

EHRlichiosis

Human Monocytic (HME), Human Granulocytic (HGE)

REPORTING INFORMATION

- Class A(3)
- Report by the end of the work week
- [Confidential Case Report Card](#) (3812.11 rev.12/81), [lab report](#) (3833.11) or telephone

AGENTS

Ehrlichia chaffeensis (HME)

Ehrlichia species (not yet named) (HGE)

Ehrlichia ewingii

CASE DEFINITION

Clinical Description

A tickborne febrile illness most commonly characterized by acute onset, accompanied by headache, myalgia, rigors and/or malaise. Clinical laboratory findings may include intracytoplasmic microcolonies (morulae) in leukocytes of peripheral smear, cerebrospinal fluid (CSF), or bone marrow aspirate or biopsy, cytopenias (especially thrombocytopenia and leukopenia), and elevated liver enzymes (especially alanine aminotransferase or aspartate aminotransferase).

There are two clinically similar yet serologically distinct forms of ehrlichiosis: a) human granulocytic ehrlichiosis (HGE), caused by infection with *Ehrlichia equi*-like agent and found primarily in the upper midwest and northeast, and b) human monocytic ehrlichiosis (HME) caused by *Ehrlichia chaffeensis* infection and found primarily in the southeastern quadrant of the United States.

Laboratory Criteria for Diagnosis

- Fourfold or greater change in antibody titer to *Ehrlichia* spp. antigen by immunofluorescence antibody (IFA) test in acute- and convalescent-phase specimens ideally ≥ 4 weeks apart. HME diagnosis requires *E. chaffeensis* and HGE currently requires *E. equi* or HGE-agent antigen, or
- Positive polymerase chain reaction assay. Distinct primers are used for the diagnosis of HGE and HME, or
- Intracytoplasmic morulae identified in blood, bone marrow, or CSF leukocytes, **and** an IFA antibody titer ≥ 64

Case Classification

Probable: a clinically compatible case with either a single IFA serologic titer ≥ 64 or intracytoplasmic morulae identified in blood, bone marrow, or CSF leukocytes

Confirmed: a clinically compatible case that is laboratory confirmed

Comment

All laboratory testing should be conducted by experienced personnel with appropriate training and should include appropriate controls and reagents necessary for accurate etiologic diagnosis. States in which cases of HGE and/or HME have occurred may submit reports to CDC.

SIGNS AND SYMPTOMS

Fever, headache, malaise, muscle aches within 5-10 days of tick contact. Other symptoms include nausea, vomiting, diarrhea, cough, joint pain, confusion and occasionally rash. Case fatality rate is estimated at 2% - 3%.

DIAGNOSIS

Testing is not currently available at the ODH Laboratory. Acute and convalescent sera sent to the ODH Lab will be forwarded to CDC for specific diagnosis. Call (614) 644-4659, ODHL, Chief Microbiologist, for details.

EPIDEMIOLOGY

Source

Ehrlichia chaffeensis is transmitted principally by the Lone Star tick, *Amblyomma americanum*. Whitetail deer appear to be a natural reservoir animal.

The HGE agent appears to be transmitted by the black-legged tick, *Ixodes scapularis*, in the northeastern and upper midwestern U.S. and by the western black-legged tick, *Ixodes pacificus* in northern California. Deer, elk and wild rodents are likely reservoirs.

Ehrlichia ewingii appears to be transmitted by the Lone Star tick, *Amblyomma americanum*, with dogs serving as the reservoir host.

Occurrence

HME has been found throughout the southeastern and lower midwestern United States. HGE has been found in the northeastern and upper midwestern United States and in northern California.

Mode of Transmission

Transmission occurs through the bite of an infected tick, or through tick secretions and fluids while carelessly handling ticks.

Period of Communicability

Humans are dead-end hosts, not being able to infect ticks or other humans.

Incubation Period

The incubation period appears to be five to ten days after tick contact.

PUBLIC HEALTH MANAGEMENT

Case

Investigation

A history of the patient's travel and contact with ticks is obtained for one to two weeks prior to onset.

Treatment

Appropriate antibiotic treatment should be initiated immediately when there is a strong suspicion of ehrlichiosis through clinical and epidemiological findings. **Treatment should not be delayed until laboratory confirmation is obtained.** Treatment with doxycycline or other tetracyclines is recommended.

Isolation

None indicated.

Contacts

Preventive and/or prophylactic treatment is not warranted. There is no vaccine for ehrlichiosis.

Prevention and Control

Community education and awareness activities should include methods used for personal protection from tick bites, reducing tick contacts, proper personal inspection and tick removal techniques, and measures that will reduce tick populations on individual properties.

Special Information

It has been determined that established, low density populations of the Lone Star tick, *Amblyomma americanum* are found in southern and southeastern Ohio. *Ehrlichia* antibodies have been detected in blood samples from Whitetail deer in four counties in southern and southeastern Ohio. More information on ehrlichiosis can be found on the Center for Disease Control and Prevention (CDC) web site at: www.cdc.gov

Last revised 7/01