

A 74-year-old male with a history of Hodgkin's lymphoma presents with recurrent fever, fatigue, and night sweats. He was evaluated 10 days ago for similar symptoms and diagnosed with Lyme disease, for which he received IV ceftriaxone. During a recent heat wave, he experienced sudden fatigue, energy loss, tremors, and night sweats. Although the night sweats have subsided, he continues to have chills and intermittent fevers, with a recent spike to 104°F. He reports muscle and joint aches and has increased his fluid intake using Gatorade and Liquid I.V. to prevent dehydration. The COVID-19 test is negative. No cough, shortness of breath, or other respiratory symptoms are present. No weight loss, changes in taste or new rash have been noted. He has spent significant time outdoors over the past month.

Laboratory workup revealed findings suggestive of hemolysis including increased LDH and increased white blood cells count with a neutrophil predominance. Malaria smear by giemsa-stained thin and thick smear is positive for Babesia and % Parasitemia = 1.7%.



Peripheral blood smear showing ring-like forms

Which of the following is false regarding Babesiosis?

- A. Symptoms of Babesiosis typically begin 1 to 4 weeks after exposure to the parasite
- B. Babesiosis is transmitted through tick bites or blood transfusion
- C. Co-infection with Lyme disease is possible
- D. Babesia microti is a rare cause of symptomatic Babesiosis in the U.S.

Answer: D

Explanation:

- Babesia microti is actually the **most common cause** of symptomatic Babesiosis in the U.S., particularly in the Northeast and upper Midwest.
- The disease is primarily transmitted by blacklegged ticks (**Ixodes scapularis**), the same vector responsible for Lyme disease, making co-infection common.
- Symptoms typically appear **within 1 to 4 weeks** after exposure.

- Transmission can also occur via **blood transfusion**, especially in immunocompromised individuals.

Babesia is a genus of parasitic protozoa that invade erythrocytes, causing babesiosis in animals and humans. The parasites are naturally transmitted by ticks. *Babesia microti* is the species that most commonly infects humans and is found worldwide, with most cases occurring in the Northeast and Upper Midwest regions of the United States.

Babesia species have a complex life cycle that involves asexual reproduction in the red blood cells of their mammalian hosts (such as humans) and sexual reproduction in their arthropod vector (ticks). Infection is more common in late spring and early summer, when nymph-stage ticks are most active.

Many people infected with *Babesia microti* are asymptomatic. Others develop non-specific flu-like symptoms, including fever, chills, sweats, headache, body aches, loss of appetite, and fatigue. Symptoms typically appear after an incubation period of 1 to 4 weeks and can last several weeks.

Because *Babesia* parasites infect and destroy red blood cells, babesiosis can cause hemolytic anemia, which may lead to jaundice (yellowing of the skin) and dark urine. Other complications include low blood pressure, thrombocytopenia (low platelet count), and disseminated intravascular coagulation (DIC), which can result in blood clots and bleeding.

In symptomatic individuals, babesiosis is diagnosed by examining blood specimens under a microscope to detect the presence of parasites. Small ring-like structures may be observed both within red blood cells (intracellularly) and outside them (extracellularly). Although rare in human infections, the presence of the Maltese Cross, also known as tetrad formation is considered a helpful diagnostic feature.

People who do not have symptoms or signs of babesiosis generally do not require treatment. Symptomatic patients should receive a course of antimicrobial therapy. Two regimens are considered highly effective: the combination of atovaquone and azithromycin (for mild to moderate disease) and clindamycin and quinine (for severe disease).

The best way to prevent babesiosis is to avoid tick bites, especially when living in or traveling to endemic areas.

Reference

1. <https://my.clevelandclinic.org/health/diseases/24809-babesiosis>
2. Rosalynn Louise Ord, Cheryl A lobo, "Human Babesiosis: Pathogens, Prevalence, Diagnosis and Treatment" Clin Microbiol . 2015 Dec;2(4):173-181.doi: 10.1007/s40588-015-0025-z. Epub 2015 Sep 28. PMID: PMC4649939 PMID: 26594611

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