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Iliopsoas bursitis and pseudogout of the knee mimicking L2-L3 radiculopathy: case report and review of the literature

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Abstract We report the case of a 74-year-old woman who presented with acute-onset right groin pain irradiating to the thigh anteriorly after having suffered for a few weeks from slight knee pain. As a CT scan showed multiple herniated intervertebral discs and spinal stenosis at the L3-L4 level, she was referred to a neurosurgical unit with the tentative diagnosis of L2-L3 radicular pain. Investigations (MR, myelography with CT scan) showed severe acquired lumbar canal stenosis. Decompression surgery was finally postponed because of the patient's serious cardiac medical history and she was referred to us for conservative treatment. She was found to

have iliopsoas bursitis with chondrocalcinosis of the knee. Local steroid injections of the two sites abolished her symptoms. We draw attention to the possible pitfalls that the radiographic appearance and one of the multiple clinical presentations of this unrare pathology may represent. Whenever a patient comes walking with crutches, avoids putting weight on his or her leg, and radicular pain is suspected, we advise consideration of other extra-spinal causes for the pain.

Key words Iliopsoas bursitis · Chondrocalcinosis · Pseudogout · Calcium pyrophosphate dihydrate · Spinal stenosis

Introduction

The iliopsoas (also termed iliopectineal, iliofemoral, iliac, or subpsoas) bursa lies between the iliopsoas and pectineus muscles anteriorly and the iliopectineal eminence and hip capsule posteriorly, and has the iliofemoral ligament on its lateral aspect (Fig. 1).

This structure, rarely absent in the adult, is the largest bursa in the region of the hip joint and averages 6 cm × 3 cm in size. Communication with the hip occurs in approximately 15% of healthy adults [13] and in 30–40% of patients with an underlying hip disease [66]. In 13% of cases the bursa is partly separated by a septum into two cavities [61]. The bursa may become inflamed due to acute and chronic trauma or any disease that produces bursitis or synovitis elsewhere [10]. The initial description of iliopsoas bursitis dates back to the 1800s [25, 70] and only a

few cases were reported in the early twentieth century [17, 21, 26, 36, 45, 59]. Inflammation of the bursa may cause anterior hip pain, an ilio-inguinal mass, a flexed position of the hip, or a snapping hip syndrome [33]. The patient may hold the hip in flexion and external rotation to eliminate pain, and limp to prevent hyperextension of the hip [7]. Pain, provoked by extension of the hip on walking, may be referred to the anterior thigh and knee, probably through femoral nerve compression [32, 34, 54]. Examination typically shows tenderness over a localized area just below the inguinal ligament and lateral to the femoral artery. Pain may be aggravated by extension of the hip. Hip mobility is usually limited in flexion and external rotation. The psoas muscle itself is exculpated when resisted flexion is found not to hurt [18]. Iliopsoas bursitis may appear on a healthy background [67]. Involvement of the bursa has been reported secondary to osteochondromatosis [17, 20, 28, 57], chondrosarcoma [70],

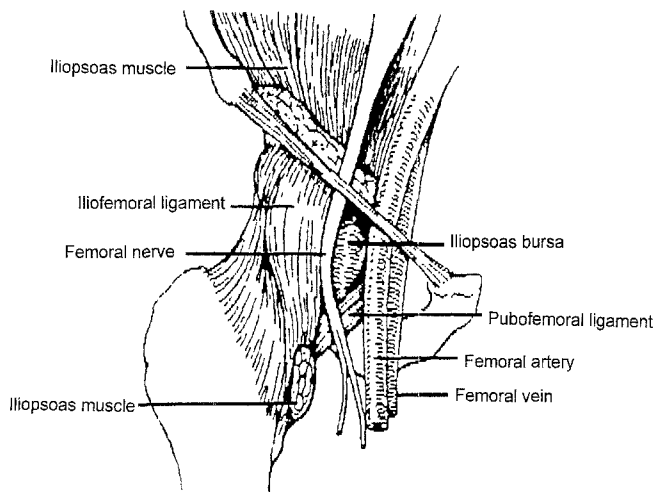


Fig. 1 Iliopsoas bursa shown in relation to the capsule, femoral nerve, and vessels (after Toohey et al. [70])

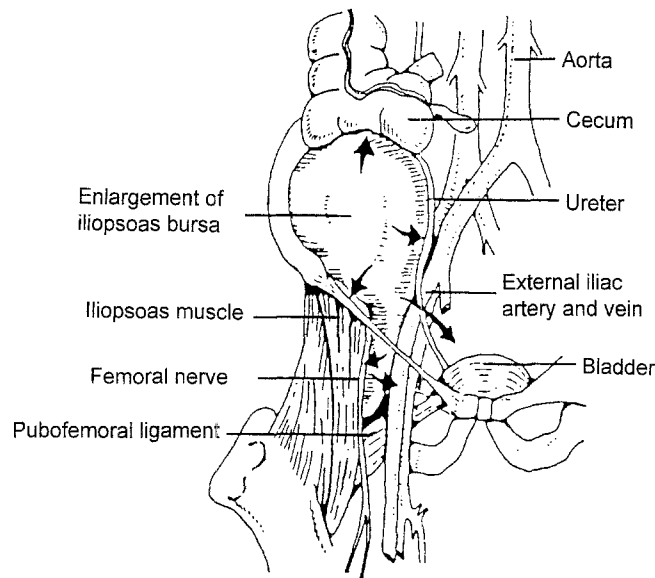


Fig. 2 Possible directions of expansion of the enlarged iliopsoas bursa associated with compression or displacement of adjacent structures (after Generini et al. [27])

pigmented villonodular synovitis [11, 58, 64, 75], pyogenic bursitis [35, 43, 44, 54, 57, 64], hip arthroplasty [5, 35, 44, 50, 55, 67, 80], septic arthritis [57, 64, 67], osteoarthritis [21, 25, 38, 57, 58, 64, 67], trauma [9, 21, 32, 64, 69], overuse during sporting activities [36, 64], and avascular necrosis of the femoral head [9, 15, 48, 57, 70, 74]. Although bilateral involvement has been reported in rheumatoid arthritis [77], unilateral involvement is the rule [2, 6, 16, 23, 25, 27, 29, 31, 32, 37, 41–43, 51–53, 57, 60, 63, 64, 70, 71, 73, 77]. Iliopsoas bursitis may also accompany sacroiliitis [64].

A distended bursa may be painless and may be detected as an inguinal soft tissue mass. It may cause diffuse

swelling of the lower extremity by compression of the femoral and external iliac veins [1, 2, 14, 23, 25, 29, 32, 39, 52, 57, 60, 64, 65, 70, 77, 80] or impedance of lymphatic drainage [60], bowel compression [6, 11, 58], and bladder compression [72, 73]. It may also present as a swelling of the groin [6, 12, 27, 38, 53, 54, 57, 58, 62, 64, 68, 72, 77, 78, 79], swelling of the thigh [6, 70], femoral neuropathy [43, 46, 51, 64, 67], pelvic mass [3, 5, 20, 39, 49, 53, 55, 80], abdominal mass [19, 24, 77], retroperitoneal mass [32, 57], unilateral varicosities [34, 46], leg pain [9, 70, 79], or deep vein thrombosis of the leg [41]. Bursae and abscess cavities may be seen on CT as soft tissue masses and, therefore, can be mistaken for neoplasms, aneurysms, or hernias [25, 30, 55, 67] (Fig. 2).

Case report

In early July 1995, a 74-year-old caucasian woman presented with slight right knee pain irradiating upward to the groin. A few weeks later, she presented with acute groin pain irradiating to the anterior thigh. The pain was so severe that she could not walk without crutches and preferred to stay in bed. A CT scan, ordered by her family doctor, showed L4-L5 right intraforaminally herniated intervertebral disc with compression of the L4 root, L5-S1 left intraforaminally herniated intervertebral disc with compression of the L5 root, and L3-L4 lumbar canal stenosis by an extradural structure. By the end of August, the patient was hospitalized in a neurosurgery ward with the tentative diagnosis of L2-L3 radicular pain and spinal stenosis. She was found to limp and to keep her hip in flexion on walking and in bed. Although the neurologic examination led to strong suspicions of such radiculopathy, the electromyogram was normal. Myelography (Fig. 3) followed by another CT scan (Fig. 4) were performed and showed the same images. Finally, MR showed a severe acquired degenerative lumbar stenosis predominantly at the L3-L4 and L4-L5 levels with root conflict at these two levels, but mainly at L3-L4 (Fig. 5). The L2-L3 space was explored only by sagittal MR images, which did not show any anomaly.

Surgery was postponed because pain was fluctuating, correlation between clinical examination and radiologic images was poor, and mainly because of the patient's serious cardiovascular history. She was referred to us for conservative treatment.

In her past history we learned that 3 months earlier the patient had suffered from a right ankle sprain and that 3 years earlier she had undergone an aortic valvuloplasty and coronary bypass. She was also known to have hypothyroidism and hypercholesterolemia and to suffer from chronic intermittent low-back pain.

Examination

The patient appeared healthy. The general medical examination revealed no abnormalities except for an apical heart murmur. She walked with two elbow crutches, keeping her right hip flexed and avoiding putting weight on it. In standing position, she was able to bend forward and touch the floor with her fingers. Percussion of her lumbar vertebrae was painless and there were no back muscle spasms. Palpation of the anterior surface of the hip joint lateral to the femoral artery was very painful, as was extension and internal rotation of the joint. Knees were normal and did not show inflammatory signs or effusion. From the neurologic point of view, femoral stretch was painful and the adductor reflex (L2-L3) was weak. Otherwise, no anomalies were seen.

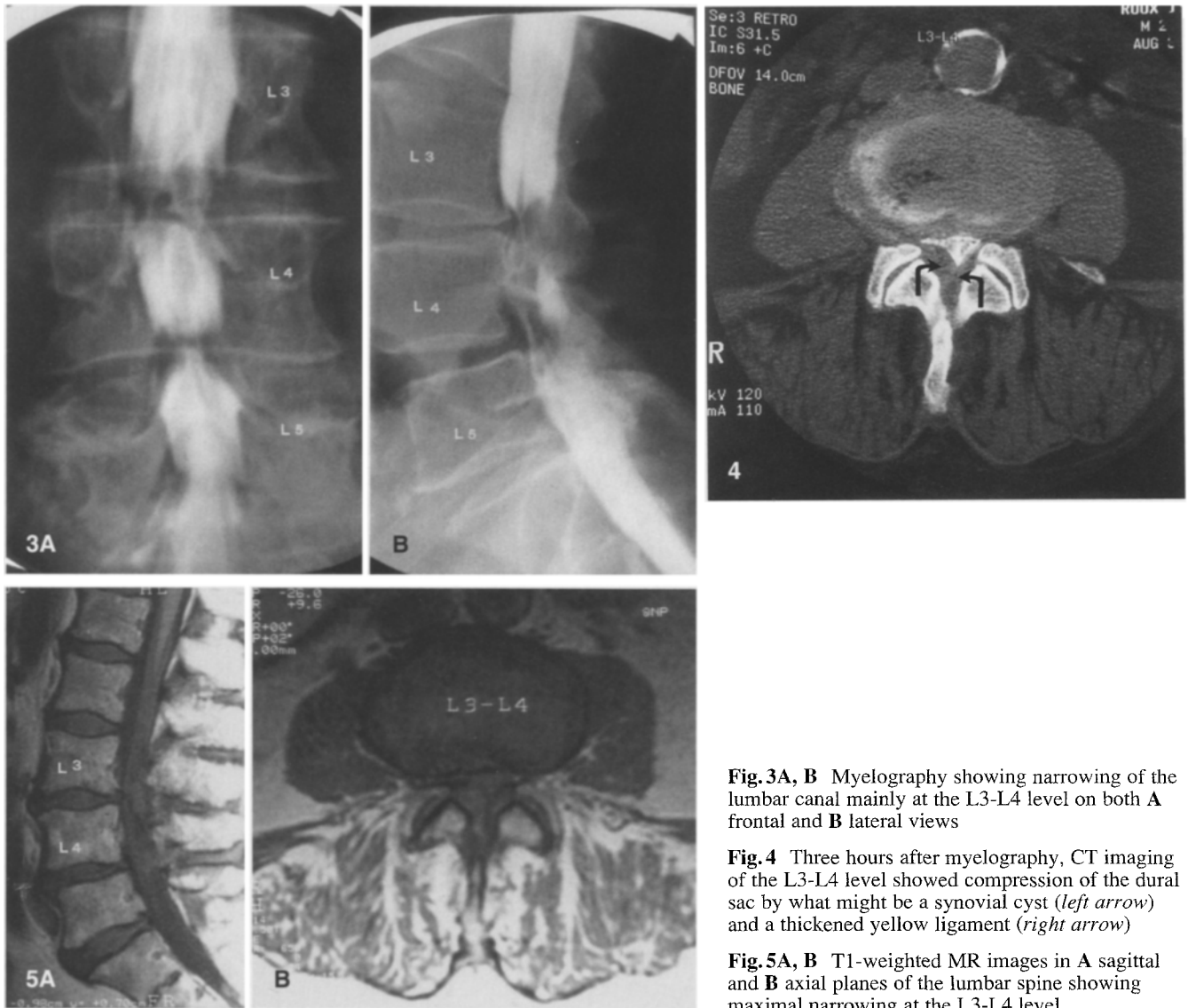


Fig. 3A, B Myelography showing narrowing of the lumbar canal mainly at the L3-L4 level on both **A** frontal and **B** lateral views

Fig. 4 Three hours after myelography, CT imaging of the L3-L4 level showed compression of the dural sac by what might be a synovial cyst (*left arrow*) and a thickened yellow ligament (*right arrow*)

Fig. 5A, B T1-weighted MR images in **A** sagittal and **B** axial planes of the lumbar spine showing maximal narrowing at the L3-L4 level

Hospital course

In spite of the CT scan, myelography, and MR images of the spine, the clinical picture led us to suspect some local inflammatory origin to the symptoms. The quality of the hip and knee radiographs brought by the patient was poor. New images were ordered, and those of the knee showed slight degenerative changes, with the typical punctate and linear densities of chondrocalcinosis within the external compartment hyaline cartilage. Ultrasound failed to show liquid collection in that hip or anterior to it. Retrospective study of a pelvic scan performed 15 days earlier did not show any anomaly in or around the hip. MRI of the pelvis could not be carried out because of technical difficulties. The patient's blood count, ESR, and C-reactive protein were normal.

We concluded that the patient had iliopsoas bursitis. We failed to aspirate any liquid and injected a mixture of lidocain with 80 mg methylprednisolone acetate, a long-acting steroid. The effect was immediate and the patient stepped down off the couch and walked without crutches. One week later, as she still complained of a little pain in her knee, that was also injected with 40 mg methylprednisolone acetate. Again, relief was immediate.

When we saw the patient 9 months later, she was doing well and walked independently. Now and then she experienced some knee pain, but she never felt the hip pain again.

Discussion

Although our capability to visualize the morphologic character of the bony and soft tissue structures of the spine has improved dramatically, clinicians and radiologists alike are still perplexed by the question of which anatomic changes are symptomatic and which are simply related to the aging process [4]. We must keep in mind the various reports that indicate percentages varying from 25 to 35% of abnormal lumbar myelograms [22], 20% of abnormal CT scans [76], and 36% of abnormal MR images [40] in patients free of low-back symptoms. In a prospective MR imaging study of the lumbar spine in asymptomatic

matic patients, 20% of patients aged 20–59 years had herniated discs and 57% of the 60- to 80-year group had evidence of a herniated disc or canal stenosis [8].

Crystal-induced arthropathies such as those induced by monosodium urate, calcium pyrophosphate dihydrate, hydroxyapatite, dicalcium phosphate dihydrate, or cholesterol, and arthropathies brought on by injection of corticosteroid esters are well known [47]. Calcium pyrophosphate dihydrate (CPPD) is deposited in tendons, ligaments, articular capsules, and synovium. In the cartilage, the typical appearance of CPPD deposit on plain radiographs is as punctate or linear densities. The term “pseudogout” was coined to describe the acute inflammatory goutlike attacks that sometimes occur in patients with CPPD deposits, with the knee being the joint affected in almost one-half of all attacks [56].

Our patient certainly presented with an attack of pseudogout of the knee. We can postulate that she suffered a similar attack of the iliopsoas bursa, whether primary or secondary to hip involvement, as 15% of such bursae communicate with the joint through an opening. The fact that we could not palpate a cystic mass or see fluid collection in the bursa with the different imaging techniques described may be because such a finding is present in only 30% of patients [7]. Pain in the groin and the anterior thigh was highly suspicious for L2 or L3 root involvement. In our case radiology misled the practitioners, as L3-L4 and L4-L5 lumbar canal stenosis can explain pain in the knee and distally in the thigh. The weakness of the adductor reflex suggested L2-L3 radiculopathy and was possibly a sequela of previous root involvement.

Injection technique [18]

The anterior superior spine of the ilium is found; pulsation identifies the position of the femoral artery. The femoral nerve lies just lateral to the artery, and both are avoided by choosing a point well lateral to the mid-point of the inguinal ligament and 5 cm below it. The needle is inserted pointing upwards and medially until it strikes the bone near the junction of the head and the neck of the femur. The needle is then withdrawn a few millimeters, until it lies outside the articular capsule, and the corticosteroid is injected.

Conclusion

Iliopsoas bursitis is not as rare as many authors claim. The condition is unfamiliar to most clinicians, including those specializing in musculoskeletal disorders, and is often overlooked as a cause of symptoms involving the inguinal area and lower limbs. In spite of modern technology, meticulous systematic examination of the patient remains the golden rule. In our patient, if the initial knee plain radiographs had been of good quality and CPPD crystals had been detected, the handling of the case might have been different. Whenever a patient with normal EMG presents with what seems to be radicular pain, is walking with crutches and avoiding putting weight on his or her leg, think of other extra-spinal and musculoskeletal causes of such pain. Iliopsoas bursa enlargement should be considered in patients with unexplained hip pain or anterior thigh pain.

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