

Lyme Arthritis Presenting as Transient Synovitis of the Hip

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Transient synovitis of the hip is a common cause of hip pain in children. The etiology of transient synovitis of the hip is unknown. Lyme arthritis is characterized by brief, often recurrent episodes of oligoarthritis. Lyme arthritis most often affects a single knee, but hip involvement is uncommon. This report describes 2 children with Lyme

arthritis who presented with features of transient synovitis of the hip. Lyme arthritis should be considered in the differential diagnosis of transient synovitis of the hip in children.

Keywords: transient synovitis; hip; Lyme arthritis

Transient synovitis of the hip is a common cause of acute, self-limited hip pain in children.¹ Although a number of infectious agents have been implicated as a cause of transient synovitis, the etiology remains unknown.^{1,2}

Lyme arthritis in children is characterized by brief, often recurrent attacks of oligoarthritis.³ Although the knee is involved in 90% of children with Lyme arthritis, hip involvement is unusual.³ The present report describes 2 children with Lyme arthritis who presented with a clinical picture compatible with transient synovitis of the hip. Thus, Lyme arthritis should be considered in the differential diagnosis of transient synovitis of the hip in children who reside in areas of the country in which Lyme disease occurs.

Case Reports

Patient 1

A 3-year-old girl presented with a 3-day history of left hip pain and refusal to walk. Physical examination showed that she kept her left hip flexed and

externally rotated. She complained of pain with movement of the hip. She was afebrile, and the remainder of her physical examination was normal. Laboratory studies showed a white blood cell count of 10 200/mm³ with 72% neutrophils and 23% lymphocytes. The hemoglobin concentration was 11.6 g/dL, and the platelet count was 500 000/mm³. The erythrocyte sedimentation rate was 36 mm/h and the C-reactive protein level was 2.5 mg/dL. Radiographs of the left hip were normal.

The patient was admitted to the hospital with a diagnosis of transient synovitis of the left hip. Further history revealed that she had a tick bite on her lower back 3 months prior to the onset of the hip pain. Several days later, the parents noted a circular, expanding lesion with central clearing in the area of the bite. The lesion ultimately reached approximately 10 cm in diameter before resolving 2 weeks after the onset. She did not seek medical attention for the skin lesion.

The hip pain began to subside within 24 hours after admission, and she was discharged from the hospital. Six days after the onset of symptoms, the hip pain had resolved completely.

Tests for antibody to *Borrelia burgdorferi* (*B burgdorferi*) sent during her hospitalization showed a strongly positive screening enzyme immunoassay and a confirmatory Western Blot showed IgG antibody to 8 of 10 *B burgdorferi* antigens. The patient was treated with amoxicillin in a dose of 50 mg/kg/d for 30 days. She has had no further recurrence of hip pain in the 9 months following treatment.

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Patient 2

An 8-year-old boy presented with a 1-day history of left hip pain and limp. There was no history of known tick exposure or rash prior to the onset of the hip pain. Physical examination showed that he preferred to keep his left hip flexed and externally rotated. There was diminished range of motion and pain with movement of his left hip. He was afebrile, and the remainder of the physical examination was normal.

Laboratory studies showed a white blood cell count of 11 000/mm³ with 65% neutrophils and 30% lymphocytes. The hemoglobin concentration was 13 g/dL, and the platelet count was 325 000/mm³. The erythrocyte sedimentation rate was 20 mm/h. Radiographs of the left hip were normal. Magnetic resonance imaging of the left hip showed a small hip effusion but no bony abnormalities.

The hip pain subsided completely 7 days after the onset. Tests for antibody to *B burgdorferi* showed a strongly positive screening enzyme immunoassay and a confirmatory Western Blot showed IgG antibody to 10 of 10 *B burgdorferi* antigens. The patient was treated with amoxicillin in a dose of 50 mg/kg/d for 30 days. He has had no recurrence of hip pain in the 6 months following treatment.

Discussion

This report describes 2 children with Lyme arthritis who presented with signs and symptoms compatible with transient synovitis of the hip. Transient synovitis of the hip, also referred to as toxic synovitis of the hip or irritable hip, is a common cause of acute hip pain in children. It occurs most often in children 3 to 10 years of age, and boys are affected twice as frequently as girls.^{1,4,5} Transient synovitis of the hip is characterized by the abrupt onset of unilateral hip pain and refusal to bear weight. Bilateral involvement is uncommon; it occurs in less than 5% of patients.⁴ Affected children generally prefer to keep the involved hip flexed and externally rotated, and movement of the hip is resisted because of pain.

Fever, if present, is generally low grade. Inflammatory makers are often slightly elevated. Plain radiographs are usually normal. Ultrasound or magnetic resonance imaging may show a small effusion of the affected hip.¹

Symptoms subside within 1 week in the large majority of patients. Recurrence of symptoms (usually

within the first 6-12 months after onset) has been reported in up to 15% of patients.^{6,7} Recurrent synovitis may involve the same hip or the previously unaffected hip.

The etiology of transient synovitis of the hip is unknown. A preceding or concomitant respiratory infection is reported in 30% to 40% of patients, but no single viral or bacterial pathogen has emerged as a dominant etiologic agent.^{1,2} The present report suggests that transient synovitis of the hip may be due to Lyme arthritis in some children.

Lyme disease was first described in 1977 following a cluster of oligoarthritis in children and adults.³ Several years later, Lyme disease was shown to be caused by the tick-borne spirochete, *B burgdorferi*.⁸ Arthritis is a late manifestation of Lyme disease, occurring months after infection in a majority of untreated patients.⁹ Only about 50% of children with Lyme arthritis recall a tick bite and most do not report a history of erythema migrans.¹⁰⁻¹²

Lyme arthritis is characterized by acute oligoarthritis primarily involving the large joints of the lower extremities. The knee is involved in 90% or more of children with Lyme arthritis.^{3,10-12} In fact, 60% to 80% of children present with monoarthritis of the knee.^{3,10-12} Ankles, elbows, wrists, or shoulders or hips are involved in a minority of patients. The arthritis is brief in duration, ranging from 3 days to 3 months, with an average duration of about 7 days.^{3,10,12} Fifty percent to 70 percent of patients have 1 or more recurrences of arthritis following initial resolution.^{3,11,12} Recurrences may involve the same joint or previously unaffected joints.

The patients in this report presented with acute, transient arthritis of 1 hip, and both were found to have serologic evidence of infection with *B burgdorferi*. Hip involvement with Lyme arthritis has been reported in 5% to 15% of patients during the initial episode of arthritis or with recurrences of the arthritis.^{3,10,11} However, in most cases, other joints in addition to the hip were also involved, diminishing any confusion with transient synovitis of the hip.^{3,10,11} Isolated hip involvement with Lyme arthritis is unusual. Huppertz et al¹³ reported that 2 of 62 (3%) children with Lyme arthritis had isolated hip involvement and Miller et al¹⁴ reported a 5-year-old girl with Lyme arthritis confined to 1 hip.

The patients in this report add to the existing literature concerning Lyme arthritis of the hip, and they show that Lyme arthritis can mimic transient

synovitis of the hip. Thus, Lyme arthritis should be considered in the differential diagnosis of transient synovitis of the hip in children residing in areas in which Lyme disease exists.

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