

Psoas abscess with septic arthritis of the hip: a case report

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Psoas abscess associated with septic arthritis of the hip is unusual in infants. A 12-month-old infant presented with the complaints of fever, left hip pain and limp. Magnetic resonance imaging revealed left psoas abscess accompanied by septic arthritis of the hip. In this report, we present a case of psoas abscess with hip septic arthritis in an infant, and we describe the clinical and radiological findings and treatment of this case.

Key words: psoas abscess, septic arthritis, hip joint, children.

Simultaneous occurrence of retroperitoneal abscess and hip septic arthritis is encountered infrequently in children¹. It is difficult clinically to differentiate psoas abscess from hip septic arthritis in pediatric patients²⁻⁴. Radiological imaging methods help in the diagnosis and initiation of adequate treatment^{1,3,5,6}. Treatment of psoas abscess and hip septic arthritis includes wide-open drainage and adequate antibiotic management. Although small psoas abscesses can be treated with intravenous antibiotics alone, all children with hip septic arthritis require prompt surgical drainage and irrigation of the joint space. Delay in drainage increases the likelihood of permanent damage because increased intra-articular pressure can compromise blood supply, resulting in avascular necrosis of the femoral head; muscle spasms may also occur, predisposing to hip dislocation^{4,7-9}. In this report, we present a case of psoas abscess complicated by hip septic arthritis in an infant, and we describe the clinical and radiological findings and treatment of this case.

Case Report

A 12-month-old girl was referred with a diagnosis of reactive arthritis from the Orthopedics outpatient clinic to our Pediatric Infectious Diseases outpatient clinic. She presented with a four-day history of left hip pain, limp and fever. She was otherwise healthy with no history of trauma. On the physical examination, her temperature was 38.4°C, and

her left leg was flexed, abducted, and externally rotated. Any left hip movement generated pain. Swelling on the left groin and upper thigh with increased warmth were noted.

Laboratory studies disclosed a peripheral blood leukocyte count of 40,900/mm³ with 86% polymorphonuclear cells, C-reactive protein (CRP) level of 303 mg/L, and erythrocyte sedimentation rate of 77 mm/h. Radiographs of the left hip and femur as well as hip ultrasonography were normal. Magnetic resonance imaging (MRI) of the abdomen and pelvis revealed abscess in the left psoas muscle (Fig. 1) and effusion of the hip joint with septic arthritis of the left hip (Fig. 2).

Blood sample culture obtained at admission was negative. The patient was treated with intravenous ceftriaxone and vancomycin and became afebrile after four days. She was operated on the eighth day of hospitalization. During the operation, her left hip joint was found swollen; the capsule was incised and pus was extracted. The left psoas muscle was normal probably because of the antibiotic treatment. Surgical drainage of the left hip was performed successfully. Culture of the drained pus was negative. By day 11, three days after the operation, the hip had full range of motion. She was discharged after three weeks of intravenous antibiotic therapy, and was then treated with a three-week course of oral amoxicillin-clavulanate (90 mg/kg/d). Upon discharge and at 12 months' follow-

up, no sequelae or growth disturbance had developed in the patient. On plain X-rays, femoral ossification centers were symmetric, and there was no sign of avascular necrosis of the femoral head.

Discussion

Psoas abscess is a severe infection rarely seen in children, and it can be classified as primary or secondary. Psoas abscess in children is usually primary and frequently yields *Staphylococcus aureus* in the culture. Secondary psoas abscesses usually arise as complications of other conditions, such as appendicitis, tuberculosis or inflammatory bowel disease¹⁰. The psoas muscle lies in the retroperitoneal space and arises from the lower thoracic and lumbar vertebrae. The conjoint tendon, the iliopsoas tendon, is separated from the hip joint by the iliopsoas bursa, which communicates with the joint in 15% of adults. Infection of the psoas could extend into the hip joint via this route². In addition, hematogenous seeding from an occult source may cause psoas abscess and septic arthritis concomitantly. In the literature, there is limited evidence regarding the source of infection when psoas abscess and hip septic arthritis coexist^{1,2}. However, it is certainly possible that the psoas abscess might mimic hip septic arthritis clinically, especially in neonates and infants¹¹. In our case, there was no growth in the blood culture or culture of hip joint aspirate obtained during surgery. We also do not know the original source of infection in our patient.

Patients with psoas abscess usually present with fever, pain, limping with flexion of the hip, abdominal or lumbar tenderness, and an inguinal mass^{1,3,4,6,12,13}. The similarity of signs and symptoms between psoas abscess and hip septic arthritis necessitates reliable methods to make the differential diagnosis. There are well-defined tests used to elicit iliopsoas abscess. The psoas muscle is the main flexor of the hip. When the examiner places his hand just proximal to the patient's ipsilateral knee and the patient is asked to lift his thigh against the examiner's hand, this will cause contraction of the psoas and results in pain. Since the psoas muscle is stretched with hyperextension of the involved hip when the patient is lying on the normal side, the patient feels pain¹⁴. For a child with a septic

hip, it is usually impossible to move the limb passively without pain, regardless of the limb's position. However, this sign is suspicious in such young children, who are irritable and apprehensive during the examination^{2,4}. Our patient was admitted with the complaints of fever, pain and limping similar to the literature; however, there was no palpable mass in the inguinal region. Blood test results in septic arthritis and psoas abscess can be similar, with elevated leukocyte count, CRP and erythrocyte sedimentation rate.

The diagnosis of psoas abscess usually can be confirmed with MRI, ultrasound or computerized tomography (CT). Involvement of bone, which may also occur secondary to psoas abscess, can be missed by ultrasound. An abscess may be missed or obscured by gas or soft tissue, if the ultrasonographer is not looking specifically for a retroperitoneal disease. CT scan with intravenous contrast material might be preferred instead. However, it is not preferred in childhood because of ionizing radiation and allergy to iodinated contrast material. MRI is very sensitive for diagnosing a septic hip and the extent of a soft tissue infection or peripelvic infection with increased accuracy. Mazur et al.⁵ performed a prospective study of 43 children who presented with clinical findings suggestive of acute hematogenous musculoskeletal infection. In that study, MRI was found to be 97% sensitive and 92% specific for the diagnosis of such infections. MRI is helpful to differentiate the septic hip from various other sources of infection, such as psoas abscess¹, ischiopubic ramus synchondrosis⁶ or other conditions. Plain X-rays and ultrasonography findings were normal in our case. The presence of hip septic arthritis with psoas abscess was detected on MRI. In this case, it was possible to delineate the exact location of the disease, which was misleading by clinical examination and nondiagnostic by radiographs. MRI allowed us to diagnose and appropriately treat this patient and was essential in reaching the correct diagnosis in a timely manner.

Treatment of psoas abscess plus septic arthritis includes wide-open drainage and adequate antibiotic management. With the recent capability of interventional radiology, percutaneous drainage of a psoas abscess is

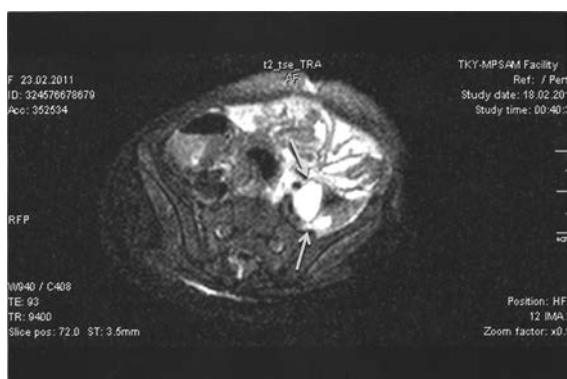


Fig. 1. Fat-saturated T2-weighted axial scan: smooth-edged hyperintense lesion is present in the left iliopsoas muscle.



Fig. 2. Fat-saturated contrast-enhanced T1-weighted coronal MRI: contrast enhancement and small foci of abscesses are present in the joint space.

becoming more common with equally good results. Intravenous antibiotics alone might be sufficient for the treatment of small psoas abscesses, like in our patient^{2,4}. Because a delay in treatment is more serious in septic hips than in psoas abscess, the safest approach should be to first rule out joint septic arthritis. Acute septic arthritis of the hip in children is an orthopedic emergency. Delayed diagnosis and ineffective treatment are associated with complications such as avascular necrosis of the femoral head, osteomyelitis, chondrolysis, systemic sepsis, leg length discrepancy, and later osteoarthritis of the hip joint. Therefore, septic arthritis of the hip in children should be surgically drained immediately⁸. Kariminasab et al.⁷ reported the grave prognostic factors in children with septic arthritis, which are delayed diagnosis, infantile age and hip sepsis. The combination of psoas abscess and septic arthritis can cause both morbidity and mortality.

Wang et al.¹ reported residual hip deformity in two infants with psoas abscess and hip septic arthritis. Complaints of these infants started 10 days before admission. Our case was followed for 12 months, and no sequelae developed, and this was probably due to admission of the patient relatively early on the fourth day of onset. Thus, early antibiotic therapy and subsequent surgery prevented sequelae formation.

In conclusion, psoas abscess and septic arthritis of the hip can occur concomitantly in infants. Because the symptoms of psoas abscess and septic arthritis are often similar, the diagnosis is clinically difficult. Delayed diagnosis and inadequate therapy may result in high morbidity and mortality. MRI is an important imaging tool in the differential diagnosis in these patients. Prompt treatment should be initiated as soon as possible in order to avoid complications.

REFERENCES

1. Wang E, Ma L, Edmonds EW, Zhao Q, Zhang L, Ji S. Psoas abscess with associated septic arthritis of the hip in infants. *J Pediatr Surg* 2010; 45: 2440-2443.
2. Su C-N, Hsieh D-S, Sun G-H, Yu D-S, Fong C-J. Primary retroperitoneal abscess complicated with septic arthritis of the hip. *J Chin Med Assoc* 2006; 69: 51-53.
3. Perry J, Barrack RL, Burke SW, Haddad RJ. Psoas abscess mimicking a septic hip. *J Bone Joint Surg* 1985; 67-A: 1281-1283.
4. Song J, Letts M, Monson R. Differentiation of psoas muscle abscess from septic arthritis of the hip in children. *Clin Orthop Relat Res* 2001; 391: 258-265.
5. Mazur JM, Ross G, Cummings RJ, Hahn GA, McCluskey WP. Usefulness of magnetic resonance imaging for the diagnosis of acute musculoskeletal infections in children. *J Pediatr Orthop* 1995; 15: 144-147.
6. Takemoto RC, Strongwater AM. Pelvic osteomyelitis mimicking septic arthritis: a case report. *J Pediatr Orthop* 2009; 18: 248-251.
7. Kariminasab MH, Azar MS, Saravi MS. Surgical intervention for treatment of septic arthritis in infancy and childhood; a retrospective study. *Arch Iranian Med* 2009; 12: 409-411.
8. El-Sayed AM. Treatment of early septic arthritis of the hip in children: comparison of results of open arthrotomy versus arthroscopic drainage. *J Child Orthop* 2008; 2: 229-237.
9. Gutierrez KM. Infections and inflammatory arthritis. In: Long SS, Pickering LK, Prober CG (eds). *Principles and Practice of Pediatric Infectious Diseases* (3rd ed). Philadelphia: Churchill-Livingstone; 2008: 482-488.
10. Bresee JS, Edwards MS. Psoas abscess in children. *Pediatr Infect Dis J* 1990; 9: 201-206.

11. Okan F, Ince Z, Coban A, Can G. Neonatal psoas abscess simulating septic arthritis of the hip: a case report and review of the literature. *Turk J Pediatr* 2009; 51: 389-391.
12. Lam SF, Hodgson AR. Non-spinal pyogenic abscess. *J Bone Joint Surg* 1966; 48A: 867-877.
13. Parbhoo A, Govender S. Acute pyogenic psoas abscess in children. *J Pediatr Orthop* 1993; 12: 663-666.
14. Mallick IH, Thoufeeq MH, Rajendran TP. Iliopsoas abscesses. *Postgrad Med J* 2004; 80: 459-462.