

JOINT MANIFESTATIONS OF LYME BORRELIOSIS

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ABSTRACT

Musculoskeletal involvement is a common feature of Lyme Borreliosis. Migratory pain in muscle, joints, or entheses occur early in the illness. Weeks to months later, untreated patients may begin to have intermittent or chronic mono- or oligoarticular arthritis, primarily affecting the knee. Only a small percentage of these patients develop chronic joint involvement. In patients with acrodermatitis chronica atrophicans, distinctive signs of joint and bone involvement can be found beneath the skin lesions.

KEY WORDS

Lyme Borreliosis, arthritis, joint and bone involvement

INTRODUCTION

Lyme arthritis (LA) was first described in North America by Steere et al. in 1976 as a previously unrecognized rheumatic disorder (1,2). Soon it turned out that LA was only one expression of a multisystem inflammatory disease (3), the dermatological and neurological manifestations of which had been described as separate entities in Europe in the early 1900s (4-6). Thus, it was believed for a long time that arthritis was a special American feature of Lyme Borreliosis (LB). In the meantime, reports on LA from nearly all European countries (reviewed in ref. 7) have confirmed previous lines of reasoning that the presumed continental difference regarding arthritis merely reflected the lack of awareness of LA in Europe (8).

INCIDENCE OF JOINT MANIFESTATIONS

In a study of 55 patients in North America who had not received antibiotics for relief of erythema migrans (EM), ten patients (18%) experienced arthralgias and 28 patients (62%) developed true arthritis with its onset as long as two years after suffering from EM (9). However, only one out of 16 patients in Sweden developed arthritis after spontaneous healing of EM (10); the follow-up period for this study was not reported. Moreover, by the time that EM and neurological manifestations of LB come to be treated more readily with antibiotics, such cases of „classic LA“ with preceding extra-articular manifestations will be increasingly rare.

Nevertheless, LA may occur as the sole manifestation of LB. Serological studies in our patients with otherwise unclassified monoarticular or oligoarticular arthritis suggest that LA without extra-articular manifestations of LB preponderates over „classic LA“ (11-13).

CLINICAL FEATURES

A variety of musculoskeletal manifestations may occur in LB, including arthralgias, myalgias, true arthritis, tendinitis and bursitis.

ARTHRALGIAS

Attacks of pain in joints, entheses, tendons, muscles, bones or the spine are characteristic of

the early disseminated infection (Stage 2) of LB (9). Arthralgias usually affect multiple joints in a migratory pattern. Particular episodes last from hours to days and are separated by days to months of remission (2,3,7,9,11-13).

The duration of arthralgias in patients who were not treated for EM ranged from 1 month to 6 years (mean 3.1 years) (9). Attacks of arthralgias were also reported to occur as long as 10 years after the spontaneous resolution of LA (12,14).

ARTHRITIS

Frank arthritis may occur within a few days to two years after the onset of the illness, on the average of 3 to 6 months (9,13). LA often begins at

Table. Musculoskeletal features of Lyme Borreliosis: mimicry of rheumatic entities.

Musculoskeletal features of Lyme Borreliosis: mimicry of rheumatic entities	
Arthralgias/Myalgias	Fibromyalgia Polymyalgia rheumatica Osteoarthritis
Acute Monarticular Arthritis	Gout, Pseudogout Septic Arthritis Sarcoid Arthritis
Migratory Arthritis	Viral Arthritis (e.g. Rubella, Parvovirus B19) Gonococcal Arthritis Rheumatic Fever
Intermittent Arthritis	Whipple's Disease Intermittent Hydarthrosis Palindromic Rheumatism
Pauciarticular Arthritis	Seronegative Spondyloarthropathies, e.g. Reactive Arthritis Psoriatic Arthritis Enteropathic Arthritis Juvenile Oligoarthritis (HLA-B27 positive) Juvenile Oligoarthritis (ANA positive) Early Rheumatoid Arthritis Systemic Lupus Erythematosus
ACA*-associated joint deformities	Osteoarthritis Hallux valgus, Hammertoes Rheumatoid arthritis

*ACA = *acrodermatitis chronica atrophicans*

the same extremity that was affected by the tick bite or EM (12).

Typically, there is an intermittent mono- or oligo-articular arthritis in large joints which can be migratory from time to time. The knee is the most common joint affected (2,3,7,9,13,14). In many instances affected knees are extremely swollen, moderately warm, but often not particularly painful. Baker's cysts develop in many cases and may rupture early. Attacks of arthritis affecting other joints, however, may be very painful and may resemble gout or septic arthritis (11,15). Evanescent diffuse swelling in the hand and sausage digits have been noted in a few patients. Moreover, heel swelling, suggesting enthesopathy, may occur (11).

Some European authors claim that sacroiliitis, Reiter's syndrome and ankylosing spondylitis may also be caused by infection with *Borrelia burgdorferi* (Bb) (16-19), which however is still questionable (9,13,20,21).

Episodes of LA last from a few days to a few months. Patients can have an isolated attack or multiple recurrences over many years. In the majority of patients LA has a self-limited course (9).

However, LA becomes chronic in about 10% of patients. In cases of chronic LA, radiographic findings of erosive arthritis may be detected (12,13,22).

Studies from North America suggest that there is a genetic susceptibility to developing chronic LA; e.g., HLA DR 2 and HLA DR 4 have been found to be significantly increased in patients with chronic joint involvement (23). However, a study of German patients with LA did not provide evidence of an HLA-related risk of developing LA or chronic joint manifestations (12,24).

JOINT AND BONE ABNORMALITIES IN ASSOCIATION WITH ACRODERMATITIS CHRONICA ATROPHICANS

Distinctive signs of joint and bone involvement beneath the skin lesions may be found in long-standing acrodermatitis chronica atrophicans (ACA). In one study, 11 out of 50 patients with ACA had luxations or subluxations of finger or toe joints (25). Since radiographs did not show erosive lesions, these joint deformities were referred to as an ACA-associated Jaccoud-like arthropathy (12). Moreover, periosteal thickening of bones, suggesting periostitis, was found radiographically under cutaneous lesions of ACA in a few cases (25).

DIAGNOSTIC CRITERIA

None of the rheumatic features of LB, per se, is absolutely pathognomonic; LA can mimic a number of other diseases (see Table) and vice versa. The coincidence with typical extra-articular manifestations of LB, in particular with EM, is the most reliable diagnostic criterion. However, LA may be the sole manifestation of LB.

In LA the possibility to cultivate or demonstrate Bb is very slim. Polymerase chain reaction (PCR) for diagnostic testing may be useful (26), however, this new technique is still not recommended for routine purposes. Thus, laboratory confirmation is generally limited to serological testing. However, serology involves pitfalls due to matters of test standardization and the occurrence of specific IgG-antibodies from remote asymptomatic infections. Thus, it is most important to emphasize that serological findings must be interpreted within the context of the clinical picture and the respective differential diagnoses. The undue readiness to believe in the diagnostic significance of a positive Lyme test would lead to the widespread overdiagnosis of LA.

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