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Case Study

Therapeutic management of canine Ehrlichiosis: a case study

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Abstract

The present study was conducted in Selesih, Aizawl Mizoram veterinary hospital (VCC). Canine monocytic ehrlichiosis (CME) is a globally spread tick-borne disease and it principally caused by a gram-negative, compulsive intracellular, pleomorphic bacterium named *Ehrlichia canis* and mostly infected leucocytes cells mainly monocytes, macrophages and lymphocytes. This disease is mainly transmitted through Rhipicephalus *sanguineus* tick. A 8 years old male Labrador retriever dog was brought to hospital with dull, depressed and anorexic condition. Haematological and biochemical analysis showed anaemia, leukocytopenia and presence of morula in the peripheral blood smear. With the above mentioned finding it was confirmed that the dog was affected with *Ehrlichia canis*. The dog was treated with antibiotic, antipyretic and other supportive therapy and speedy recovery noticed within 3 days.

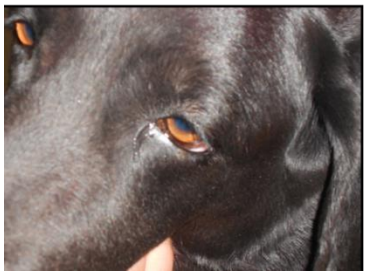
Introduction

Gram-negative bacteria *Ehrlichias* reside inside the membrane-bound vacuoles in the cytoplasmic cells. The progression of E. canis infection can be divided into acute, subclinical, and chronic phases after an incubation period of 8-20 days, but these phases are difficult to discern in the clinic (Syaputra et al., 2020). *Rhipicephalus sanguineus* is one of the world's most effective pathogenic microorganisms for wide variety of mammals whereas preferred hosts are dogs (Greene&Vandevelde,2015). It plays a role as infectious agents for different pathogenic diseases including *Ehrlichia canis* causing canine ehrlichiosis, and *Babesia canis* causing canine babesiosis. Being a causative agent of canine monocytotropic ehrlichiosis, E canis appears to be a major pathogen responsible for serious, life-threatening illness in dogs. Fever, fatigue, anorexia, lymphadenomegaly, hepatomegaly, splenomegaly, weight loss, oedema in dependent areas pale mucous membranes due to anemia, and bleeding due to thrombocytopenia are all clinical symptoms of ehrlichiosis (Das and Konar, 2013). The routine diagnostic test is to look for E. canis morula in monocytes on a peripheral blood smear, that could only be identified in the acute phase (Nakaghi *et al.*, 2008). Clinical signs noticed in affected dogs were fever, bloody diarrhoea, dyspnoea and anaemic condition **(Figure no. 2)** and presence of morula **(Figure no. 3)** in the peripheral blood smear confirmed ehrlichiosis.

Case presentation

8 years old, 28 kg male Labrador retriever was bringing to the veterinary dispensary of Selesih (VCC), with a history of fever, enlarged popliteal gland, epistaxis, eye discharge vomition and bloody diarrhoea. Clinical examination found that increased temperature 101.2°F, pulse 110/minutes, heart rate 150/minutes, pale mucous membrane and enlarged popliteal lymph node and anaemic condition. Ehrlichiosis was confirmed by the appearance of morula **(Figure no. 3)** in the peripheral blood smear. The clinic and pathological findings of the affected dog were enlisted in table no. 1. A hemaprotozoan infection was suspected based on clinical symptoms, haematological and biochemical reports, and a blood smear with morula identified it as E. canis infection.

Figure 1: Eye discharge



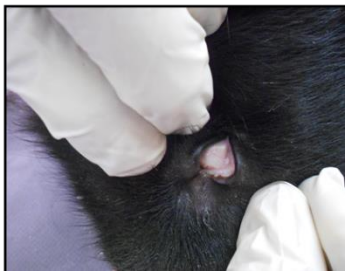


Figure 2: Anaemic condition

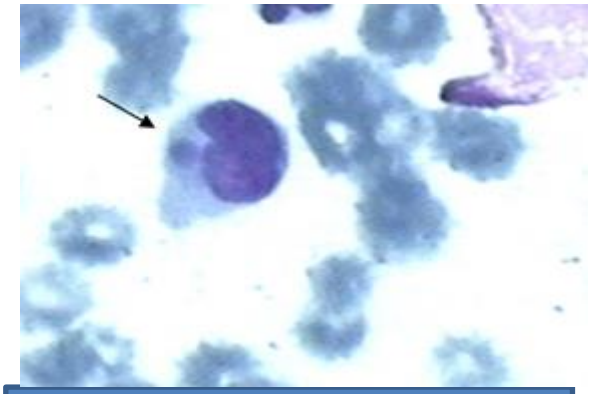


Figure No. 3: Presence of Morula in peripheral blood smear

Table no.1: Clinicopathologic finding of *E. canis* affected dog:

Parameter	Day 0 values	Reference values
Hb (g/dl)	10.9	8-13
PCV%	35.4	45.5
RBC (m/mm^3)	4.91	6.20
WBC(thousand/mm^3)	17.27	8.18
Neutrophil (%)	30.4	62.80
Lymphocytes (%)	64.4	10-28
Monocytes (%)	5.2	3-9
Total Protein (g/dl)	3.93	5.4-7.4
Albumin (g/dl)	1.03	2.7-4.4
Globulin (g/dl)	2.90	1.6-3.6

Treatment

After diagnosed with Ehrlichiosis the dog was treated with tab Cycline DT @ 300 mg PO OD for 28 days; DNS @ 500 ml IV for 3 days; Aciloc @ 3ml IV for 2 days; Maxeron @ 2ml IV for 2 days; Ferritus @ 2ml IM for 5 days; Syp. Liver tonic(Liv-52 1Ph) @ 3 t.s.f. BD before meal for 15 days and Polyvet @ 2ml IV for 7 days. 3 days after post treatment animal show positive response from treatment and all physiological parameter come to normal **(table no. 2).**

Table no. 2: Response to treatment:

Parameter	Day 0	Day 1	Day 2	Day 3
Temperature (°F)	101.2	101.6	100.6	100.5
Pulse rate/ min	111	120	115	110
Vomition	Twice yellow color	Once	No	No
Appetite	Inappetence	Improved	Improved	Normal
Eye discharge	Present	Present	Present	No
Urine colour	-	-	Normal	Normal
Faeces colour	Black color	Yellow	Normal	Normal

Discussion

Canine monocytic ehrlichiosis (CME) is caused by *Ehrlichia canis*, which was the first species to be identified as infecting dogs. The simplest and most effective method for preventing *E.canis* infection is tick management, either by diligent manual removal or year-round application of sufficient insecticides (Syaputra et al., 2020). Ehrlichia co-infections mostly with species Anaplasma, Rickettsia, Babesia or Bartonella frequently occur in dogs are these are generally faced with many different tick-borne infectious agents (Straube, 2010). Morula has been identified in only a few reported trials in the blood smear test, so for early detection, PCR diagnosis can be helpful (Kahn, 2010).

Conclusion

Appearance of morula in peripheral blood smear and associated symptoms confirmed ehrlichiosis infection in the affected dog and therapeutic medication successfully recovered the animal from this life-threatening disease.

Acknowledgement

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