



## Lyme Disease Co-Infections

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January 2013 - Many different types of ticks cause Lyme Disease. More and more research studies are concluding that the deer tick that is the vector for spreading Lyme disease is only one of a dozen of ticks that can infect humans. In addition, one tick may **carry more than one disease**, and therefore those infected with the bacteria that causes Lyme disease are at risk to develop other co-infections as well. Although many of these infections cause non-specific symptoms such as headaches and flu-like symptoms, it is important to get the correct diagnosis, since the treatment of Lyme disease co-infections may require different medications.

The suspicion of co-infections occurs when an individual does not respond optimally to the antibiotics used to treat Lyme disease, or in the cases of severe forms of Lyme which require longer recovery periods. The following are considered the major Lyme disease co-infections:

**Babesiosis** is caused by the bacteria *Babesia microti*, and the same ticks that cause Lyme disease, Deer Tick Pacific and Black-legged Ticks, are the vectors. Signs and symptoms include fever and chills, fatigue, digestive symptoms such as nausea or vomiting, and hemolytic anemia. In severe cases, if left untreated, the infection can lead to death.

**Ehrlichiosis** is caused by *Ehrlichia phagocytophila* which is carried by the Deer Tick Pacific, Black-legged tick, American Dog Tick and Long Star Tick. Symptoms include fever, headache, chills, malaise, muscle pain, nausea, vomiting, diarrhea, confusion, conjunctival injection (red eyes), and rash (particularly in children). This disease can be fatal if left untreated, too.

**Q Fever** is caused by *Coxiella burnetii* caused by the bite of the Brown Dog Tick, Rocky Mountain Wood Tick and the Lone Star Tick. Typical symptoms include acute fever, chills and abundant sweats, muscle pains, dry cough, abdominal pain or chest pain.

**Rocky Mountain Spotted Fever** is caused by *Rickettsia* caused by the bite of the American Dog Tick and Rocky Mountain Wood Tick. Typical symptoms include sudden fever, a characteristic rash on soles of hands and feet that spreads over the entire body as well as general symptoms such as malaise and chills. There is a 3%-5% fatality rate if left untreated.

**Tularemia** is a disease caused by *Francisella tularensis* and rabbits, hares, and rodents are especially susceptible when bitten by tick and often die in large numbers during outbreaks. Deaths can occur in humans as well, but commonly this disease is associated with indolent ulcers, swollen lymph nodes and flu-like symptoms.

- Bartonellais caused by 2 species of bacteria from a genus with the same name, *Bartonella Quintana* and *Bartonella henselae*. Cats, ticks and fleas are the vectors of this infection. Beside fever and flu-like symptoms, *Bartonella* disease can cause neurological symptoms, enlarged lymph nodes and skin lesions.

**Powassan** viral encephalitis is a serious Lyme disease co-infections, with a 10% fatality rate and significant neurological symptoms occurring in half of those developing the disease. Fever and signs/symptoms of meningoencephalitis (severe headache, stiff neck, vomiting or nausea, confusion or difficulty concentrating, seizures, sleepiness and sensitivity to light) occur.

Thus, if you have been diagnosed with Lyme, it is important to get tested for any of the above Lyme disease co-infections that have been linked with Lyme disease and promptly start the proper treatment protocols.

References:

<http://www.cdc.gov/ehrlichiosis/symptoms/>

<http://www.cdc.gov/qfever/symptoms/index.html>

[http://www.lymedisease.org/lyme101/coinfections/tick\\_chart1.html](http://www.lymedisease.org/lyme101/coinfections/tick_chart1.html)