

Clinical Management of Canine Monocytic Ehrlichiosis in a Basset Hound Dog – A Case Report

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Abstract: Canine monocytic ehrlichiosis (CME) is one of the most common tick-borne diseases among dog population of Gujarat and is caused by *Ehrlichia canis*. The present report deals with clinical management of canine monocytic ehrlichiosis in a Basset Hound dog presented at TVCC, Anand, Gujarat with a history of persistent high body temperature, weakness, ocular discharge, dehydration and tick infestation. Ticks were collected and identified as *Rhipicephalus sanguineus* under stereoscopic microscope. Peripheral blood smear examination revealed intracytoplasmic morulae of *Ehrlichia canis* responsible for CME. Hematobiochemical parameters were analyzed. Therapeutic management included oxytetracycline @ 10 mg/kg intravenously once followed by doxycycline @ 10 mg/kg orally for next 15 days along with other supportive measures. Dog recovered uneventfully 15 days post-treatment. Results suggests continuous monitoring, specific and appropriate supportive therapy as well as owner's compliance are key factors in reversing clinical signs in CME affected dog.

Keywords: Canine monocytic ehrlichiosis, *Ehrlichia canis*, *Rhipicephalus sanguineus*, oxytetracycline, doxycycline

I. INTRODUCTION

Increasing interest has been observed among people to keep dogs as pets with or without considering to their basic healthcare and management requirements. Improper housing management practices are responsible for occurrence of ectoparasitic infestations in dogs (e.g. ticks, fleas, mites etc.). Tick infestation and tick-borne haemoprotozoan infections are frequently encountered entities at clinics. *Rhipicephalus sanguineus* tick is widespread across tropical and subtropical regions [1] and dog stands as the primary host for this species tick in both, urban as well as rural areas. Fewer investigations have been made into the presence of different species of ticks among the dog population in India [2]. Canine Monocytic Ehrlichiosis (CME) remains one of the most frequently encountered tick-borne diseases of dogs and is transmitted by *Rhipicephalus sanguineus* tick. Present case report deals with a clinically feasible approach used for rapid confirmatory diagnosis of CME in a 3-years-old male Basset Hound dog and possibilities of early clinical recovery by use of specific and supportive therapy.

II. DIAGNOSIS

Anamnesis included reduced appetite, recurrent tick infestation, and persistent high body temperature, one episode of bleeding from nose, dullness, depression, normal defecation and urination, housing in a kachcha house with access to open areas with regularly followed vaccination and deworming schedules.

Major pre-treatment clinical findings involved increased rectal temperature, swelling of peripheral lymph nodes (Figure-01), petechial hemorrhages on lower abdomen, epistaxis, anorexia, dehydration, ocular discharge and congestion of conjunctiva (Figure-02), pale mucosal layers (Figure-03) and weight loss. Collection, permanent mounting and

identification of tick were carried out as per the method described by Kikani [3]. Ticks were identified as *Rhipicephalus sanguineus* based on structures observed under stereoscopic microscope (Figure-04). Peripheral blood smear examination after staining with Giemsa stain revealed presence of intracytoplasmic morulae of *Ehrlichia canis*. Pre-treatment hematological parameters were evaluated using autohematology analyzer (BC-2800 Vet, Mindray) which evinced lowered platelet counts, hemoglobin (Hb), total erythrocyte count (TEC), packed cell volume (PCV), eosinophils and lymphocytes and increased levels of neutrophils, monocytes and mean corpuscle hemoglobin concentration (MCHC) values. Hematological alterations were in correlation with findings of Dixit *et al.* [4] and Bhardwaj [5]. Pre-treatment serological parameters were evaluated by use of commercial Coral[®] diagnostic kits (Coral Clinical System, Goa) which evinced decreased levels of total protein and increased levels of alanine transaminase (ALT), aspartate transaminase (AST) and creatinine. Serological alterations were in correlation with findings of Bhardwaj [5] and Waner *et al.* [6].

III. TREATMENT

Oxytetracycline at dose rate of 10 mg/kg of body weight was administered intravenously on first day followed by doxycycline at dose rate of 10 mg/kg of body weight orally twice a day for next 15 day as specific therapy. Supportive therapy included ketoprofen at dose rate of 2 mg/kg of body weight subcutaneously once; Ivermectin at dose rate of 200 µg/kg of body weight, subcutaneously during the whole period; liver extracts and iron supplement 1 teaspoonful, orally twice a day; ethamsylate intramuscularly thrice during the treatment duration of 15 days and cypermethrin containing shampoo for bathing (Dilution: 5 ml/liter of water, twice a week during first week followed by once a week). Owner was advised for manual removal of ticks and application of antiseptic at bleeding sites after removal, appropriate bathing protocol as well as housing management. Correlation of pre-treatment and fifteen days post-treatment clinical, hematological and serological parameters is shown in Table-01, 02 & 03. The values were returning towards normal range and suggested improvement in overall clinical status. Dog showed complete clinical improvement 15 days post-treatment.

Figure-01: Swelling of peripheral lymphnodes (red arrows)

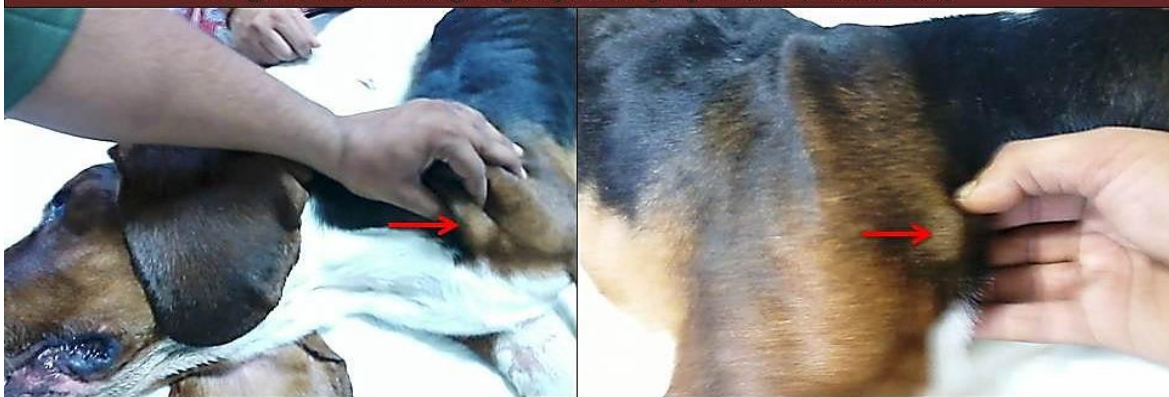


Figure-02: Ocular discharge and congestion of conjunctiva (red arrows)



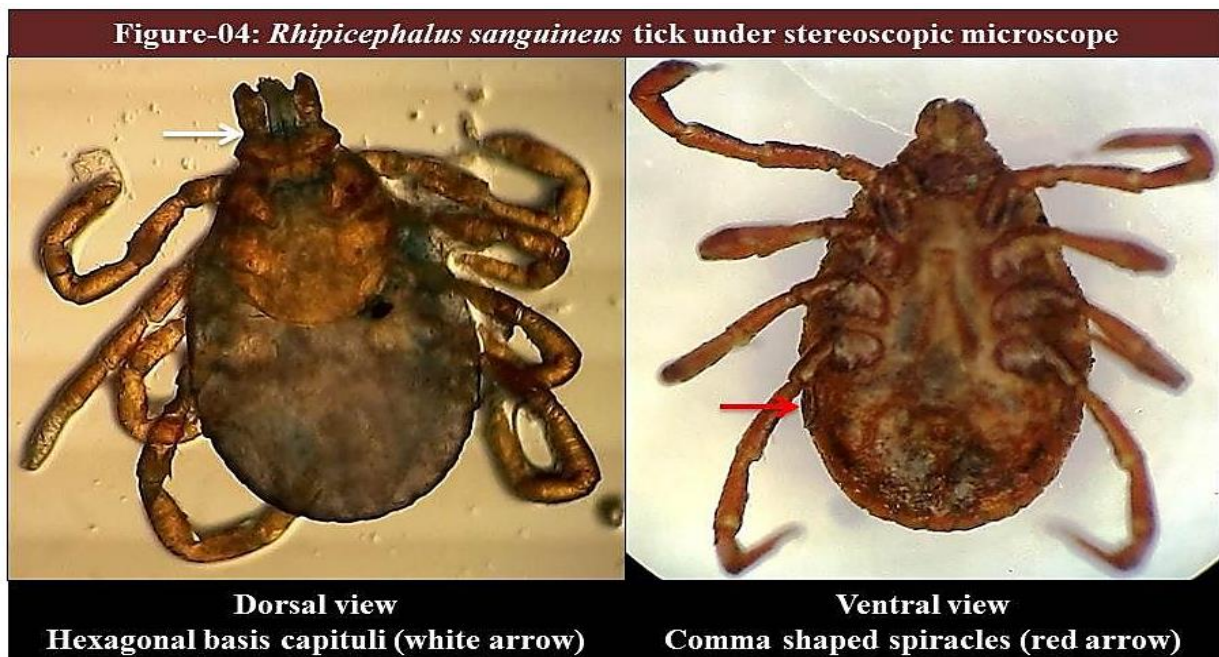


Table-01: Pre-treatment and 15th day post-treatment clinical parameters

Sr. No.	Pre-treatment	15 th Day Post-treatment
01	Rectal temperature: 103.9°F	101.6°F
02	Pulse rate: 70/min.	79/min.
03	Respiratory rate: 42/min.	27/min.
04	Pale mucosal layers	Normal pinkish
05	Capillary refill time (CRT): > 2 seconds	< 2 seconds
06	Ocular discharge: Present	Absent
07	Epistaxis: Present	Absent
08	Significant lymph node enlargement	Reduced
09	Petechial hemorrhages on abdomen (three in numbers)	Resolved
10	Ticks: Present	Absent
11	Anorectic	Gradual improvement
12	Weight loss	Gradual improvement

Table-02: Pre-treatment and 15th day post-treatment hematological parameters

Sr. No.	Hematological Parameter	Pre-treatment	15 th Day Post-treatment
1	Hb (g/dl)	08.58	12.10
2	TEC ($\times 10^6/\mu\text{l}$)	05.49	07.98
3	TLC/WBC ($\times 10^3/\mu\text{l}$)	12.32	10.21
4	Lymphocytes (%)	11.00	24.00
5	Neutrophils (%)	80.00	72.00
6	Eosinophils (%)	02.00	02.00
7	Basophils (%)	00.00	01.00
8	Monocytes (%)	07.00	01.00
9	Platelet Count ($\times 10^5/\mu\text{l}$)	102.00	217.00
10	PCV (%)	30.33	42.12
11	MCV (fl)	64.84	65.98
12	MCHC (g/dl)	39.21	34.67
13	MCH (pg)	24.57	25.16

Table-03: Pre-treatment and 15th day post-treatment serological parameters

Sr. No.	Serological Parameter	Pre-treatment	15 th Day Post-treatment
1	Total Protein (g/dl)	02.17	04.67
2	ALT (IU/L)	103.90	60.52
3	AST (IU/L)	101.85	61.20
4	Creatinine (mg/dl)	01.98	01.37

IV. SUMMARY

Tick infestation is frequently reported in Gujarat. An approach for diagnosis and therapeutic management of Canine Monocytic Ehrlichiosis (CME) is reported. Clinical, hematological, serological parameters and peripheral blood smear examination aided in confirmatory diagnosis of canine monocytic ehrlichiosis. Therapeutic regimen with intravenous administration of oxytetracycline once followed by oral therapeutics with doxycycline as specific therapy as well as other supportive medications showed complete clinical recovery in 15 days.

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