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Transient Synovitis

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Introduction

Transient synovitis is an acute inflammation of the synovium of a joint causing arthritis and arthralgias. It most commonly affects the hip joint and is the most common cause of hip pain in children between the ages of three to ten years.

Etiology

The etiology of transient synovitis is unknown. Since many patients have a history of trauma, an injury may be a cause or predisposing factor. Other hypothesized causes include viral infections, postvaccine or drug-mediated reactions, or an allergic disposition. No seasonal relationship has been found. A proposed possible etiologic relationship between transient synovitis and Legg-Calvé-Perthes disease (LCP) is controversial.

Epidemiology

Transient synovitis most frequently occurs in children ages four to ten years; however, it has been reported in a three-month-old infant and adults. It affects boys twice as often as girls. Third, behind infections and trauma, transient synovitis is one of the most common causes of joint pain in the pediatric age group.

Pathophysiology

Biopsy of the synovial membrane reveals only nonspecific inflammation and hypertrophy. Ultrasonography demonstrates an effusion that causes bulging of the anterior joint capsule. Synovial fluid has increased proteoglycans.

History and Physical

Unilateral hip or groin pain is the most common symptom reported; however, patients with transient synovitis (TS) may report medial thigh or knee pain. Some patients may present with only a limp. Young children may have no symptoms other than crying at night. An examination should reveal some degree of an antalgic limp. A recent history of an upper respiratory tract infection, pharyngitis, bronchitis, or otitis media is elicited from approximately half of patients with transient synovitis. Children with transient synovitis are usually afebrile or have a mildly-elevated temperature. A high fever is rare.

Examination of the individual with an affected hip usually reveals mild restriction of motion, especially to the abduction and internal rotation, although one-third of patients with transient synovitis demonstrate no limitation of motion. The hip can be painful even with passive movement or tender to palpation. The Patrick test (also known as the FABER test for **f**lexion, **ab**duction and **e**xternal **r**otation) is performed by having the patient flex the leg with the

thigh abducted and externally rotated. Pain on the ipsilateral anterior side is indicative of a hip disorder on that side. If the pain is elicited on the contralateral side posteriorly around the sacroiliac joint, it suggests pain mediated by dysfunction in that joint.

The most sensitive test is logrolling, in which the patient lies supine, and the examiner then rolls the involved limb from side to side. This may detect involuntary muscle guarding on one side when compared to the other side.

Evaluation

An initial evaluation should routinely include a white blood cell count (WBC), C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), and hip radiography and ultrasonography. The white blood cell count and ESR may be slightly elevated. A CRP greater than 2 mg/dl has been shown to be an independent risk factor for septic arthritis. If done, a urinalysis and culture should be normal. Because procalcitonin levels remain low during bouts of inflammatory disease, an increase should raise suspicion of septic arthritis. Depending on the history, consider antinuclear antibody, rheumatoid factor, HLA-B27, and tuberculosis skin testing.

In a Lyme endemic area, only 5% of children with acute, nontraumatic hip pain had a Lyme infection, so routine serology is not necessary. It should be performed if an alternative diagnosis such as septic/pyogenic arthritis is being considered and in those with an atypical clinical course.

Although plain films may be normal for months after onset of symptoms, the medial joint space is typically slightly wider in the affected hip indicating the presence of fluid. One-half to two-thirds of patients with transient synovitis may have an accentuated pericapsular shadow.

Ultrasound is extremely accurate for detecting an intracapsular effusion. Ultrasound-guided hip aspiration not only relieves pain and limitation of movement but it often provides a rapid distinction from septic arthritis. Ultrasound-guided hip aspiration should be done in all individuals in whom ultrasonography has exhibited evidence of an effusion, and any of the following predictive criteria are present:

- Temperature greater than 99.5 F
- ESR greater than or equal to 20 mm/hr
- Severe hip pain and spasm with movement

If the aspirate has a positive gram stain, more than 90% polymorphonuclear cells, or a glucose less than 40 mg/dL or markedly different from the serum glucose, the patient is more likely to have septic arthritis and not transient synovitis.

In settings in which routine aspirations of effusions is not performed, a dynamic contrast-enhanced MRI may help differentiate transient synovitis from septic arthritis.

Bone scintigraphy demonstrates mildly elevated uptake; however, it does not help differentiate etiologies.

A guideline for differentiating between septic arthritis and transient synovitis published in the American Journal of Emergency Medicine suggests the following algorithm:

Criteria: Limping child (24 months to 10 years old)

Positive for Patrick test

Step 1:

Detailed history

Focused physical examination

Check x-rays

Step 2:

Evidence of osteomyelitis on the x-rays or three or more risk factors for concern for septic arthritis (see possible risk factors below)

If yes, go to step 3a. If no, go to step 3b.

Step 3a:

Laboratory tests: WBC and CRP

If the WBC is more than 14,000 cells/mm3 or CRP greater than 2.0 mg/dl, get arthrocentesis. If no, close observation.

Step 3b:

Discharge from emergency department

Treat as an outpatient and re-evaluate within 48 hours

Possible risk factors for SA:

- Fever greater than 38 C
- NRS greater than 7
- Symptom onset in two days and rapid progression of symptoms in hours
- Acute severely ill-looking appearance
- Pain of other joint(s)
- Underlying disease related with rheumatic disease
- Recent use of antibiotics less than 14 days
- Impossible ambulation
- Duration of weight bearing less than 3 seconds
- Decreased ROM less than 45 degrees
- Hip joint area: swelling, tenderness

Treatment / Management

Apply heat and massage to individuals with transient synovitis (TS). If the diagnosis of transient synovitis is equivocal or the patient is uncomfortable, hospitalize for observation and traction. Home treatment also can include traction. Skin traction of the hip in 45 degrees of flexion minimizes intracapsular pressure. Recommend nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen and naproxen. NSAIDs may shorten the duration of symptoms.

Limiting activity may make the patient more comfortable. Patients with transient synovitis should avoid full unrestricted activity until the limp and pain have resolved.

Patients with transient synovitis (TS) should return in 12 to 24 hours for a repeat examination.

Patients with transient synovitis usually experience marked improvement within 24 to 48 hours. Two-thirds to three-fourths of patients with transient synovitis have a complete resolution within two weeks. The remainder may have less severe symptoms for several weeks. If significant symptoms persist for seven to 10 days after the initial presentation, consider other diagnoses. Patients with symptoms for more than a month have been found to have a different pathology.

All patients with transient synovitis have repeat radiography within six months to exclude Legg-Calve-Perthes (LCP) disease.

Pearls and Other Issues

Sequelae include coxa magna and mild degenerative changes of the femoral neck. Coxa magna is observed radiographically as an overgrowth of the femoral head and broadening of the femoral neck. Coxa magna leads to dysplasia of the acetabular roof and subluxation. An incidence rate of coxa magna of 32.1% has been reported in the first year following transient synovitis.

Legg-Calve-Perthes disease develops in 1% to 3% of individuals.

The recurrence rate of transient synovitis is 4% to 17%; most recurrences develop within six months.

Questions

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