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## LYME DISEASE: A Review.

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### ABSTRACT

Lyme disease is a spirochetal infection caused by *Borrelia Burgdorferi* and transmitted by the bite of an infected deer tick. It is now the most common vector-borne disease in the United States. In India exact figures for prevalence are not available. The tick typically feeds on mice, dogs, cats, cows, horses, deer and humans. Person to person transmission does not occur. The peak season for human infection is during the summer months. Reinfection is not uncommon. A diagnosis of lyme disease is often based on clinical manifestations, in particular the EM (*Erythema Migrans*) lesion and a history of exposure in an endemic area. Reducing exposure to ticks is the best way to prevent lyme disease. No vaccine is available for lyme disease.

**Keywords:** Ticks, erythema migrans, spirochetes, vector

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## INTRODUCTION

Lyme disease is a bacterial infection that is spread through the bite of one of several types of ticks. Lyme disease is a spirochetal infection caused by *Borrelia Burgdorferi* and transmitted by the bite of an infected deer tick. Arthritis in Lyme disease was caused by spirochete *Borrelia Burgdorferi* which has been detected in synovial fluid by PCR –polymerase chain reaction and is transmitted from deer by a tick (ixodes). It occurs in commonly in children and may be mistaken for still's disease [1].

### 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.

### 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

### INCUBATION PERIOD

Infection to First Symptom Usually 14-23 Days [5]

### 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 (EM). Without treatment, it can last 4 weeks or longer. The lesion begins as a red macule or papule that slowly expands to form a large round lesion of upto 12 in with a bright border and central clearing [4].

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

#### **DIAGNOSTIC METHODS**

- Enzyme immune assay(EIA)
- Western blot test
- Electrocardiogram
- Echocardiogram
- MRI of brain
- Lumbar puncture

#### **MANAGEMENT**

Persons bitten by a tick should be watched closely for at least 30 days to see if a rash or symptoms develop. A single dose of the antibiotic doxycycline may be given to someone soon after being bitten by a tick. 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 [3]

- The choice of antibiotic depends on the stage of the disease and the symptoms.
- Common choices include doxycycline, amoxicillin, azithromycin, cefuroxime, and ceftriaxone.
- Pain medicines, such as ibuprofen, are sometimes prescribed for joint stiffness.

#### **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 include:

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

#### **PREVENTION**

Take precautions to avoid tick bites. Be extra careful during warmer months. When possible, avoid walking or hiking in the woods and areas with high grass.

MEASURES TO BE TAKEN TO PREVENT TICK BITES:

- Wear light-colored clothing so that if ticks land on you, they can be spotted and removed.
- Wear long sleeves and long pants with pant legs tucked into your socks.{1}
- Spray exposed skin and your clothing with insect repellent, such as DEET or permethrin.
- After returning home, remove your clothes and thoroughly inspect all skin surface areas, including your scalp. Shower as soon as possible to wash off any unseen ticks.

**STEPS TO REMOVE TICKS:**

- Grasp the tick close to its head or mouth with tweezers. Do not use your bare fingers. If needed, use a tissue or paper towel.
- Pull it straight out with a slow and steady motion. Avoid squeezing or crushing the tick. Be careful not to leave the head embedded in the skin.
- Clean the area thoroughly with soap and water. Also wash your hands thoroughly.
- Save the tick in a jar.
- Watch carefully for the next week or two for signs of Lyme disease.
- If all parts of the tick cannot be removed, get medical help. Bring the tick in the jar to your doctor appointment. save the tick in a bottle of alcohol [4].

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