

# Microbiological diagnosis of Lyme borreliosis

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## SUMMARY

Lyme borreliosis is a complex multisystem disorder. Clinical manifestations are variable and differential diagnosis is often difficult. Besides clinical criteria (erythema migrans), the diagnosis of Lyme borreliosis can be ascertained by demonstration of borrelial infection using either direct (isolation, PCR) or indirect (serology) microbiological tests. Isolation of *B. burgdorferi* sensu lato from clinical material represents the most reliable method for confirming borrelial infection. PCR has been developed for the detection of *B. burgdorferi* sensu lato DNA in clinical specimens. In contrast to culture, PCR is a rapid method but it is not standardized. Serologic tests represent the most commonly used method for establishing microbiological diagnosis of borrelial infection. Specific IgM and IgG antibodies can be detected in blood, CSF and synovial fluid. The percentage of seropositivity increases with duration of infection. It is not possible with serologic tests to distinguish between acute, late, active, or treated disease. In patients with Lyme borreliosis a specific T-cell response to *B. burgdorferi* sensu lato can also be detected.

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## Introduction

### KEY WORDS

Lyme  
borreliosis,  
diagnosis,  
isolation,  
PCR,  
serology

Lyme borreliosis is a complex multisystem disorder that affects persons of all ages and both sexes. Infection can manifest with protean clinical signs; different organs can be affected, including the skin, nervous system, joints, and others (1). Clinical manifestations are variable and differential diagnosis is often difficult. The best clinical marker of the disease is the initial skin lesion erythema migrans (1, 2). In some patients clinical manifestations are not specific but indicate a borrelial etiology, in others they can be entirely non-specific for

borrelial infection. In these cases, microbiological confirmation of borrelial infection is essential (3).

Besides clinical criteria (primarily the presence of erythema migrans), the diagnosis of Lyme borreliosis can be ascertained by demonstration of borrelial infection using either direct (isolation, PCR) or indirect (serology) microbiological tests. Each individual method has its own sensitivity and specificity; criteria for the evaluation are based on clinical parameters. In many cases different tests are combined.

