CONDITION

Babesiosis

Learn how babesiosis spreads, what symptoms it can cause, how it is diagnosed and treated, and when to seek urgent medical care.

WHAT IT IS
Parasitic infection of red blood cells

BODY SYSTEM
Blood and circulation

MAIN SYMPTOMS
Fever, fatigue, body aches, headache

WHAT CAUSES IT
Parasitic infection

HOW IT IS DIAGNOSED
Blood smear and PCR blood tests

MAIN TREATMENT
Combination antimicrobial treatment

CAN IT BE CURED?
Sometimes - infection may persist or relapse

IS IT AN EMERGENCY?
Sometimes - severe trouble breathing

LONG-TERM OUTLOOK
Most recover, but weakened immunity raises relapse risk

Overview

Babesiosis is an infection caused by microscopic parasites that enter and damage red blood cells. These cells carry oxygen throughout the body. The most common cause in the United States is Babesia microti .

Most infections occur after the bite of an infected blacklegged tick, also called a deer tick. This is the same type of tick that can transmit Lyme disease. Babesiosis is reported most often in parts of the Northeast and upper Midwest, although infections can occur elsewhere.

The infection ranges from having no symptoms to causing a serious illness. When red blood cells are destroyed faster than the body can replace them, a person can develop hemolytic anemia. "Hemolytic" means that red blood cells are breaking apart. Severe infection can also affect the lungs, kidneys, heart, or other organs.

People without a spleen, older adults, and those with weakened immune systems have a greater risk of severe or long-lasting illness. However, symptoms alone cannot show whether someone has babesiosis. Blood testing is needed for diagnosis.

Babesiosis does not usually spread through ordinary contact, coughing, food, water, or sexual activity. Less commonly, it may be transmitted through donated blood. Transmission from a pregnant person to a fetus or newborn has also been reported.

Symptoms

Many people infected with Babesia do not notice any symptoms. When symptoms occur, they may begin within weeks of a tick bite. In some cases, they appear months later. Because ticks can be very small and their bites are often painless, many people do not remember being bitten.

Early symptoms may resemble the flu and can include:

Unlike Lyme disease, babesiosis does not usually cause a distinctive expanding rash. A rash may suggest another tick-borne infection or a different condition.

As the infection damages red blood cells, symptoms may include shortness of breath, pale skin, a fast heartbeat, jaundice, or dark urine. Jaundice is a yellow color in the skin or whites of the eyes. Dark urine can develop when products from broken-down blood cells are removed from the body.

Contact a clinician promptly if fever, marked fatigue, dark urine, jaundice, or shortness of breath develops after possible tick exposure, especially if you do not have a spleen or have a weakened immune system.

Seek emergency care for severe trouble breathing, chest pain, fainting, new confusion, difficulty waking, blue or gray lips, or rapidly worsening weakness. These symptoms can have many causes, but they need immediate assessment.

- Fever, sometimes with chills or sweating
- Headache
- Muscle or body aches
- Unusual tiredness or weakness
- Loss of appetite
- Nausea
- Joint discomfort

Causes and risk factors

Babesiosis is caused by Babesia parasites. In the United States, infected blacklegged ticks are the main source of infection. Young ticks called nymphs are especially easy to miss because they are about the size of a poppy seed.

Ticks usually must attach and feed before they can transmit the parasite. Prompt tick removal may reduce the chance of infection, but there is no exact attachment time that can guarantee whether transmission did or did not occur.

Activities that increase contact with ticks include walking, working, gardening, hunting, or camping in wooded, brushy, or grassy areas. Exposure is more common during warmer months, but ticks may be active whenever temperatures allow.

A person can have babesiosis and another tick-borne infection at the same time. Blacklegged ticks may also carry the bacteria that cause Lyme disease, anaplasmosis, and other infections. Symptoms that are unusual, severe, or slow to improve may lead a clinician to test for more than one infection.

Factors associated with a greater chance of severe or persistent babesiosis include:

The spleen helps remove infected red blood cells and supports the immune response. People who have had their spleen removed should tell a clinician about possible tick exposure even if early symptoms seem mild.

- Having no spleen or a spleen that does not work normally
- Having a weakened immune system because of cancer, HIV, an organ transplant, or immune-suppressing treatment
- Taking certain medicines that reduce antibody-producing B cells
- Being an older adult
- Having significant heart, lung, kidney, or liver disease

Diagnosis

A clinician will ask about symptoms, recent travel, outdoor activity, tick exposure, blood transfusions, medical conditions, and medicines that affect the immune system. Not recalling a tick bite does not rule out babesiosis.

A complete blood count may show anemia and a low platelet count. Platelets help blood clot. Other tests may show increased bilirubin or other signs of red blood cell breakdown, as well as changes in liver or kidney function. These findings can support the diagnosis but are not

specific to babesiosis.

Confirmation usually involves one or more specialized blood tests:

On a blood smear, Babesia can sometimes resemble the parasite that causes malaria. Travel history and confirmatory testing can help distinguish them.

A clinician may also consider other causes of fever and anemia. These include viral infections, medication reactions, autoimmune conditions, malaria after relevant travel, and other tick-borne diseases.

- Blood smear: A laboratory professional examines blood under a microscope for parasites inside red blood cells. More than one smear may be needed because parasite levels can be low.
- Polymerase chain reaction, or PCR: This test looks for Babesia genetic material and may detect infection when a smear is negative.
- Antibody testing: This measures the immune system's response to Babesia . Antibodies can remain after an infection has cleared, so a positive antibody result alone does not prove that parasites are currently present.

Treatment and management

Treatment depends on whether symptoms are present, the severity of illness, the person's immune health, and whether parasites continue to be found in the blood.

Many people with a positive test but no symptoms do not need immediate medication. A clinician may recommend observation and repeat testing, particularly if parasites remain visible in the blood.

Symptomatic babesiosis is usually treated with a combination of two antimicrobial medicines. Atovaquone with azithromycin is commonly used for uncomplicated infection. Clindamycin with quinine is another combination and may be used in selected situations. Treatment commonly lasts about 7 to 10 days in otherwise healthy people, but the exact plan must be chosen by a clinician.

People with weakened immune systems may need a longer course and repeated blood smears. Persistent infection can sometimes require changes in medication under the care of an infectious disease specialist.

Severe babesiosis generally requires hospital treatment. Care may include intravenous medicine, fluids, oxygen, blood transfusion, or support for affected organs. In selected patients with a very high parasite level, severe anemia, or major lung, kidney, or liver problems, clinicians

may consider a red blood cell exchange transfusion. This procedure removes some infected red blood cells and replaces them with donor cells.

Pregnant patients and children need treatment plans suited to their circumstances. Pregnancy can affect the choice of medicine, and infection may rarely pass to the fetus. An obstetric or pediatric specialist may be involved.

Do not use leftover antibiotics or attempt to treat a suspected infection without testing. The medicines used for babesiosis may cause side effects and interact with other drugs. A clinician or pharmacist should review all prescription medicines, nonprescription products, and supplements.

Rest, adequate fluids, and gradual return to activity may support recovery. These measures do not replace antiparasitic treatment when treatment is needed.

Complications

Babesiosis can cause ongoing destruction of red blood cells. Severe anemia reduces oxygen delivery and may place added strain on the heart and lungs.

Possible complications include:

A person can worsen even after symptoms have been present for several days. Prompt medical assessment is especially important for anyone without a spleen, with immune suppression, or with signs of anemia.

Most people who receive appropriate care recover. Fatigue may improve more slowly than fever or other symptoms. Persistent fatigue alone does not confirm that active parasites remain, so follow-up testing should be guided by a clinician.

- Very low blood pressure
- Acute respiratory distress, in which the lungs cannot provide enough oxygen
- Kidney or liver injury
- Abnormal blood clotting
- Heart problems
- Splenic injury, including rare splenic rupture
- Persistent or relapsing infection in people with weakened immunity

Follow up

Follow-up depends on the severity of the infection and the person's immune health. A clinician may repeat a complete blood count, blood smear, or tests of liver and kidney function to confirm that red blood cells and platelets are recovering.

For people with intact immune systems, routine parasite testing is generally not continued after symptoms have resolved unless symptoms return. PCR can remain positive for a time and does not always mean that more treatment is needed.

People with weakened immune systems often need closer monitoring. Blood smears may be checked during treatment and after symptoms improve because relapse is more likely in this group. Do not stop or extend prescribed treatment without discussing it with the treating clinician.

Contact the care team if fever returns, fatigue worsens, or new jaundice, dark urine, shortness of breath, or weakness develops. Emergency symptoms such as severe breathing difficulty, chest pain, fainting, or confusion require immediate care rather than a routine appointment.

People diagnosed with babesiosis should not donate blood while infected and should follow the blood collection organization's eligibility instructions afterward. If a diagnosis is made after a recent donation, notify the blood center.

Future tick bites can cause another infection. When spending time in tick habitat, use an Environmental Protection Agency-registered repellent as directed, wear protective clothing, check the body and clothing for ticks, shower after coming indoors, and remove attached ticks promptly with fine-tipped tweezers.

Sources

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