

Ehrlichiosis



PLAY PICMONIC

Characteristics

Intracellular Gram-Negative Rod

[Graham-cracker Negative-devil with Rod Inside Cell](#)

Ehrlichia chaffeensis and *E. ewingii* are obligate intracellular gram-negative rods. They are zoonotic pathogens that are transmitted to humans by the lone star tick and are the causative agent of ehrlichiosis.

Lone Star Tick

[Star-Tick](#)

The lone star tick (*Amblyomma Americanum*) is indigenous to Mexico and the southeastern United States. This tick transmits human monocytic ehrlichiosis.

Deer Reservoir

[Deer](#)

White-tailed deer is the major reservoir of *Ehrlichia chaffeensis*.

Clinical Features

Fever

[Fever-beaver](#)

Immune response to Ehrlichia with resultant release of interleukins and cytokines leads to the development of fever in patients who are infected.

Flu-like Symptoms

[Thermometer and Ice-bag](#)

Inflammation triggered by the infection often leads to non-specific flu-like symptoms (e.g., myalgias, fever).

Rash is Rare

[Dermatologist Looking At a Rare Rash](#)

Ehrlichiosis can mimic Rocky Mountain spotted fever (RMSF) in its clinical manifestations (e.g., fever, myalgias, pancytopenia). However, the rash is rare in ehrlichiosis, which is why it is sometimes referred to as "spotless RMSF".

Diagnostic Workup

Antibody Testing

[Ant-tie-body with Test-Tubes](#)

The diagnosis of ehrlichiosis is confirmed by antibody testing such as indirect immunofluorescence antibody (IFA) assay for immunoglobulin G (IgG).

Pancytopenia

[Pan-side-toe-peanut](#)

Pancytopenia is common in patients with ehrlichiosis. Thrombocytopenia and leukopenia are particularly common. Anemia is less common and is caused by the erythrocytic invasion by *Ehrlichia*.

Monocytes with Cytoplasmic Morulae

[Monkey-monocyte-More-LA](#)

Wright-Giemsa stain of the blood smear often reveals monocytes with cytoplasmic morulae. Morulae are cytoplasmic inclusions made up of microcolonies of *Ehrlichia*.

Treatment

Doxycycline

[Dachshund-cycling](#)

Doxycycline inhibits bacterial protein synthesis by binding to the 30S ribosomal subunit and can be used for the treatment of ehrlichiosis.

Tetracycline

[Tetris-cycle](#)

Tetracyclines (e.g., doxycycline) are used for the treatment of ehrlichiosis. These antibiotics bind to the 30S prokaryotic ribosomal subunit in the mRNA translation complex. By doing so, these drugs prevent the binding of aminoacyl tRNA to the mRNA ribosome complex. The role of aminoacyl tRNA is to deliver the amino acid to the ribosome where it will be incorporated into the polypeptide chain that is being produced. Therefore, if the binding of aminoacyl tRNA subunit is inhibited, protein synthesis will be decreased.