

Named after series of arthritis+rash cases occurring in Lyme, Connecticut in 1975.  
Caused a spirochaete, *Borrelia burgdorferi* (and others) carried by *Ixodes* spp. (deer) ticks.

### Pathophysiology

- The infection may be cleared by host defences → asymptomatic but seropositive.
- But may spread by direct invasion e.g. erythema chronicum migrans, or,
- may excite an immune response → a variety of clinical manifestations e.g. neurological or musculoskeletal. HLA- DR4 and HLA- DR2 are associated with such disease.

### Epidemiology

- Uncommon
- Occurs in temperate forested regions of North America, Europe, and Asia.
- It has not been found in tropical areas or in the southern hemisphere.
- Risk of infection is greater if the tick is attached for more than 24 hours.
- There is a rise in reported cases in autumn, but the peak occurs in spring and summer.

### Presentation

May be asymptomatic

#### 1. Early Lyme Disease (Stage 1 or localised disease):

- Erythema migrans: Circular spreading rash @ bite by 6wk. Multiple in 40%, recurs in 20%.
- ~66% will also have pyrexia, arthritis, musculoskeletal symptoms and/or local ↑LN

#### 2. Disseminated Lyme disease (or Stage 2 disease ):

- Flu-like illness (malaise, myalgia, fatigue), oligoarthralgia (60%).
- Intermittent inflammatory arthritis
- CNS disorders (15%): cranial nerve palsies, meningitis, mild encephalitis, peripheral mononeuritis, lymphocytic meningoradiculitis (or Bannwarth's Syndrome)
- Cardiovascular (10%): transient AV block, myocarditis, or chronic dilated cardiomyopathy.
- Occasionally hepatitis, orchitis, uveitis and panophthalmitis.
- Lymphocytomas: Bluish-red nodules typically on earlobe or nipple (not US Lyme disease)

#### 3. Late manifestations of Lyme disease (or Stage 3 disease):

- Prolonged arthritis
- Encephalopathy
- Polyneuropathy
- Fibromyalgia.

### Investigations

ECG, serology (total or IgG and IgM) - If symptomatic (other than just erythema migrans - antibodies develop after the rash) and confirm positive titres with a Western blot.

### Management

- Remove tick
- In endemic areas **doxycycline** 200mg PO stat within 72 hours of tick removal.
- ABx: PO (**doxycycline**, **amoxicillin** or **azithromycin**), or IV (**cefotaxime** or **ceftriaxone**)
  - Give 4wks PO Rx. Use IV if PO fails or encephalitis/ encephalopathy
- Temporary pacemaker may be required if there is carditis and conduction defects.

### Complications

- If untreated: arthritis (50%), meningitis or neuropathies (15%), carditis (5-10%) and, rarely, encephalopathy. Over 90% of facial palsies resolve spontaneously
- Jarisch-Herxheimer reaction may occur soon after treatment is initiated.
- Recovery is often incomplete if disease presents late, however rarely fatal.