Piriformis bursitis causing sciatic neuropathy

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Clinical information

A 73-year-old woman was admitted to the hospital with a history of several weeks of increasing pain in her right knee and right hip. The pain was exacerbated by movement and weight bearing. There was no history of recent trauma. She had a previous history of rheumatoid arthritis treated with steroids, and was under consideration for receiving total hip and knee replacements.

The patient was mildly febrile (temperature 38.4 °C), and physical examination showed her right lower limb to be slightly edematous compared with the left. Her right knee was warm but showed no erythema. Range of motion in the right knee was limited because of pain. Her right hip was difficult to evaluate because of the knee pain, but it was not tender to palpation. No neurological deficit was present in either extremity. The white blood count was elevated to 16,000/mm³, with granulocytes of 96.9%. Routine blood and urine analyses were within normal limits. Blood cultures grew Staphylococcus aureus.

Plain radiographs of the right knee showed joint space narrowing and effusion consistent with mild osteoarthritis. The femoral head was grossly deformed, most of its superior portion being absent (Fig. 1A).

The acetabulum was mildly deformed with hypertrophic bone production and sclerosis. The iliopectineal line was disrupted. These findings suggested osteonecrosis, possibly from previous trauma, steroid therapy, or radiation osteonecrosis from earlier radiation therapy for carcinoma of the vagina.

A single contrast arthrogram of the right hip showed an enlarged and irregular joint space (Fig. 1B). There was opacification of adjacent lymphatic channels, possibly indicative of a synovial inflammatory process. Contrast medium filled a large, irregular, sac-like space within the pelvic cavity that communicated with the medial aspect of the hip joint. As this cavity filled, the patient complained of increasing pain in her right knee identical to that which she had been having. Computed tomography (CT) confirmed the presence of contrast medium in an enlarged right piriformis bursa, compressing the right sciatic nerve and causing it to deviate from its normal course (Fig. 1C,D). This bursa had not been visible on CT performed 1 month earlier when the patient was being evaluated for a mesenteric cyst (Fig. 1D).

Gram stain and culture of the right hip joint aspirate were negative. Histologic evaluation of tissue from a synovial biopsy done at the time of the arthrogram showed fibrosis and calcification consistent with the presence of a reactive process.

The diagnosis was piriformis bursitis causing sciatic neuropathy. Surgery was not considered because of the patient’s poor general medical condition. She was managed conservatively with some improvement and was discharged 3 weeks after admission.

Discussion

Symptomatic communicating bursae and synovial cysts of the hip joint are rare but well-recognized entities. Previous studies have described clinical and radiological features of the more commonly recognized iliopsoas bursa. To our knowledge, an enlarged piriformis bursa causing compression of the sciatic nerve has not been reported in the literature.

Compared with joints, bursae have generally been underestimated as a cause of clinical problems. They are anatomically related to joints, being lined by a synovial membrane and secreting synovial fluid. Because of this similarity, bursae are subject to the same diseases as joints [1].

At least 14 bursae have been identified around the hip [2]. The iliopsoas bursa is the largest, most constantly present, and by far the most important. It has been described extensively in the clinical and radiological literature [1–7]. It is present in 98% of hips, and may extend proximal to and beneath the inguinal ligament to enter the false pelvis [3].

Other bursae which have been mentioned in previous publications are the posteriorly located subten-
dinea iliaca [8] and subgluteus maximus [9] bursae. Most of the muscles surrounding the hip have bursae separating them from bone, tendons, and other structures [2].

Although the exact mechanism by which joint-bursal communication occurs is uncertain, it is generally accepted that any condition resulting in joint effusion may elevate intra-articular pressure, with resultant rupture of contents through the weakest part of the joint capsule into the bursa. Symptomatic iliopsoas bursitis has been associated with several conditions including rheumatoid arthritis [6, 7], osteoarthritis [7, 10, 11], and avascular necrosis [6, 12]. Among the variable clinical presentations previously described is pain from compression of the femoral nerve by iliopsoas bursitis [13, 14].

The sciatic nerve is formed from the trunks of the fourth and fifth lumbar and the first and second, and sometimes the third, sacral nerves. It leaves the pelvis by passing through the greater sciatic foramen, below the inferior border of the piriformis muscle, to descend between the greater tuberosity of the femur and the ischial tuberosity [15, 16]. The course, anatomy, and pathology of the sciatic nerve in the pelvis and upper thigh are well demonstrated on cross-sectional imaging by CT and magnetic resonance imaging (MRI) [17–19].

Compression neuropathy of the proximal sciatic nerve occurs infrequently, and may be produced by immobility, prolonged squatting, intra-muscular injections, and hip surgery [15, 16]. The sciatic nerve may be entrapped where it crosses the sharp inferior edge of the piriformis muscle as it leaves the pelvis—the so-called „piriformis syndrome“. Although entrapment neuropathy of the distal sciatic nerve by a Baker’s cyst has been reported [20], sciatic neuropathy from bursal compression in the pelvis has yet to be described.

Our patient had rheumatoid arthritis, secondary osteoarthritis of the hip, and osteonecrosis, possibly related to steroid treatment, trauma or radiation. All these conditions cause increased formation of intra-articular fluid and predisposition towards joint–bursal communication.

In this case, the extravasation of joint contents into the piriformis bursa instead of the more common iliopsoas bursa may be related to altered local anatomy from the collapsed femoral head and from previous lower pelvis radiation therapy.

Hip arthrography was essential to demonstrate bursal filling and, in addition, played an important role in documenting the origin of the patient’s knee pain. CT arthrography was useful in demonstrating the exact anatomical site of the bursal collection and confirming mass effect along the course of the sciatic nerve.

Various modes of treatment have been advocated for iliopsoas bursitis