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Case Report

Trypanosomiasis in a Labrador Retriever Dog- Successful Management Using Multiple Doses of Diminazene Aceturate

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Abstract

Trypanosomes are extra erythrocytic protozoan parasite of domestic and wild animals. In the present study, a seven-month-old male Labrador retriever dog was presented to District Veterinary Hospital Kannur (Kerala) with a history of inappetance, persistent fever, occular discharge and high colored urine for past three days. Upon physical examination lymphadenopathy, pallor mucous membrane (anaemia) and mild corneal opacity was noticed. Blood smear and whole blood were collected for the laboratory examination. The complete blood count revealed severe anaemia, thrombocytopaenia and hypoglycemia (blood sugar 65mg/dl). The peripheral blood smear and wet film examination revealed the presence of trypomastigote stage of Trypanosoma spp. The animal was treated with intra muscular administration of Diminazene aceturate at dose rate of 5mg per kg body weight along with Oxytetracycline injection intravenously at the dose rate of 10mg per kg body weight along with supportive therapy. The uneventful clinical recovery was noticed after seven days of post therapy.

Keywords: Anaemia, Blood Smear, Diminazene Aceturate, Hypoglycemia, Trypanosoma

Introduction

Trypanosomiasis caused by *Trypanosoma evansi* is an important hemoprotozoan disease of domesticated animals, pets and wild animals. The disease is commonly termed as Surra in all animal species. Among the different species of trypanosomes, *Trypanosoma evansi* is the most commonly occurring species in India that causes diseases. Almost all species of *Trypanosoma*, with the exception, *T. vivax* which produce a hyper acute and acute infection, and all are characterized by high parasitaemia, fever, severe anemia and hemorrhages on the mucosal and serosal surfaces. The present study discusses the diagnosis and clinical management of canine trypanosomosis in a dog.

The organisms found sporadically in dogs and are capable of causing severe anaemia and death, Finelle (1973). Raina *et al*. (1985) reported that infections from *T. b. brucei* and *T. congolense* are found mainly in Asia. Infected tse-tse fly is considered as major mode of transmission of disease. However, dogs can also get the infection by consumption of fresh animal carcasses that are infected by trypanosomosis. In addition to this Uilenberg and Boyt (1998) concluded that dogs and cats can become infected with *T. cruzi and T. evansi* through ingestion of the vector's excreta or ingestion of the entire infected vector and they also pointed out that infections may also be through penetration of dogs' intact or abraded skin by metacyclic forms of *T. cruzi.* The early acute phase of the disease is marked by the continuous presence of trypanosomes in the blood at detectable concentration, reported by Herrara *et al.* (2001) author also mentioned that the elevation of body temperature is noticed at first peak of parasitemia, thereafter at parasitemic waves which often corresponds with the development of anemia. Mechanical transmission of *T. evansi* through vampire bats and ingestion of infected herbivore meat is reported form South America by Steverding (2008). Madeira *et al*. (2009) reported that anemia is the most prominent feature of Canine Trypanosomosis and *Trypanosoma caninum* of unknown pathogenicity has been isolated from intact skin of canine along with leishmania in south eastern Brazil. Barros *et al*. (2012) pointed out that Canine trypanosomes cause infections of varying severities in dogs and the infection ranges from acute, sub-acute to chronic. Chronic form of the disease is mostly seen in adult dogs and is characterized by myocardial dilation and ventricular arrhythmias. The cardiac insufficiency is initially detected on the right side and later progressed to left ventricular insufficiency Ognu *et al*. (2017).

Case History and Observations

A seven-month-old male Labrador retriever dog was presented to District Veterinary Hospital Kannur (Kerala) with history of lethargy, reduced appetite and high colored urine for past three days. Upon clinical examination pyrexia (103.6° F), lymphadenopathy and pallor mucous membranes was noticed.

Materials and Method

Peripheral blood was collected from the ear tip thin and thick smear was prepared. Wet film examination revealed the presence of extra erythrocytic flagellar organisms. Wright Giemsa staining techniques were used for staining the blood smears. The smeared blood smears were examined under oil immersion microscope. Whole blood was collected in 2ml anti-coagulant coated vial (CBC comprising RBC, WBC and platelet count (PLT), HGB concentration, HCT, MCV, MCH, MCHC and RDW, was performed with an automatic hemocytometer. The blood glucose was estimated using semi-automatic bio chemical serum analyser as per standard operation procedures.

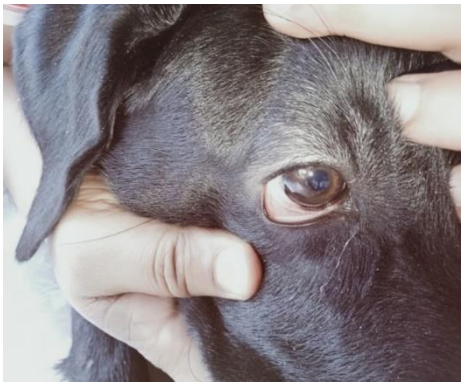

Figure 1: Blanched mucous

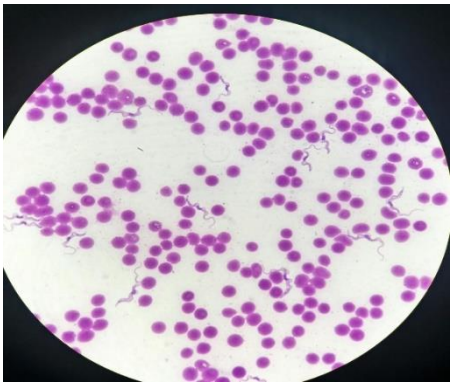

Figure 2: Trypomastigote of trypanosome spp.

Results and Discussion

Hematology revealed normocytic normochromic and regenerative anemia along with thrombocytopenia. Serum biochemistry - reduced levels of glucose could be detected. The wet film was positive for moving blood parasites and blood smear revealed the presence of trypomastigotes of *Trymanosoma* spp. The laboratory examination results on day zero, 7th day and 28th day of treatment were summarized in Table 1.

Table 1: Haematology and serum biochemistry

Parameters	Day 0 (before treatment)	Day 7 (after treatment)	Day 28 (after treatment)	Normal Range
Hemoglobin (g/dl)	7.16	9.3	14.5	12-18
Total RBC (million/µl) count	3	5.2	6.5	5.5-8.5
PCV (%)	21	27	42	37-55
Total WBC count (thousands/µl)	5	15.3	12	6-17
Neutrophils (%)	82	41	71	58-85
Lymphocyte (%)	12	35	12	8-21
Monocyte (%)	0	13	6	02-10
Eosinophil (%)	1	11	11	0-9
Platelets (lakhs/µl)	0.4	2.2	2.5	02-6
Creatinine (mg/dl)	2.6	1.5	0.8	0.5-1.7
Urea (mg/dl)	62	40	24	8-28
Alanine aminotransferase (U/L)	123	93	50	10-109
Gamma-glutamyl transferase (U/L)	12	5	2	01-10
Alkaline phosphatase (U/L)	230	112	45	1-14
Total protein (g/dl)	5.25	6.01	6.28	5.4-7.5
Albumin (g/dl)	2.2	2.8	2.5	2.3-3.1
Total Cholesterol (mg/dl)	158	162	192	135-278
Glucose (mg/dl)	65	92	125	76-119

Treatment

The animal was treated with intra muscular administration of diminazene aceturate at dose rate of 5mg per kg body weight as multiple doses at weekly intervals along with oxytetracycline injection intra venously at the dose rate of 10mg per kg body weight for seven days. The animal was supported with pantoprazole and fluid therapy was followed.

Discussion

Trypanosome evansi, the etiological agent of Surra/Tibersa is a hemoflagellate protozoan of class Kinetoplastida and family Trypomastidae, which is pleomorphic in form and ranges from long and slender, upto 42µm (average 29µm) to intermediate, the two forms often being present in the same blood sample Greene (2006). The clinical signs and haematological alterations in the present study is in concordance with the findings of Barr *et al*. (1991). Thirunavukkararasu *et al*. (2004) reported that Anaemia, thrombocytopaenia and hypoglycemia are the characteristic finding in trypanosomosis similarly in the present study also the major findings were anaemia thrombocytopaenia and hypoglycemia. Microscopic examination of Giemsa stained blood smear and wet film examinations are the tool used for diagnostics purpose Rjeibi *et al*. (2015). In the present study Gimesa stained blood smear revealed the trypomastigote stage of trypanosoma spp.

Single dose of Diminazene aceturate at the dose rate of 3.5 – 5 mg/kg body weight is the drug of choice for trypanosomosis in dogs (Colpo *et al*., 2005; Rjeibi *et al*., 2015). In this case we used diminazene aceturate at the dose rate of 5mg per kg body weight as single intramuscular injection due to the severity of the infection.

Veterinarians in non-endemic regions should consider this disease in dogs with a history of anorexia, anemia, thrombopaenia and hypoglycemia along with weight loss and ocular involvement Desquesnes *et al.* (2013). In the present study the microscopical confirmation and therapeutic management of *trypanosoma* spp causing anaemia in dogs give lights to veterinarians to include trypanosomosis in the differential diagnosis of anaemia in pet animals in field practice.

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Conflict of Interests

There is no conflict of interest.

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References

1. Barr, S. C., Gossett, K. A., & Klei, T. R. (1991). Clinical, clinicopathologic, and parasitologic observations of trypanosomiasis in dogs infected with North American Trypanosoma cruzi isolates. *American Journal of Veterinary Research*, *52*(6), 954-960.
2. Barros, J. H. S., Almeida, A. B. P. F., Figueiredo, F. B., Sousa, V. R. F., Fagundes, A., Pinto, A. G. D. S., & Madeira, M. D. F. (2012). Occurrence of Trypanosoma caninum in areas overlapping with leishmaniasis in Brazil: what is the real impact of canine leishmaniasis control? *Transactions of the Royal Society of Tropical Medicine and Hygiene*, *106*(7), 419-423.
3. Colpo, C. B., Monteiro, S. G., Stainki, D. R., Colpo, E. T. B., & Henriques, G. B. (2005). Natural infection by Trypanosoma evansi in dogs. *Ciencia Rural (Brazil)*.
4. Desquesnes, M., Holzmuller, P., Lai, D. H., Dargantes, A., Lun, Z. R., & Jittaplapong, S. (2013). Trypanosoma evansi and surra: a review and perspectives on origin, history, distribution, taxonomy, morphology, hosts, and pathogenic effects. *BioMed Research International*, *2013*.
5. Finelle, P. (1973). African animal trypanosomiasis. II. Chemoprophylaxis and the raising of trypanotolerant livestock. *World Animal Review*.
6. Greene, C. E. (2006). *Infectious Diseases of the Dog and Cat* (No. Ed. 3). *WB Saunders\Elsevier Science*.
7. Herrera, H. M., Aquino, L. P. C. T., Menezes, R. F., Marques, L. C., Moraes, M. A. V., Werther, K., & Machado, R. Z. (2001). Trypanosoma evansi experimental infection in the South American coati (Nasua nasua): clinical, parasitological and humoral immune response. *Veterinary Parasitology*, *102*(3), 209-216.
8. Madeira, M. F., Sousa, M. A., Barros, J. H. S., Figueiredo, F. B., Fagundes, A., Schubach, A., ... & Marzochi, M. C. A. (2009). Trypanosoma caninum n. sp. (Protozoa: Kinetoplastida) isolated from intact skin of a domestic dog (*Canis familiaris*) captured in Rio de Janeiro, Brazil. *Parasitology*, *136*(4), 411-423.
9. Ogbu, K. I., Anene, B. M., Nweze, N. E., & Danladi, M. A. (2017). Trypanosomosis in dogs: a review. *International Journal of Science and Applied Research (ISSN: 2504-9070)*, *2*(2), 144-174.
10. Raina, A. K., Kumar, R., Sridhar, V. R., & Singh, R. P. (1985). Oral transmission of Trypanosoma evansi infection in dogs and mice. *Veterinary Parasitology*, *18*(1), 67-69.
11. Rjeibi, M. R., Hamida, T. B., Dalgatova, Z., Mahjoub, T., Rejeb, A., Dridi, W., & Gharbi, M. (2015). First report of surra (Trypanosoma evansi infection) in a Tunisian dog. *Parasite*, *22*.
12. Steverding, D. (2008). The history of African trypanosomiasis. *Parasites & Vectors*, *1*(1), 3.
13. Thirunavukkarasu, P. S., Rao, V. V., Srinivasan, S. R., Nambi, A. P., & Dhanapalan, P. (2004). Haematobiochemical findings in case of trypanosomiasis in dog: A clinical study. *Indian J. Vet. Med*, *24*, 117.
14. Uilenberg, G., & Boyt, W. P. (1998). *A field guide for the diagnosis, treatment and prevention of African animal trypanosomosis*. Food & Agriculture Org.

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