL MANIFESTATION OF TRYPANOSOMIASIS IN A DOG - FATAL CASE REPORT

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ABSTRACT

A five-year-old intact male non-descript dog was referred to the Madras Veterinary College Teaching Hospital with a history of blindness, persistent fever, inappetence, lethargy and corneal opacity for a week. Clinical examination revealed pale mucous membrane, pyrexia, and enlarged superficial lymph nodes and ophthalmic examination confirmed bilateral corneal opacity (5/5) and related vision loss. Hemato-biochemical profile revealed anemia, thrombocytopenia, hypoproteinemia, hypoalbuminemia and elevated creatinine levels. The wet film examination was positive for Trypanosoma evansi (+++) and following which the animal was treated with Diminazene aceturate @ 3.5 mg/kg deep IM, tab. Prednisolone @0.5 mg/kg, oral hematinics and evaluated after 2 weeks. Corneal opacity cleared After 14 days of treatment; haemato-biochemical parameters were back to normal range, and after one week of clinical recovery, the dog showed neurological signs. Abdominal ultrasonography revealed mild splenomegaly, ocular ultrasonography revealed normal ocular structure. CSF was positive by PCR for Trypanosoma evansi upon which the animal succumbed to death.

Keywords: Wet Film, Trypanosomiasis, Corneal Opacity, Diminazene Aceturate.

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INTRODUCTION

Trypanosomiasis is disease caused by extra erythrocytic hemoprotozoan disease of domestic and wild animals which is transmitted by biting of flies Tabanus, Stomaxys, tsetse, etc. (Rashid *et al*., 2008). Finally, dogs, cats, and wild carnivores can be infected by *T. cruzi* or *T. evansi* by ingesting infected

triatomines, the organs of animals killed by trypanosomiasis, and infected fresh carcasses, from rodents, from foodstuffs contaminated by kissing bug feces, or from wild animals. The main mode of transmission in canine species seems to be the ingestion of infected vectors. Animal trypanosomiasis is caused by the *T. evansi* parasite, which resides, survives and multiplies in blood during the initial stage of infection and can be transmitted to the central nervous system in the advanced stage of the disease (Prayag *et al.,* 2023).

Clinical signs are characterized by anorexia, anemia, intermittent fever, conjunctivitis, swelling of limbs, corneal opacity, and weight loss (Thirunavukkarasu *et al.*, 2004). Hematobiochemical changes observed in trypanosomiasis are decreased total erythrocytic count, packed cell volume, hemoglobin and total leucocyte count. Total serum proteins, albumin and glucose levels were decreased. A single dose of diminazene aceturate @ 3.5 mg /kg body weight intramuscularly as a therapeutic agent with supportive therapy and favors recovery. (Ramesh *et al.,* 2016). Five dose protocol obtained higher efficiency because it provided greater passage of drug molecules through blood-brain barrier, which could eliminate the parasite from the brain (Howes *et al.,* 2011).

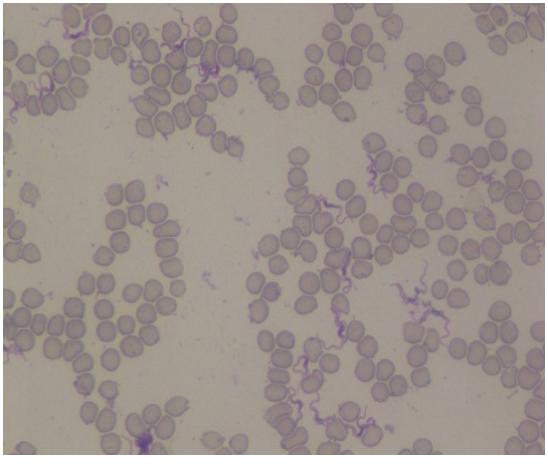
CASE STUDY

A five-year-old male, a non-descript dog weighing 20 kg was referred to the Madras Veterinary College Teaching Hospital with a history of persistent fever, inappetence, lethargy and bilateral corneal opacity for a week and treated for 3 days. Clinical examination revealed pale mucous membrane, pyrexia, and enlarged superficial lymph nodes and ophthalmic examination confirmed bilateral corneal opacity (5/5) and related vision loss. The wet film was positive for live *Trypanosoma* species having long flagellum. The dog was tested for the presence of hemoparasites through a blood smear from the ear pinna and stained with Giemsa which was positive for *Trypanosoma evansi* with long slender free flagellum, a central nucleus, and a posterior kinetoplast (Bui *et al.,* 2021). Hemato-biochemical values revealed anemia, thrombocytopenia, hypoproteinemia, hypoalbuminemia, elevated creatinine level (Hb- 8.7 g/dl, PCV-27.1%, platelets -112000/cm, Total protein-5.5 g/dl, Albumin-1.6 g/dl, creatinine 2.4 g/dl) Blood glucose was found to be low. Ultrasonographic imaging revealed moderate splenomegaly. Based on clinical signs, blood smear and hemato-biochemical values the case was diagnosed as Trypanosomiasis. A single dose of diminazene aceturate is not effective for dogs, hence it was decided to treat the dog with diminazene aceturate @ 3.5 mg/kg bw following five days therapeutic protocol (Howes *et al.,* 2011). The animal was treated with inj. Diminazine aceturate 3.5 mg/kg deep IM, inj. DNS @ 10 ml/kg, inj. chlorpheniramine maleate @ 0.2 mg/kg, inj. Tribivet 2 ml on day one of diagnosis. Tab. prednisolone @ 0.5 mg/ kg P/O for 10 days, oral hematinic was advised. The case was to be reviewed on the following day, As the dog's appetite has improved the owner has not reported on the following day.

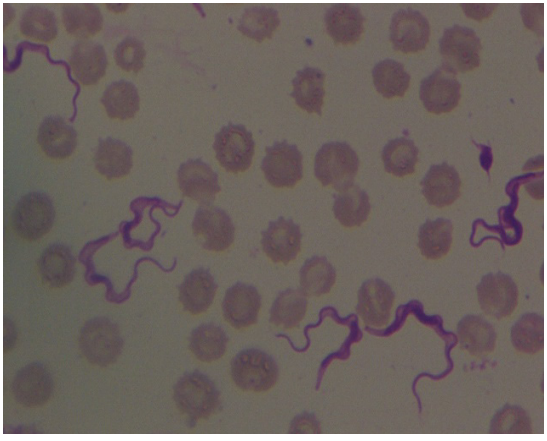
Bilateral corneal opacity in *Trypanosoma evansi* infected non-descript dog

Pre- treatment

Post treatment



*Trypanosoma evans*i organism in
10 x magnification Stain used: Giemsa



100 x magnification of smear showing
T.evansi

The dog reported after a week so the hemato-biochemical examination was carried out again. Wet film examination was negative for *Trypanosoma evansi*. The dog was evaluated after two weeks, corneal opacity was cleared and blood values were within the normal range (Hb-10.4 g/dl, PCV 33.6%, platelets 169000/cm, Total protein 6.8 g/dl, albumin 2.9 g/dl, BUN 10.89 mg/dl, creatinine 0.8 1 mg/dl, glucose -103 mg/dL). The wet film revealed no parasite, post-treatment of blood by PCR

was negative for *Trypanosoma evansi* after 14 days, and all the clinical signs disappeared. Post-treatment hemato-biochemical values returned to normal range. No signs of drug toxicity were noticed during and after the treatment. The owner was adviced to report after a month. As there was discontinuation in five dose protocol as planned the treatment was not continued.

After one week of complete clinical recovery the dog developed neurological signs like head pressing, ataxia, goose-stepping gait, constant whining, and disorientation to the surrounding environment. The hemato-biochemical values were normal. Cornea was clear. As the dog exhibited neurological signs it was decided to perform a CSF examination following standard procedures. Microscopic examination of wet film and a dry stained smear of CSF was negative for Trypanosoma parasites. PCR was performed on CSF which turned out to be positive for *Trypanosoma evansi* genome substantiating cerebral Trypanosomiasis which has sought refuge after a first short of diminazene aceturate therapy. To conclude, five doses of diminazene aceturate protocol could have been efficient, as it provides greater passage of drug molecules through the blood-brain-barrier, which could eliminate the parasite from the brain in the present case (Howes *et al.,* 2011).

Abbreviation

CSF – cerebrospinal fluid, PCR- Polymerase Chain Reaction , Hb- Hemoglobin, BUN- Blood Urea Nitrogen, PCV – Packed Cell Volume

REFERENCES

Bui, K.L., Duong, D.H., Bui, D.T.A., Nguyen, V.L., Do, T., Le, T.L.A. and Tran, K.T. (2021). A case of *Trypanosoma evansi* in a German Shepherd dog in Vietnam. *Parasitology International*, **80**: 102198.

Howes, F., Silva, A., Athayde, C., Costa, M., Corrêa, M.M.B., Tavares, K., Miletti, L. C., Lopes, S., Amaral, A. and Schmidt, C. (2011). A New Therapeutic Protocol for Dogs Infected with Trypanosoma evansi. *Acta Scientiae Veterinariae*, **39**(3): 988.

Prayag S. Kedar., Atish T Paul, Ghorui, Samar and Anil B. Jindal (2023). Preclinical evaluation of quinapyramine sulphate-loaded lipidic nano carriers for trypanocidal effect against *Trypanosoma evansi*. *Journal of Drug Delivery Science and Technology*, **81:** 104215.

Ramesh P., Chowdary, S.R.C.H. and Chaitanya, Y. (2016). Diagnosis and treatment of canine Trypanosomiasis - a case study. *International Journal of Environmental Science and Technology*, **5**: 3387 - 3393.

Rashid, A., Rasheed, K. and Hussain, A. (2008). "Trypanosomiasis in dog; a case report." *Iranian Journal of Arthropod Borne-Diseases*, **2**(2): 48 - 51.

Thirunavukkarasu, P.S., Rao, V.V., Srinivasan, S.R., Nambi, A.P. and Dhanapalan, P. (2004). Haematobiochemical findings in case of trypanosomiasis in dog: a clinical study. *Indian Journal of Veterinary Medicine,* **24**: 117.