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Chronic phase of ehrlichiosis in a Labrador: A case study

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Abstract

A 19-month-old male Labrador dog weighing 20 Kgs was bought to State Institute of Animal health (SIAH) TANUKU, Andhra Pradesh, India, with a history of anorexia, severe tick infestation and dull and inactive. On physical examination of the animal, pyrexia, bleeding gums, ecchymotic haemorrhages on the ventral abdomen, hyphema, swollen popliteal lymph nodes, and pale mucus membranes were noticed. Blood and serum samples are collected for complete blood picture, and serological tests. Haematological values revealed anemia, thrombocytopenia, and leucopenia and the serological study showed no significant changes. Peripheral blood smear examination revealed the presence of *Ehrlichia canis* morula stages in monocytes. The dog was treated accordingly with antibiotic (doxycycline@10mg/kg), antihistamine (chlorpheniramine maleate) and NSAID (meloxicam @ 0.2 mg/kg), Granulocyte colony stimulating factor (filgrastim@10mcg/kg) was given and platelet enhancer syrups like advaplat are advised. Blood transfusion was done on the second day of treatment to improve hemoglobin concentration. The animal did not survive despite intensive treatment.

Keywords: Canine monocytic ehrlichiosis, *Ehrlichia canis*, *Rhipicephalus sanguineus*, hyphema, doxycycline, blood transfusion

Introduction

Tropical canine pancytopenia or canine monocytic ehrlichiosis is one of the major fatal disease of dogs in tropical and subtropical countries spread by ticks (Huxsoll *et al* 1970) [12]. Etiological agent for this disease is obligate intracellular rickettsial bacteria, *Ehrlichia canis*. Principal vector that transtadially transmits the disease to dogs is tick, *Rhipicephalus sanguineus* also known as brown dog tick/Kennel tick/Tropical dog tick and it belongs to the family Ixodidae (Ansari mood *et al* 2015) [3]. It was in 1935, *Erlichia canis* in Algerian dog was described by Donaties and Lestoquard (1935) [10], but the disease gained importance during Vietnam war due to death of huge number of military dogs especially German shepherds (kasondra *et al* 2017) [15].

Disease is prevalent worldwide but mostly occur in tropical and subtropical climates (Keefe *et al* 1982) and both the sexes and all age groups are affected but German shepherds are mostly affected (Harrus *et al* 1997) [14] (Nyindo *et al* 1980) [18]. Disease has three phases acute phase, subclinical phase, and chronic phase. Fever, anemia, depression, lethargy, loss of appetite and joint pains are characteristic of acute phase (Sainz *et al* 2015) [19]. In sub clinical there are no outward signs even though dog remains infected. Immunocompetent dogs can eliminate infection during the above two phases (Das *et al* 2013) [11]. Few animals enter into chronic phase characterised by hemorrhagic diathesis, aplastic pancytopenia (Neer *et al* 2006) [17], ocular changes like hyphema, corneal opacity, retinal detachment or sometimes blindness (Sainz *et al* 2015) [19] and the prognosis is grave.

Case presentation

History

- A 19-month-old male Labrador dog was brought to State Institute of Animal Health (SIAH), Tanuku, Andhra Pradesh, with a history of anorexia, dullness and inactive since 5days. Clinical examination revealed 103.5°F temperature, pale mucus membrane, hyphema, bleeding gums, ecchymotic hemorrhages on the ventral abdomen (figure: 1,2,3), swollen popliteal lymph nodes, capillary refill time >3 seconds and skin tenting time >4. Severe tick infestation was noticed.

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Fig 1: Hyphema



Fig 2: Bleeding gums



Fig 3: Ecchymotic hemorrhages on the ventral abdomen

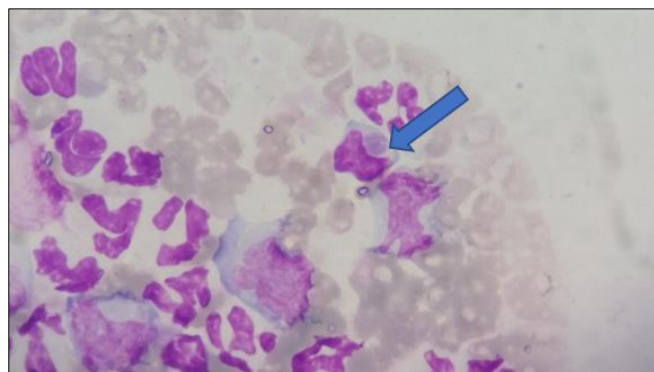


Fig 4: Morula stage of ehrlichia in monocytes

S.no	Parameters	Results	Normal values
1	Hemoglobin	3.2 gm/dl	12-18 gm%
2	Total white blood cell count	600 cells/cu.mm	11-14000/cu.mm
3	Erythrocyte sedimentation rate	85 mm/1 st hour	37-55%
4	Total red blood cell count	1.5 million/cu.mm	5.-9.5 million/cu.mm
5	Eosinophil count	200 cells/cu.mm	0.75-2.5x10 ⁹ /L
6	Platelet count	2000	1.75-5laks/cu.mm
7	SGOT	120IU/L	< 80IU/L
8	SGPT	113IU/L	<80IU/L
9	Creatinine	4 mg/dl	<1.4mg/dl

Treatment

On the day of presentation, Inj. melonex (Intas pharma) was given @ 0.2 mg/kg to decrease the temperature (103.5°F) before giving an IV drip. Later when temperature was reduced near to normal, administration of Intravenous fluid Inj dextrose 5% @ 200 ml is given to counter dehydration. As for antibiotic, Inj doxycycline was given intravenously along with normal saline @ 100mg (5 mg/kg). On the very next day when blood parameters results are obtained an immediate blood transfusion was planned (figure:5)



Fig 5: Blood transfusion in dog.

Materials and Methods

Hair is clipped at area of cephalic vein where; blood was later collected for complete blood picture and serum samples in respective EDTA and serum vials for laboratory examination. A drop of blood was taken on a clean glass slide, thin blood smear was made was air dried. The smear was stained with Giemsa stain after methanol fixation, washed under tap water, air dried and examined microscopically under oil immersion.

Peripheral blood smear

A drop of blood was taken on a clean glass slide and was spread to get feather edges and was air dried. It was methanol fixed and allowed to dry. It was then stained with giemsa (diluted 1 in 10 with distill water) and allowed for 10 minutes. Later it was washed with distilled water, dried, and examined under 100x with oil immersion.

Results

Haematological parameters revealed decreased hemoglobin, platelet count, total WBC count and total erythrocyte count. Serological examination studies showed increased SGOT, SGPT and creatinine values. On peripheral blood smear morula stages of *Ehrlichia canis* were identified in monocytes (figure: 4)

250 ml of blood was collected from a healthy mongrel dog, mixed with trisodium citrate @ 9:1 ratio and transfused into the recipient dog.

After transfusion animal was given an antihistamine @ 1 ml to counter any adverse reactions along with daily dose of

antibiotic and IV drip. The following day animal was given an Inj DNS IV, Inj doxycycline @ 10 mg/kg in IV, and Injfilgrastim @ 200 mcg was given to stimulate growth of white blood cells and advised for an oral supplement Syrup advaplat BID 5 ml to increase platelet count. This treatment was continued for 4 days later which animal was not able to respond to treatment and died on fifth day.

Discussion

Significant signs in this case are hyphema, bleeding gums, ecchymotic hemorrhages on the ventral side of abdomen. Haematological abnormalities like thrombocytopenia, anemia, leukopenia is found similar to that of studies of Ansari mood (2015) [3] in addition, in their study's other haematological abnormalities like leucocytosis, neutropenia, neutrophilia are also observed and are found similar in accordance with (Bhadesiyan *et al* 2015) [6]. Thrombocytopenia alone being most frequent haematological abnormality in many cases (Warner *et al* 1995) [20]. The reason for thrombocytopenia is due to decreased platelet production which is because of bone marrow hypoplasia (Woody BJ *et al* 1991) [5]. These significant changes in haematological values like decreased platelet WBC and RBC count was the reason for blood transfusion to avoid complications (Kasondra *et al* 2017) [15]. There are many antimicrobials for treatment of ehrlichia in dogs and doxycycline (Breitschwerdt *et al* 1998) [8] @ 10 mg/kg for a period of 4 weeks is considered as choice of treatment (kasndra *et al* 2017) [15], other antimicrobials against *E. canis* are oxytetracycline (Adwa day *et al* 1992), imidocarb dipropionate (Breitschwerdt *et al* 1992) [7] (Adenyanju *et al* 1982) [2], and those that are ineffective against *E. canis* are penicillin G (Breitschwerdt *et al* 1987) [9], erythromycin (Brouqui *et al* 1991) [10], chloramphenicol (Bartsch *et al* 1996) [4]. Even though treated with the effective antibiotics and supportive supplements animal was not able to respond to it and died after a continuous treatment of 4 days due to low amount of hemoglobin which is (2.9 mg/dl) compared to normal value which is (12-18 mg/dl) and in chronic stage animal immune system doesn't respond because organism invade monocytes and attack platelets which ultimately lead to decreased platelet count.

Conclusion

It is necessary to follow proper control measures like deworming, grooming, checking for ticks when animal arrived from tick infested area to prevent tick born diseases and early diagnosis and treatment are important.

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Conflict of interest

Authors declare no conflict of interest.

References

1. Adawa DAY, Hassan AZ, Abdullah SU, Ogunkoya AB, Adeyanju JB, Okoro JE. Clinical trial of long acting oxytetracycline in the treatment of canine ehrlichiosis. *The Veterinary Quarterly*. 1992;14:118-120.
2. Adenyanju BJ, Aliu YO. Chemotherapy of canine ehrlichiosis and babesiosis with imidocarb dipropionate.

- Journal of the American Hospital Association. 1982;18:827-830.
3. Ansari-Mood M, Khoshnegah J, Mohri M, Rajaei SM. Seroprevalence and Risk Factors of *Ehrlichia canis* Infection among Companion Dogs of Mashhad, Northeast of Iran, 2009-2010. *J Arthropod Borne Dis*. 2015 Mar 11;9(2):184-94. PMID: 26623430; PMCID: PMC4662790.
4. Bartsch RC, Greene RT. Post-therapy antibody titers in dogs with ehrlichiosis: Follow-up study on 68 patients treated primarily with tetracycline and/or doxycycline. *Journal of Veterinary Internal Medicine*. 1996;10:271-274. Check once.
5. Benny J. Woody, Johnny D. Hoskins, Ehrlichial Diseases of Dogs, *Veterinary Clinics of North America: Small Animal Practice*. 1991;21(1):75-98. ISSN 0195-5616. [https://doi.org/10.1016/S0195-5616\(91\)50009](https://doi.org/10.1016/S0195-5616(91)50009)
6. Bhadesiya CM, Raval SK. Hematobiochemical changes in ehrlichiosis in dogs of Anand region, Gujarat. *Vet World*. 2015 Jun;8(6):713-717. DOI: 10.14202/vetworld.2015.713-717. Epub 2015 Jun 6. PMID: 27065635; PMCID: PMC4825270
7. Breitschwerdt EB, Hegarty BC, Hancock SI. Doxycycline hyclate treatment of experimental canine ehrlichiosis followed by challenge inoculation with two *Ehrlichia canis* strains. *Journal of Clinical Microbiology*. 1992;36:362-368.
8. Breitschwerdt EB, Hegarty BC, Hancock SI. Doxycycline hyclate treatment of experimental canine ehrlichiosis followed by challenge inoculation with two *Ehrlichia canis* strains. *Antimicrob Agents Chemother*. 1998 Feb;42(2):362-8. DOI: 10.1128/AAC.42.2.362. PMID: 9527787; PMCID: PMC105415
9. Breitschwerdt EB, Woody BJ, Zerbe CA. Monoclonal gammopathy associated with naturally occurring canine ehrlichiosis. *Journal of Internal Veterinary Medicine*. 1987;1:2-9.
10. Brouqui P, Davoust B, Haddad S, Vidor E, Raoult D. Serological evaluation of *Ehrlichia canis* infections in Military dogs in Africa and Reunion Island. *Veterinary Microbiology*. 1991;26:103-105.
11. Das M, Konar S. Clinical and hematological study of canine Ehrlichiosis with other hemoprotozoan parasites in Kolkata, West Bengal, India. *Asian Pac J Trop Biomed*. 2013;3(11):913-915. Anemia leucopenia
12. David Huxsoll L, Paul Hildebrandt K, Robert Nims M, Herbert Amyx L, James Ferguson A. Epizootiology of Tropical Canine Pancytopenia. *J Wildl Dis* 1 October 1970;6(4):220-225.
13. Donatien A, Lestoquard F. Existence en Algerie d'une Rickettsia du chien. *Bull Soc Pathol Exot*. 1935;28:418-9. Check
14. Harrus S, Aroch I, Lavy E, Bark H. Clinical manifestations of infectious canine cyclic thrombocytopenia. *Vet Rec*. 1997a;141:247-250.
15. Kasondra A, Gupta S, Bhai GABB, Saini VK. Therapeutic management of canine ehrlichiosis with aid of blood transfusion: a case report. *J Parasit Dis*. 2017;41(2):395-397.
16. Keefe TJ, Holland CJ, Salyer PE, Ristic M. Distribution of *Ehrlichia canis* among military working dogs in the world and selected civilian dogs in the United States. *J Am Vet Med Assoc*. 1982;181:236-238.

17. Neer MT, Harrus S. Ehrlichiosis, Neorickettsiosis, Anaplasmosis and Wolbachia Infection. In: Greene, C.E., Ed., Infectious Diseases of the Dog and Cat, Elsevier, Philadelphia; c2006. p. 203-216.
18. Nyindo MBA, Huxsoll DL, Ristic M, Kakoma I, Brown JL, Carson CA, *et al.* Cell-mediated and humor immune responses of German shepherd dogs and beagles to experimental infection with *Ehrlichia canis*. Am J Vet Res. 1980;42:250-254.
19. Sainz Á, Roura X, Miró G, Estrada-Peña A, Kohn B, Harrus S, *et al.* Guideline for veterinary practitioners on canine ehrlichiosis and anaplasmosis in Europe. Parasit Vectors. 2015 Feb 4;8:75. DOI: 10.1186/s13071-015-0649-0.
20. Trevor Waner, Shimon Harrus, Douglas Weiss J, Hylton Bark, Avi Keysary. Demonstration of serum antiplatelet antibodies in experimental acute canine ehrlichiosis, Veterinary Immunology and Immunopathology. 1995;48(1-2):177-182. ISSN 0165-2427. [https://doi.org/10.1016/0165-2427\(95\)05420-B](https://doi.org/10.1016/0165-2427(95)05420-B).