

International Journal of Advanced Biochemistry Research



ISSN Print: 2617-4693
ISSN Online: 2617-4707
NAAS Rating (2026): 5.29
IJABR 2026; 10(8): 115-117
www.biochemjournal.com
Received: 15-05-2026
Accepted: 18-06-2026

Praveen Kumar Reddy D
M.V.Sc. Scholar, Department
of Veterinary Parasitology,
NTR College of Veterinary
Science, Gannavaram, Andhra
Pradesh, India

V Gnani Charitha
Associate Professor and Head,
Department of Veterinary
Parasitology, College of
Veterinary Science, Proddatur,
Andhra Pradesh, India

C Sreedevi
Professor and Head,
Department of Veterinary
Parasitology, NTR College of
Veterinary Science,
Gannavaram, Andhra Pradesh,
India

Ch Sudha Rani Chowdary
Assistant Professor,
Department of Veterinary
Pathology, NTR College of
Veterinary Science,
Gannavaram, Andhra Pradesh,
India

Corresponding Author:
V Gnani Charitha
Associate Professor and Head,
Department of Veterinary
Parasitology, College of
Veterinary Science, Proddatur,
Andhra Pradesh, India

Acute fatal canine monocytic ehrlichiosis in a young Pup

Praveen Kumar Reddy D, V Gnani Charitha, C Sreedevi and Ch Sudha Rani Chowdary

DOI: <https://www.doi.org/10.33545/26174693.2026.v10.i8b.9470>

Abstract

Canine monocytic ehrlichiosis (CME), caused by *Ehrlichia canis*, is a life-threatening tick-borne disease characterized by hematological abnormalities and hemorrhagic manifestations. This report presents a fatal case of CME in a 8-month-old female Husky pup presented to veterinary hospital in Vijayawada with unilateral epistaxis, labored breathing and severe weakness. Clinical examination revealed marked pallor of the mucous membranes. Hematological evaluation demonstrated severe anemia with neutrophilia. Giemsa-stained peripheral blood smear examination revealed characteristic intracytoplasmic morulae within circulating monocytes. The diagnosis was further confirmed by a rapid immunochromatographic antibody assay and polymerase chain reaction (PCR) targeting the *virB9* gene of *Ehrlichia canis*. Despite prompt initiation of doxycycline therapy along with intensive supportive management, the dog deteriorated rapidly and succumbed within 48 hours of presentation. This case underscores the grave prognosis associated with severe hemorrhagic manifestations of canine monocytic ehrlichiosis in young dogs, particularly when the disease is recognized at an advanced stage.

Keywords: Canine monocytic ehrlichiosis, *Ehrlichia canis*, epistaxis, severe anemia, hemorrhagic complications, poor prognosis

Introduction

Canine monocytic ehrlichiosis (CME) is a globally distributed tick-borne disease caused by *Ehrlichia canis*, an obligate intracellular Gram-negative bacterium belonging to the family **Anaplasmataceae**. The disease is transmitted predominantly by the brown dog tick, *Rhipicephalus sanguineus* sensu lato, particularly in tropical and subtropical regions where the vector thrives throughout the year (Greene, 2022) [2]. Following transmission through tick feeding, the disease progresses through acute, subclinical and chronic phases, producing a wide range of clinical manifestations including fever, anorexia, lethargy, lymphadenopathy, pale mucous membranes, thrombocytopenia, epistaxis, petechial haemorrhages and ocular abnormalities. Bleeding manifestations are among the most characteristic clinical findings and generally result from thrombocytopenia, platelet dysfunction, vasculitis and coagulation abnormalities (Harrus and Waner, 2011; Waner *et al.*, 2001) [5, 7]. Chronic infection may result in severe bone marrow suppression, pancytopenia and immune-mediated complications, which can be fatal if left untreated (Neer *et al.*, 2002). The clinical diagnosis of CME is often difficult because its manifestations overlap with those of other canine vector-borne diseases such as babesiosis, anaplasmosis and hepatozoonosis. Furthermore, the severity of disease is influenced by host immunity, stage of infection and the degree of tick infestation (Waner *et al.*, 2001; Kottadamane *et al.*, 2017) [7]. Consequently, understanding the clinical profile and epidemiological characteristics of the disease is essential for early recognition and effective case management.

Case History

A 8-month-old female Husky (Case No. 1899) was presented to the veterinary hospital in Vijayawada with a history of unilateral epistaxis (Fig. 1), anorexia and labored breathing. According to the owner, the bleeding had progressively increased over the preceding day and was accompanied by weakness and reduced activity. Physical examination revealed severe depression and marked pallor of the conjunctival and oral mucous membranes suggestive of significant anemia. No obvious external traumatic lesion was observed.

Based on the history and physical examination ticks were recovered from the pup and further hematological investigation was undertaken to determine the underlying cause along with further investigations.



Fig 1: A 8-month-old female Husky with unilateral epistaxis

Results and Discussion

Complete hematological examination revealed marked anemia accompanied by neutrophilic leukocytosis. Giemsa-stained peripheral blood smear examination demonstrated characteristic basophilic intracytoplasmic morulae within circulating monocytes, providing direct microscopic evidence of *E. canis* infection (Fig. 2). Based on the clinical presentation together with hematological findings, the case was diagnosed as acute canine monocytic ehrlichiosis. Consequently, further diagnostic confirmation was performed using a rapid immunochromatographic assay for the detection of *Ehrlichia canis*-specific antibodies (Fig. 3), followed by molecular confirmation through conventional PCR amplification of the *virB9* gene (Fig. 4). Amplification of the expected PCR product confirmed the presence of *E. canis* DNA, establishing active infection and validating the hematological and serological findings. Despite timely therapeutic intervention, the dog succumbed within 48 hours of presentation, indicating an advanced stage of disease with extensive systemic involvement. The rapid clinical deterioration was most likely attribute to severe hematological abnormalities and hemorrhagic manifestations, which are recognized indicators of poor prognosis in CME.

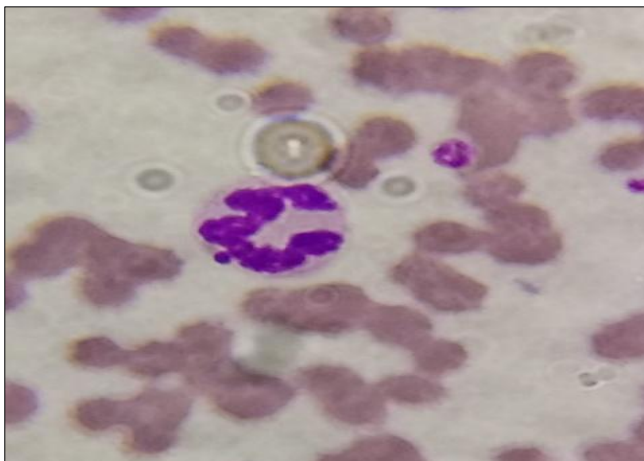


Fig. 2: Intracytoplasmic morulae within circulating monocyte

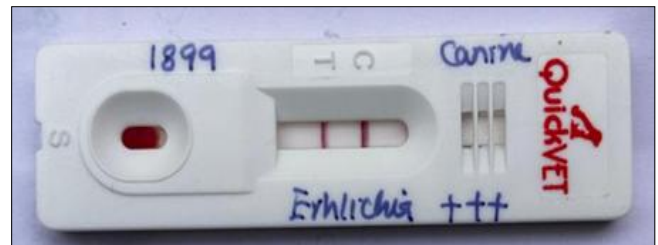


Fig. 3: Rapid *E. canis* Ab Test kit showing Positive results

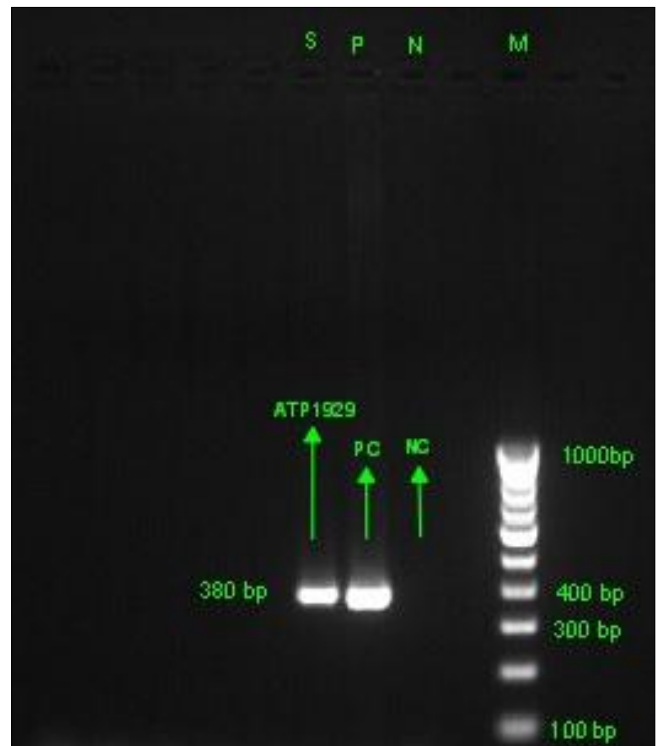


Plate 4: Standardized conventional PCR product with amplification of the 380 bp *Ehrlichia canis* from the husky blood sample

- Lane M-Ladder (100bp ruler)
- Lane P/PC- Positive Control
- Lane N/NC-Negative control
- Lane S/ATP1929- Blood sample found positive for *Ehrlichia canis* 380bp product after initial successful standardization of PCR

Canine monocytic ehrlichiosis is a multisystemic disease whose severity depends upon host immunity, infecting bacterial load and the stage of infection. Young animals may develop rapidly progressive disease characterized by hemorrhage and severe anemia. Epistaxis observed in the present case represents one of the classical manifestations of CME. Hemorrhage results primarily from thrombocytopenia, platelet dysfunction, immune-mediated platelet destruction and vascular injury caused by widespread vasculitis. (Harrus *et al.*, 1999; Greene, 2022) ^[2, 4]. Marked pallor and severe anemia reflected extensive hematological involvement. Anemia in ehrlichiosis develops through multiple mechanisms including blood loss, immune-mediated erythrocyte destruction, inflammatory suppression of erythropoiesis and bone marrow dysfunction (Harrus *et al.*, 1997) ^[3].

Diagnosis of CME should ideally integrate clinical findings with laboratory confirmation. Peripheral blood smear

examination provides rapid evidence when morulae are present but lacks sensitivity. Serological tests such as rapid immunochromatographic assays are useful screening tools for detecting anti-*Ehrlichia* antibodies; however, positive antibody tests cannot differentiate active infection from previous exposure because antibodies may persist after recovery. In contrast, PCR detects bacterial DNA directly and is regarded as one of the most reliable methods for confirming active infection, particularly when targeting conserved genes such as *virB9* (Iqbal and Rikihisa, 1994; Harrus and Waner, 2011) [5, 6, 7].

The present case involved a young Husky that developed a rapidly progressive and fatal form of canine monocytic ehrlichiosis despite prompt initiation of doxycycline therapy and intensive supportive management. This observation is in agreement with previous reports indicating that German Shepherds and Siberian Huskies are predisposed to developing severe clinical disease with an unfavorable prognosis following *Ehrlichia canis* infection (Aziz *et al.*, 2022) [1]. The heightened susceptibility of these breeds has been attributed to breed-associated variations in host immune responses, which may predispose affected dogs to more severe hematological abnormalities and systemic complications. The fatal outcome within two days emphasizes that advanced ehrlichiosis remains associated with a guarded prognosis, particularly when hemorrhagic manifestations and severe anemia are already evident at presentation. Early diagnosis followed by prompt doxycycline therapy remains essential for improving survival.

Conclusion

This report documents a fatal case of acute canine monocytic ehrlichiosis in a young Husky-dog presenting with unilateral epistaxis, severe anemia and neutrophilia. Diagnosis was established by demonstration of *Ehrlichia canis* morulae in peripheral blood smears, positive rapid immunochromatographic antibody testing and molecular confirmation using *virB9* gene PCR. The case highlights the diagnostic value of combining hematological, serological and molecular techniques for accurate diagnosis of CME and underscores the importance of early therapeutic intervention in dogs presenting with spontaneous hemorrhage.

Acknowledgments

The authors express their sincere gratitude to the Sri Venkateswara Veterinary University (SVVU), Tirupati, Andhra Pradesh, India, for providing the necessary facilities, infrastructure and institutional support to carry out this research. Appreciation is extended to the veterinarians, dog owners and supporting staff who cooperated during sample collection and clinical investigations.

Conflict of Interest: None

References

1. Aziz MU, Hussain S, Song B, Ghauri HN, Zeb J, Sparagano OAE. Ehrlichiosis in dogs: A comprehensive review about the pathogen and its vectors with emphasis on South and East Asian countries. *Veterinary Sciences*. 2023;10(1):21.
2. Greene CE. *Infectious Diseases of the Dog and Cat*. 5th ed. St. Louis: Elsevier; 2022.

3. Harrus S, Kass PH, Klement E, Waner T. Canine monocytic ehrlichiosis: A retrospective study of 100 cases, and an epidemiological investigation of prognostic indicators for the disease. *Veterinary Record*. 1997;141(14):360-363.
4. Harrus S, Waner T, Bark H, Jongejan F, Cornelissen AWCA. Recent advances in determining the pathogenesis of canine monocytic ehrlichiosis. *Journal of Clinical Microbiology*. 1999;37(9):2745-2749.
5. Harrus S, Waner T. Diagnosis of canine monocytotropic ehrlichiosis (*Ehrlichia canis*): An overview. *Veterinary Journal*. 2011;187(3):292-296.
6. Rikihisa Y. *Anaplasma phagocytophilum* and *Ehrlichia canis*: Subversive manipulators of host cells. *Nature Reviews Microbiology*. 2010;8(5):328-339.
7. Waner T, Harrus S, Jongejan F, Bark H, Keysary A, Cornelissen AWCA. Significance of serological testing for ehrlichial diseases in dogs with special emphasis on the diagnosis of canine monocytic ehrlichiosis caused by *Ehrlichia canis*. *Veterinary Parasitology*. 2001;95(1):1-15.