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Lyme disease is caused by a spiral shaped bacteria (spirochete) called Borrelia burgdorferi. These bacteria are found in deer ticks.

The most common indicator of infection with Borrelia burgdorferi is a bull's eye rash around the area of a tick bite. These rashes are called erythema chronicum migrans. Rashes can also be less typical in shape. The rash occurs approximately 2-4 weeks following the initial tick bite. However, the rash is absent in at least 25 - 35 percent of people who become infected. Typical treatment for Lyme disease is oral antibiotics (Doxycycline) for approximately 14-21 days.

1. Fewer than 50% of patients with Lyme disease recall any rash.
2. Fewer than 50% of patients with Lyme disease recall a tick bite.

Due to the large percentage of people that do not present with a rash, Lyme disease can go undetected and become a chronic Lyme infection. Approximately 4-6 weeks following the tick bite, the first systemic symptoms (other than multiple rashes) occur in some patients, usually in the form of "flu". Patients with chronic Lyme disease most commonly have sore throat, headaches and neck pain, severe fatigue, joint and muscle pain, sleep disorders and cognitive problems, also known as “brain fog”. In addition, infection with Borrelia often results in a low-grade encephalitis (infection of the brain) that can cause depression, bipolar disorder, panic attacks, numbness, tingling, burning, weakness, or twitching. Some patients experience Bell’s palsy, which causes the drooping of one side of the face.

After several months, approximately 60% of patients with untreated infection will begin to have intermittent bouts of arthritis, with severe joint pain and swelling. Large joints are most often affected, particularly the knees. Chronic Lyme is a persistent and debilitating disease.

The major symptoms of chronic Lyme disease that overlap with Chronic Fatigue and Immune

Dysfunction Syndrome (CFIDS) are:

- cognitive dysfunction and mood changes
- central nervous system irritability, including parathesias (numbness, tingling crawling and itching sensations)
- fatigue
- flu-like illness: fevers, malaise, headache, muscle aches
- joint aches (arthralga) and intermittent swelling and pain of one or a few joints.
- sleep disturbance

Due to these similarities, it is very difficult to tell the difference between the two illnesses especially if there's no tick-associated rash.

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Diagnosis

The diagnosis of Lyme disease is very complicated due to the interpretation of clinical symptoms and also the lack of reliable diagnostic testing. Similar to CFS/CFIDS/ME, the persistence of unexplainable symptoms for greater than 6 months in the absence of another alternative diagnosis may be indicative of chronic Lyme disease.
In 1994, the Centers for Disease Control & Prevention (CDC) published a two-step protocol for testing the presence of Lyme Disease.

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CDC 2-step protocol:

1. The first step uses an ELISA or IFA test. These tests are designed to be very "sensitive," meaning that almost everyone with Lyme disease, and some people who don't have Lyme disease, will test positive. If the ELISA or IFA is negative, it is highly unlikely that the person has Lyme disease, and no further testing is recommended. If the ELISA or IFA is positive or indeterminate (sometimes called "equivocal"), a second step should be performed to confirm the results.

2. The second step uses a Western blot test. Used appropriately, this test is designed to be "specific," meaning that it will usually be positive only if a person has been truly infected. If the

Western blot is negative, it suggests that the first test was a false positive, which can occur for several reasons. Sometimes two types of Western blot are performed, IgM and IgG. Patients who are positive by IgM but not IgG should have the test repeated a few weeks later if they remain ill. If they are still positive only by IgM and have been ill longer than one month, this is likely a false positive.

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Testing

The CDC does not recommend testing blood by Western blot without first testing it by ELISA or IFA. Doing so increases the potential for false positive results. Such results may lead to patients being treated for Lyme disease when they don't have it and not getting appropriate treatment for the true cause of their illness. For detailed recommendations for test performance and interpretation of serologic tests for Lyme disease, see the CDC Recommendations .

Presently, physicians perform laboratory testing such as the ELISA and Western Blot for testing Lyme disease. Over the last 10 years, the ELISA has been shown to be an unreliable test in many patients with Lyme disease, both in early infection and later disease. This is mostly due to the lack of sensitivity of this test.

Because Western blots separate the proteins of the Borrelia, specific reactions can be visualized and more accurate interpretations of the results made. Over 75% of patients with chronic Lyme disease are negative by ELISA, while positive by Western blot.

If a person suspects Lyme infection, s/he should seek medical attention immediately. Despite the CDC recommended protocol, the Western blot is the most sensitive test and is the best indicator of disease. Therefore, if ELISA testing is negative, patients should request the Western blot test from their physician.

Infectious Disease physicians are the most knowledgeable in treating Lyme disease and should be consulted concerning appropriate blood tests and diagnostic testing results.

One authority writes: "…doctors (infectious disease, internists, family practice, etc.) most often use the Centers for Disease Control (CDC) criteria to define a positive test…To adequately detect and treat chronic Lyme disease, physicians must understand that standard tests will miss the majority of these cases. One must undergo more specialized testing and a multi-system integrative treatment approach to achieve success in the majority of patients. If one uses an expanded Western blot with revised CDC requirement criteria for diagnosis, studies have demonstrated an improved sensitivity of detection of over 90%, while having a low false positive rate of less than 3%."

There is a great deal of controversy today concerning the diagnosis of Lyme disease. This controversy surrounds the accuracy of diagnostic tests, interpretation of testing results and treatment plans. Consult your physician, and if necessary an Infectious Disease specialist in Lyme disease.

Reference:
Weintraub P. *Cure Unknown: Inside the Lyme Disease Epidemic*. St. Martin's Press, 2008. ISBN: 978-0-312-37812-7

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