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Lyme disease

Lyme disease is a bacterial infection that is spread through the bite of one of several types of ticks.

See also: Lyme disease - what to ask your doctor

Causes

Lyme disease is caused by bacteria called *Borrelia burgdorferi* (B. burgdorferi). Blacklegged ticks and other species of ticks can carry these bacteria. The ticks pick up the bacteria when they bite mice or deer that are infected with B. burgdorferi. You can get the disease if you are bitten by an infected tick.

Lyme disease was first reported in the United States in the town of Old Lyme, Connecticut, in 1977. The same disease occurs in many parts of Europe and Asia. In the United States, most Lyme disease infections occur in the following areas:

- Northeastern states, from Virginia to Maine
- North-central states, mostly in Wisconsin and Minnesota
- West Coast, particularly northern California

There are 3 stages of Lyme disease.

- Stage 1 is called early localized Lyme disease. The infection has not yet spread throughout the body.
- Stage 2 is called early disseminated Lyme disease. The bacteria have begun to spread throughout the body.
- Stage 3 is called late disseminated Lyme disease. The bacteria have spread throughout the body.

Risk factors for Lyme disease include:

- Doing outside activities that increase tick exposure (for example, gardening, hunting, or hiking) in an area where Lyme disease is known to occur
- Having a pet that may carry ticks home
- Walking in high grasses

Important facts about tick bites and Lyme disease:

- In most cases in the U.S., a tick must be attached to your body for 24 - 36 hours to spread the bacteria to your blood. Ticks that cause Lyme disease

in Europe transmit the bacteria more quickly, within 24 hours.

- Blacklegged ticks can be so small that they are almost impossible to see. Many people with Lyme disease never even see or feel a tick on their body.
- Most people who are bitten by a tick do not get Lyme disease.

Symptoms

Symptoms of early localized Lyme disease (Stage 1) begin days or weeks after infection. They are similar to the flu and may include:

- Chills
- Fever
- General ill feeling
- Headache
- Joint pain
- Muscle pain
- Stiff neck

There may be a "bull's eye" rash, a flat or slightly raised red spot at the site of the tick bite. Often there is a clear area in the center. It can be large and expanding in size. This rash is called erythema migrans. Without treatment, it can last 4 weeks or longer.

Symptoms may come and go. Untreated, Lyme disease can spread to the brain, heart, and joints.

Symptoms of early disseminated Lyme disease (Stage 2) may occur weeks to months after the tick bite and may include:

- Numbness or pain in the nerve area
- Paralysis or weakness in the muscles of the face
- Heart problems, such as skipped heartbeats (palpitations), chest pain, or shortness of breath

Symptoms of late disseminated Lyme disease (Stage 3) can occur months or years after the infection. The most common symptoms are muscle and joint pain. Other symptoms may include:

- Abnormal muscle movement
- Joint swelling
- Muscle weakness
- Numbness and tingling
- Speech problems
- Thinking (cognitive) problems

Exams and Tests

A blood test can be done to check for antibodies to the bacteria that cause Lyme disease. The most commonly used is the ELISA for Lyme disease test. An

immunoblot test is done to confirm ELISA results.

In areas where Lyme disease is more common, your health care provider may be able to diagnose early disseminated Lyme disease (Stage 1) without doing any lab tests. In the early stage of infection, blood tests can be normal.

Other tests that may be done when the infection has spread include:

- Electrocardiogram
- Echocardiogram to look at the heart
- MRI of the brain
- Spinal tap (lumbar puncture to examine spinal fluid)

Treatment

Anyone who has been bitten by a tick should be watched closely for at least 30 days.

A single dose of doxycycline may be offered to someone soon after being bitten by a tick, if all of these conditions are true:

- The person has a tick that can carry Lyme disease attached to his or her body. This usually means that a nurse or physician has looked at and identified the tick.
- The tick is thought to have been attached to the person for at least 36 hours.
- The person can begin taking the antibiotics within 72 hours of removing the tick.
- The person is over 8 years old and is not pregnant or breastfeeding.

A 10 day to 4-week course of antibiotics is used to treat people who are diagnosed with Lyme disease, depending on the choice of drug.

- The choice of antibiotic depends on the stage of the disease and the symptoms
- Common choices include doxycycline, amoxicillin, azithromycin, cefuroxime, and ceftriaxone

Pain medications, such as ibuprofen, are sometimes prescribed to relieve joint stiffness.

Outlook (Prognosis)

If diagnosed in the early stages, Lyme disease can be cured with antibiotics. Without treatment, complications involving the joints, heart, and nervous system can occur. However, these symptoms and stages are still treatable and curable.

Rarely, a person will continue having symptoms that can interfere with daily life after they have been treated with antibiotics. Some people call this post-Lyme disease syndrome. The cause of this syndrome is unknown.

Symptoms that occur after antibiotic treatment for Lyme disease may not be signs of active infection and may not respond to antibiotic treatment.

Possible Complications

Stage 3, or late disseminated, Lyme disease can cause long-term joint inflammation (Lyme arthritis) and heart rhythm problems. Brain and nervous system problems are also possible, and may include:

- Decreased concentration
- Memory disorders
- Nerve damage
- Numbness
- Pain
- Paralysis of the face muscles
- Sleep disorders
- Vision problems

When to Contact a Medical Professional

Call your health care provider if you have:

- A large, red, expanding rash that may look like a bull's eye
- Had a tick bite and develop weakness, numbness, tingling, or heart problems
- Symptoms of Lyme disease, especially if you may have been exposed to ticks

Prevention

Take precautions to avoid direct contact with ticks. Be extra careful during warmer months. Whenever possible:

- Avoid wooded or bushy areas, or areas with high grasses and leaf litter.
- Walk in the center of trails.
- Check yourself and your pets frequently during and after your walk or hike.

When walking or hiking in wooded or grassy areas, spray all exposed skin and your clothing with insect repellent.

See also: Bug repellent safety

You may also treat clothing, such as boots, pants, and socks, with a product that contains permethrin. It remains protective for several washings.

Ticks that carry Lyme disease are so small that they are very hard to see. After returning home, remove your clothes and thoroughly inspect all skin surface areas, including your scalp. Shower soon after coming indoors to wash off any unseen ticks.

See also: Tick removal

Alternative Names

Borreliosis; Bannwarth syndrome

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