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MANAGING CANINE EHRLICHIOSIS IN A MALE PUG DOG: IMPORTANCE OF TICK CONTROL MEASURES

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Abstract

Canine Ehrlichiosis is a multi-systemic infectious disease caused by th Ehrlichia canis and transmitted through the brown dog tic Rhiphicephalus sanguinus. This case study presents a successfu therapeutic management of a two-year-old male pug dog with Canin Ehrlichiosis. The dog was initially presented with various clinica symptoms, including tick infestation, anorexia, melena, and exercis intolerance, with confirmatory diagnosis via nested PCR bein performed. Treatment with doxycycline led to complete recovery an absence of parasitic evidence on buffy coat smear and nested PCF However, the dog was later re-infected due to exposure to infected tick from its surroundings, resulting in a recurrence of the disease. The stud highlights the importance of proper tick control measures and monitorin to prevent the reoccurrence of Canine Ehrlichiosis in dogs.

Introduction

Canine Ehrlichiosis is a common tick-borne disease caused by the gram-negative, obligate intracellular bacterium, Ehrlichia canis. The disease is transmitted by the brown dog tick Rhiphicephalus sanguinus and is prevalent in tropical and subtropical areas worldwide. Clinical signs of Canine Ehrlichiosis can vary from mild to severe and can include lethargy, fever, anorexia, lymphadenopathy, and hemorrhagic diathesis. Canine Ehrlichiosis is diagnosed through clinical signs, serology, and PCR, with PCR being the most sensitive and specific test. Treatment for Canine Ehrlichiosis primarily involves the use of tetracyclines, such as doxycycline, and supportive therapy. While therapy is effective, reoccurrence of the disease is possible due to exposure to infected ticks, highlighting the importance of proper tick control measures and monitoring to prevent the reoccurrence of Canine Ehrlichiosis in dogs. This case study presents a successful therapeutic management of a two-year-old male pug dog with Canine Ehrlichiosis and emphasizes the importance of tick control measures in preventing the reoccurrence of the disease.

Table 1: Pre and post-treatment Hemato biochemical findings in canine ehrlichiosis

Parameter	Before treatment	After treatment		Reference values*
	0th day	15th day	30th day	
Hb (g/dl)	5.4	7.2	9.0	12-19
HCT (%)	17	21	29	35-57
TEC($\times 10^6$ / µl)	2.56	3.53	4.54	5-7.9
TLC($\times 10^3$ /µl)	15.7	16	9.49	5-14 .1
Neutrophil (%)	78.0	76.0	76.0	58-85
Eosinophil (%)	1	2	0	0-9
Basophil (%)	0	0	0	0-1
Monocytes (%)	4.0	4.0	4.0	2-10
Lymphocytes (%)	17.0	19.0	20.0	8-21
Platelets (10^3/µl))	56	220	300	211-621
MCV	68.8	60.1	64.0	66-77
MCH	21.0	20.0	21.0	21-26.2
MCHC	30.6	33.4	33.0	32-36.3
Total protein (g/dl)	4.6	5.2	6.1	5.4-7.5
Albumin (g/dl)	1.6	2.3	2.7	2.3-3.1
Globulin (g/dl)	3	2.9	3.4	2.4-4.4
ALT or SGPT (IU/L)	164	228	54	10-109
ALP (IU/L)	228	240	24	1-114
BUN (mg/dl)	34.0	30.0	25.0	8-28
Serum creatinine (mg/dL)	1.9	1.5	1.0	0.5-1.7

*** Reference ranges, 10th edition The Merck Veterinary Manual.**

TREATMENT AND DISCUSSION

Treatment was initiated using doxycycline (Doxypet @10mg/kg b.wt once in a day per orally for 28 days) and other supportive treatment includes antacid (Pantaprazole @mg/kg per orally for 28 days), hepato- protectant (Ventriliv – pet), hematinic (fefolate), platelet enhancer (Platogrow) @ 6ml / day each orally . The owner way further advised to use Fipronil spot-on and 1.0% cypermethrin shampoos. Dog started clinical improvement on 5th day of post treatment which showed complete clinical recovery with normal appetite and improvement in general condition by 30days. The pre and post therapeutic (15&30days) haematological and serum biochemical values are presented in table 1. Laboratory recovery way also confirmed by examination buffy coat and nested PCR which revealed no parasites.

The same dog was presented to hospital with previous clinical signs after four and half months. Detailed history revealed that dog was re exposed to the infected ticks from the surroundings, which results in re infection. Based on microscopic examination and nested PCR results the diseases was confirmed as reinfection of canine

ehrlichiosis. Therapy was repeated for one month and advised to eradicate ticks from premises and housing the animal away from infected premises to break down the life cycle of ticks.

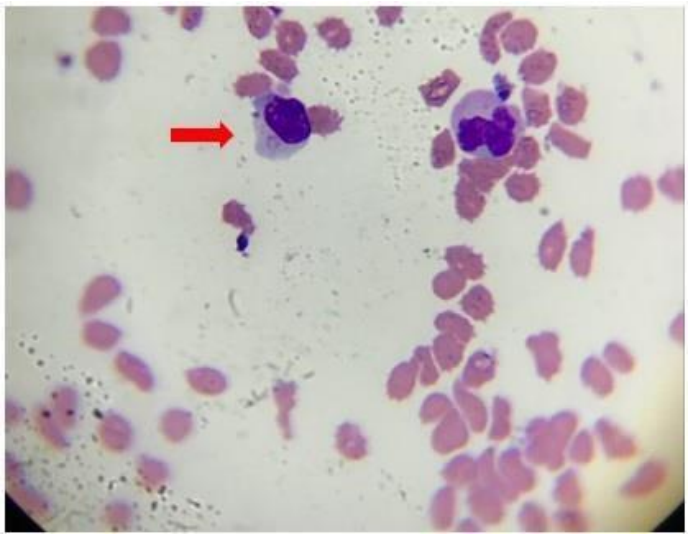
Canine ehrlichiosis in dogs is caused primarily by *E. canis* and transmitted by *Rhipicephalus sanguinus* ticks [4]. It causes a potentially fatal disease in dogs that requires rapid and accurate diagnosis in order to initiate appropriate therapy leading to a favourable prognosis. Splenomegaly, hepatomegaly is the major internal organ changes observed in abdominal ultrasonography these findings was parallel with Sarma *et al*.(2014) [7], Hepatomegaly could be probable, due to passive congestion, reticulo endothelial hyperplasia or infiltrative diseases mediated through cytokines and Splenomegaly was because of reactive lymphoid hyperplasia and concurrent extramedilary hematopoiesis [2]. Harrus *et al.* (1997) [3] opined that

Splenomegaly might be due to harboring *E. canis* parasites by spleen and is the last organ to accommodate the parasite before elimination. Anemic changes could be due to epistaxis, petechial hemorrhages and bone marrow hypoplasia and thrombocytopenia occurs due to increased platelet consumption and decreased platelet half-life. Recurrence of infection might be due to reinfection of infected ticks from surroundings. These findings were in according with Stephen Dumler *et al*. (1992) [8]. Perill *et al.* (1991) [6] observed persistently increased antibody titers in ehrlichia effected dogs after initiation of 15 to 31 months treatment.

CONCLUSION

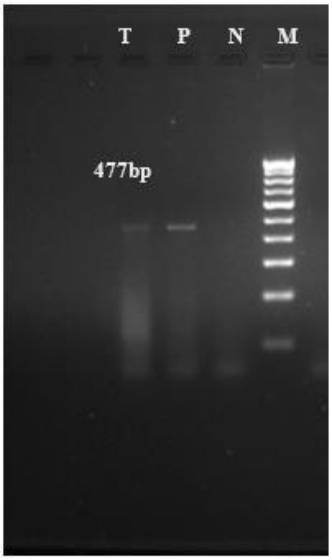
Reinfection of canine ehrlichiosis is possible because no persistent or effective immunity develops to defined against re-infection with these pathogen. When no proper ticks control measures are employed and dogs are re-exposed, re infection is common.

Fig.1 *Ehrlichia canis* in buffy coat smear



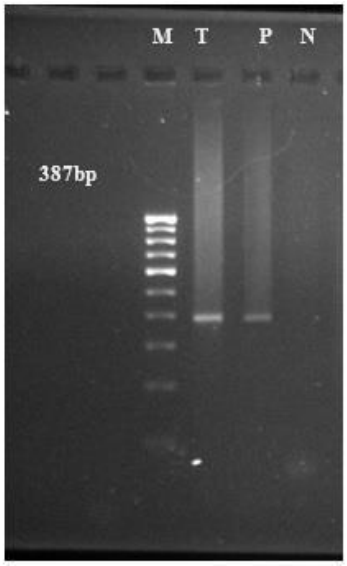
Purple colored inclusion bodies with in the monocyte suggestive of *E.canis* known positive control morula, Giemsa stain X 1000.

Fig.2 *Ehrlichia* sp- Genus specific Nested PCR



M-100bp ladder Pcytoplasm of of Ehrlichia sp, N-known negative control, T-Positive sample of *Ehrlichia* sp

Fig.3 *Ehrlichia canis*- Species specific Nested PCR



M-100bp ladder Pknown positive control of *E.canis* N-known negative control, T-Positive sample of *E.canis*

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