



Ehrlichiosis in Dogs: A Growing Tick-Borne Threat

Kasthuri Dhileep¹, Balaram P² and Pavan Kumar A³.

¹. Ph.D scholar, Department of Veterinar Medicine, College of Veterinary Science, Rajendranagar

Mail ID : kasthuridhileep3128@gmail.com

Contact no: 9391097150

². PG scholar, Department of Veterinary Pathology, N.T.R College of Veterinary Science, Gannavaram

³. PG scholar, Department of Veterinary Pathology, College of Veterinary Science, Rajendranagar

DOI:10.5281/Vettoday.17798261

Introduction

Canine Ehrlichiosis is an important tick-borne infectious disease caused by small (0.2–2 µm), obligate intracellular, gram-negative rickettsial organisms belonging to the genus *Ehrlichia*. Among the various species, *Ehrlichia canis* is regarded as the most pathogenic and is responsible for canine monocytic ehrlichiosis (CME) worldwide. These organisms are pleomorphic and reside within monocytes, macrophages, or granulocytes, where they form characteristic membrane-bound inclusions known as *morulae*—a useful diagnostic indicator (Figure 1). The brown dog tick (*Rhipicephalus sanguineus*) serves as the major vector, contributing to the disease's high prevalence in tropical and subtropical regions, including India. The clinical presentation varies with host immunity, pathogenic species, and treatment status, and infection may progress through acute, sub clinical, or chronic stages.

Etiology

The main species causing disease in dogs include:

- ❖ **Ehrlichia canis** – causes Canine Monocytic Ehrlichiosis (CME)
- ❖ **Ehrlichia ewingii** – causes Canine Granulocytic Ehrlichiosis (CGE)
- ❖ **Ehrlichia chaffeensis** – zoonotic; incidental in dogs

- ❖ **Ehrlichia ruminantium** – rarely affects dogs

Epidemiology

- The disease is common in regions with warm climates and heavy tick infestations.
- Dogs of all ages may be affected, though severity may vary.
- Breeds such as German Shepherds and Siberian Huskies exhibit increased susceptibility and tend to develop more severe clinical forms.
- Incidence tends to rise during peak tick-activity periods.

Transmission

Transmission primarily occurs through bites from infected ticks. *E. canis* is most commonly transmitted by *Rhipicephalus sanguineus*, while *E. ewingii* is spread by the lone star tick (*Amblyomma americanum*). Ticks generally need to remain attached for 24–48 hours to transmit infection. Direct dog-to-dog or dog-to-human transmission does not occur, but infected animals may act as reservoirs for ticks. Rarely, blood transfusions from infected donors may spread the disease.

Pathogenesis

These bacteria are obligate intracellular pathogens that invade and multiply within white blood cells especially monocytes and macrophages leading to immune dysfunction and systemic inflammation. Disease

progression typically follows three distinct phases:

- ◆ **Acute phase (1–3 weeks post-infection):** Rapid replication occurs in mononuclear cells, leading to fever and hematologic changes.
- ◆ **Sub clinical phase:** Dogs may appear clinically normal but remain persistently infected and act as carriers.
- ◆ **Chronic phase:** Long-standing infection results in severe pathology, including bone marrow suppression and life-threatening complications.

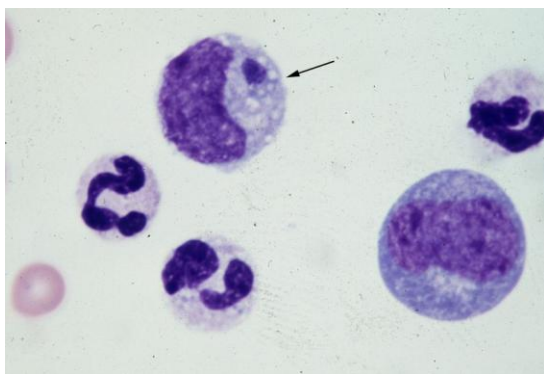


Figure 1. *Ehrlichia canis* morula within a monocyte (arrow) using Wright’s stain, 1000× magnification.

Symptoms

Symptoms of Ehrlichiosis vary depending on the phase of the disease

Acute Phase

- ✓ Fever
- ✓ Depression and poor appetite
- ✓ Generalized lymphadenopathy
- ✓ Polyarthritis, joint pain, or stiffness
- ✓ Bleeding tendencies such as epistaxis, petechiae, or bruising (Figure 2)
- ✓ Ocular abnormalities including uveitis

Subclinical Phase

- ✓ Dogs may remain asymptomatic while harboring the organism.

Chronic Phase

- ✓ Marked weight loss and anemia
- ✓ Severe thrombocytopenia with spontaneous bleeding
- ✓ Neurological abnormalities (seizures, ataxia)
- ✓ Liver or kidney impairment
- ✓ Pancytopenia due to bone marrow suppression

- ✓ Some breeds, notably German Shepherds, are more prone to developing severe chronic disease.



Diagnosis

Diagnosing Ehrlichiosis requires a combination of clinical history, physical examination, and laboratory tests.

Common diagnostic indicators include:

- ◆ **CBC:** anemia, thrombocytopenia, or leukopenia
- ◆ **Serological tests (ELISA, IFA):** detect antibodies but may not differentiate active from past infections
- ◆ **PCR:** highly sensitive for detecting active infection by identifying bacterial DNA
- ◆ **Blood smear examination:** morulae may occasionally be detected in leukocytes
- ◆ Routine screening in endemic areas can aid early identification.
- ◆ In endemic areas, routine screening during annual check-ups is recommended.

Treatment

Prompt therapy is essential for good outcomes. Doxycycline (10 mg/kg once daily for 3–4 weeks) is the treatment of choice and is effective in most cases.

Supportive care may include:

- Intravenous fluids
- Blood transfusions in cases of severe anemia or hemorrhage
- Anti-inflammatory medications
- Hematinics and thrombopoietic agents
- Intensive care for critically ill dogs

While dogs usually respond well in the acute stage, those with chronic disease may require prolonged therapy and carry a guarded prognosis. Regular follow-up testing is recommended.

Prevention

Prevention centers around effective tick control:

- Use of veterinarian-recommended tick preventives (spot-ons, oral acaricides, tick collars)
- Routine inspection and prompt removal of ticks
- Environmental management—keeping yards clean, reducing vegetation, and applying acaricides
- Avoidance of tick-infested areas during high-risk seasons
- No vaccines are currently available; hence prevention relies entirely on tick control
- Annual tick-borne disease screening is advisable in endemic regions