BORRELIA MIYAMOTOI

Disease Overview

Borrelia miyamotoi disease is a tick-borne disease caused by the spirochete bacterium *Borrelia miyamotoi*.

This is a rare but emerging tickborne disease in North America. *B. miyamotoi* disease can be acquired in the upper midwestern, northeastern and mid-Atlantic states, and in Pacific coastal states.

Symptoms

Infection most frequently presents as a self-resolving acute febrile illness, but the spectrum of illness varies from subclinical to severe. The most common symptoms were fever, chills, and headache. Other common symptoms included body and joint pain and fatigue. Rash was uncommon, with fewer than 1 in 10 patients developing a rash. Severe illness affecting the nervous system has also been reported.

Reservoir

To date, blacklegged ticks.

Reservoir hosts support the circulation and maintenance of the pathogen. In North America reservoir hosts potentially are white-tailed deer, however this is not confirmed.

Mode of Transmission

Primarily vector-borne transmission via bites from infected blacklegged ticks (*I. scapularis* and *I. pacificus*).

Incubation period

3 days to 6 weeks, exact range unknown

Period of Communicability

No evidence of natural transmission from person to person.

Risk Factors

Increased risk for acquiring illness:

- Exposure to blacklegged ticks

Increased risk for acquiring/severe illness:

- Risk factors for severe illness could include immunocompromised patients.

Surveillance Case Definition

Confirmed Case

Confirmatory laboratory evidence of infection AND

- Clinical evidence of infection (fever and at least one of the following: chills, headache, body and joint pain, and fatigue)

OR

- Without clinical evidence of infection.

Confirmatory laboratory evidence of infection

- Detection of *Borrelia miyamotoi* DNA in an appropriate clinical specimen by polymerase chain reaction (PCR) test

OR

- Serological evidence of a four-fold change in IgG-specific antibody titre to *Borrelia miyamotoi* antigen in paired serum samples by enzyme immunoassay or ELISA. The first sample taken in the acute phase (in first week of illness) and the second taken in the convalescent phase (2-4 weeks after the first sample).

Probable Case

Supportive laboratory evidence of infection AND clinical evidence of infection (fever and at least one of the following: chills, headache, body and joint pain, and fatigue).

Supportive laboratory evidence of infection:

- Serological evidence of elevated IgG antibody to *B. miyamotoi* in a single specimen.

Diagnosis and Laboratory Guidelines

The diagnosis is based on an assessment of exposure risk, clinical signs and symptoms, in addition to laboratory testing.

Laboratory Testing:

- Real-time polymerase chain reaction (RT-PCR) tests that detect DNA from the bacteria. Prior antibiotic treatment may reduce sensitivity by decreasing the amount of bacterial DNA present in specimens.
- Serologic tests that detect antibodies are most often negative during the acute presentation and are therefore of limited utility in diagnosis, though paired acute and convalescent tests can confirm a recent infection.

  Public Health staff should discuss the findings with the Medical Officer of Health before initiating an investigation.

Reporting

Per Policy 2.2 Disease and Event notification to OCMOHE and Disease and Event Reporting section

- Enhanced surveillance. For all confirmed and probable cases, an enhanced surveillance form should be completed and sent to OCMOHE within 5 days of completing the interview.
- Routine surveillance (RDSS) for all confirmed cases.

Case Management

Education

Case or relevant caregiver should be informed about:

- Nature of infection, length of communicable period, mode of transmission and disease ecology
- Tick bite prevention

Investigation

Obtain travel history, outdoor activity, and tick exposure to determine if source of infection occurred within a recognized endemic focus or not.

Exclusion/Social Distancing

Not applicable.

Treatment

Patients have been successfully treated with doxycycline or amoxicillin at dosages used for Lyme disease. Consultation with an infectious disease specialist may be considered regarding individual patient treatment decisions.

Immunization

Not applicable.

Contact Management

Education

Not applicable

Investigation

Contacts of cases are not at risk as there is no person-to-person transmission.

Exclusion/Social Distancing

Not applicable.

Prophylaxis

Not applicable.

Outbreak Management

Activate the local outbreak plan when an outbreak is declared.