PAIN MEDICINE CASE REPORTS

ISSN 2768-5152

Volume 8, Number 4, pp. 147-150

Ischiofemoral Impingement, An Atypical Cause of Gluteal Pain: A Case Report

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Background: This is a case of unilateral gluteal pain in a 54-year-old woman.

Case Report: The patient presented with a 4-month history of left buttock pain after a traumatic fall. Her pain was exacerbated primarily while sitting. Pelvic x-rays showed bilateral acetabular dysplasia. Magnetic resonance imaging of the left femur without contrast was significant for ischiofemoral impingement (IFI), including compression of the quadratus femoris (QF). The QF space displayed a minimum dimension of 0.7 cm. The patient was scheduled for an ultrasound-guided QF injection, but cancelled the procedure due to symptomatic improvement with supportive care.

Conclusions: IFI has become increasingly recognized as an uncommon cause of posterior hip, gluteal, or groin pain. Diagnosis of IFI can be challenging given the broad differential and potential for multiple etiologies of pain. Acetabular dysplasia leads to increased femoral anteversion. Thus, patients with acetabular dysplasia may be vulnerable to the development of IFI.

Key words: Ischiofemoral impingement, acetabular dysplasia, ischiofemoral impingement, buttock pain, gluteal pain, case report

BACKGROUND

Ischiofemoral impingement (IFI) is a relatively new diagnosis, which was first described in 1977, in patients with persistent pain after hip replacement. This is a condition in which the IF space (IFS) between the ischial tuberosity and lesser trochanter is narrow, resulting in impingement on the quadratus femoris (QF) muscle (1). IFI has become increasingly recognized as an uncommon cause of posterior hip, gluteal, or groin pain (1-3). This is a unique case of IFI presenting as chronic unilateral gluteal pain in a middle-aged woman with acetabular dysplasia after a traumatic fall.

CASE PRESENTATION

This case presents a 54-year-old woman with a past medical history of osteoporosis and prior lumbar L4-L5 fusion. She presented with a 4-month history of left buttock pain after a traumatic fall. She fell down 2 steps onto her affected side, with her hip in a flexed position. Her pain worsened initially, but then became dull in nature and intermittent. The patient's pain at the time of presentation was 6/10 in severity. Her pain was exacerbated primarily in a seated position. She denied any back pain. On examination, the patient was 5'2" 102 lbs (body mass index 18.68 kg/m^2). She had tenderness on palpation just distal and lateral to the origin of the proximal hamstring muscles. Lower extremity muscle strength and sensory examination were normal. Pelvic x-rays showed signs of bilateral acetabular dysplasia and mild femoroacetabular osteoarthritis (OA) (Fig. 1). Magnetic resonance imaging (MRI) of the left femur without contrast was significant for evidence of IFI, including

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Disclaimer: There was no external funding in the preparation of this manuscript.
Conflict of interest: Each author certifies that he or she, or a member of his or her immediate family, has no commercial association (i.e., consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted manuscript.
Patient consent for publication: Consent obtained directly from patient(s).
This case report adheres to CARE Guidelines and the CARE Checklist has been provided to the journal editor.
Accepted: 2024-03-27, Published: 2024-05-31

compression and signal abnormality of the QF (Fig. 2A and B). Additionally, MRI showed partial hamstring tendinopathy, which has been discussed as a potential contributing factor to narrowing of the QF space (QFS) (3). The QFS displayed a minimum dimension of 0.7 cm.

Fig. 1. Anterior-posterior pelvis x-ray displaying bilateral acetabular dysplasia and mild femoroacetabular osteoarthritis.

The patient was scheduled for an ultrasound-guided QF injection, but ultimately cancelled the procedure due to symptomatic improvement with supportive care.

DISCUSSION

IFI is a syndrome that predominantly affects women and involves impingement between the femoral lesser trochanter and the lateral aspect of the ischium (1,2). This leads to a narrowing of the QFS and IFS. QFS is defined as the smallest distance between the hamstring tendons and the lesser trochanter of the iliopsoas tendon (1). IFS is defined as the smallest distance between the cortex of the femoral lesser trochanter and the cortex of the ischium (1). Risk factors for IFI include female gender, trauma, prior hip surgery, increased age, and femoral anteversion (1,2,4). It is believed that gender differences in pelvic anatomy may be the reason for strong female predisposition to IFI (4). The pelvis is wider and shallower in women than men (1). Additionally, other factors may lead to IFS narrowing, including more prominent lesser trochanters of the femur or projection of the ischial spine (4). The prevalence of IFI is largely unknown (3). In 2012, Tosun et al (4) retrospectively reviewed MRIs for hip pain and found a strong predominance (84%) for women among those with QF edema.

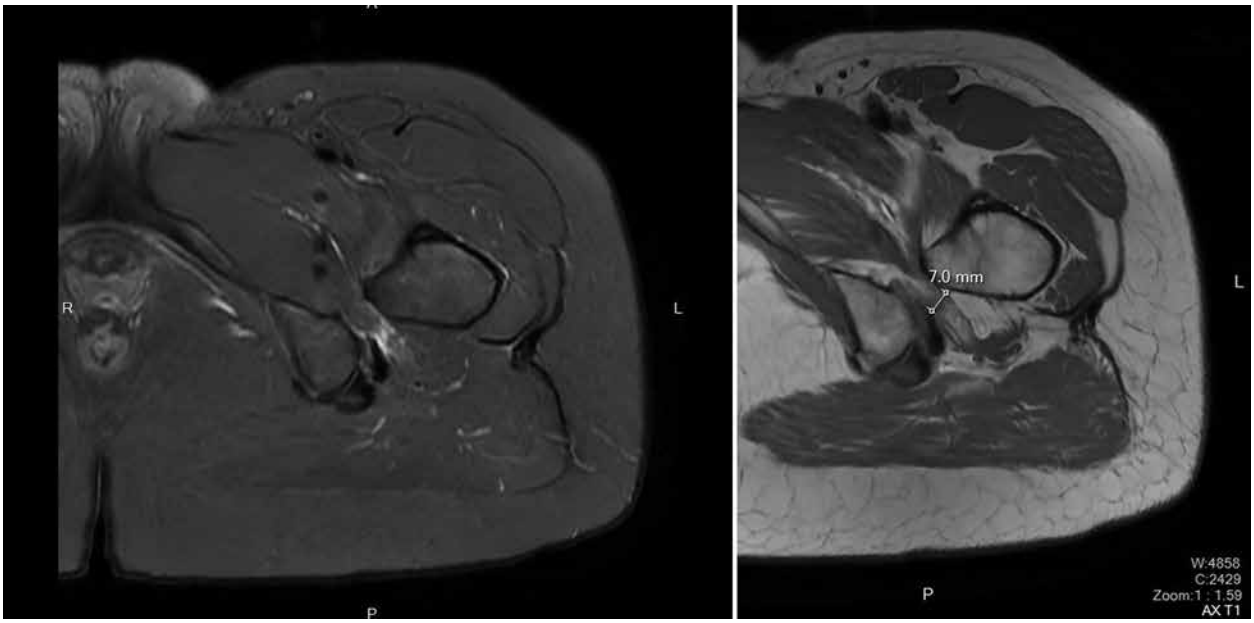

Fig. 2. A) T2-weighted MRI showing compression and signal abnormality of the QF muscle. B) T1-weighted MRI displaying narrowing of the QFS with a minimum dimension measured of 0.7 cm.
MRI, magnetic resonance imaging; QF, quadratus femoris; QFS, QF space.

Pain related to IFI is often aggravated by weight bearing or hip extension, adduction, and external rotation (1,2,5). Pain can migrate to the knee and may be accompanied by a snapping sensation or crepitus (2,4). Two physical examination maneuvers, including the long-stride walking test or IFI tests, may aid in diagnosis (2,6). The long-stride walking test is performed by instructing the patient to grab the ipsilateral buttock and extend the affected hip (2). This has a reported sensitivity of 94% and specificity of 85% (6). The IFI test is conducted by firm palpation lateral to the ischium after extension on the hip in a lateral decubitus position (2). The flexion, adduction, and internal rotation test is a nonspecific test that can also be positive in patients with IFI (2).

MRI is the preferred imaging modality for diagnosis of this condition, which may show narrowing of the IFS or QFS (1,2,3). Additionally, QF muscle abnormalities, including edema, atrophy, or fatty infiltration, are often described (1,2,3). Singer et al (1), in 2015, proposed diagnostic thresholds for IFS and QFS narrowing as ≤15 mm and ≤10 mm, respectively. Diagnosis of IFI can be made by ipsilateral clinical symptoms with suggestive MRI findings (1,2). Diagnosis of this syndrome can be challenging given the broad differential and potential for multiple etiologies of pain (2). Differential diagnosis may include degenerative OA, piriformis syndrome, ischial bursitis, sacroiliac disorder, proximal hamstring tear, labral tear, middle cluneal nerve entrapment, or lumbosacral radiculopathy (2,3). Although IFI is the most likely diagnosis in this case, there are other considerations, including a history of prior lumbar fixation, partial hamstring tendinopathy, and bilateral femoroacetabular OA. Additional imaging of the spine or hip could have been warranted but was deferred due to the absence of back pain, groin pain, or signs of radiculopathy on examination. There is often overlap seen between IFI and hamstring tendinopathy (3). Partial hamstring tendinopathy seen on MRI could have played a role in this patient's pain; however, QF abnormalities suggest IFI to be the primary pain generator. Additionally, IFI can lead to sciatic nerve entrapment, which can result in pain radiation distally. Ultrasound has emerged as another potential clinical tool for diagnosis of the IFI, but literature for diagnosis is limited (7).

Treatment of IFI is primarily conservative with physical therapy and activity modification; however, nonoperative interventions can be considered (1,2,3). Surgical decompression is considered a last-resort treatment option for refractory cases (1,3,5). A retrospective study of 7 patients by Backer et al (3), in 2014, has shown promising results for ultrasound-guided corticosteroid injection, which may be diagnostic and therapeutic in nature. Although there are different approaches to injection, identification of the sciatic nerve is crucial, which lies posterior to the QF (2,4). Injectate is described using 1 mL of 40 mg of triamcinolone and 3 mL of 1% lidocaine (2,3). Complications of injection include proximal hamstring tendon scarring, tearing, and rupture if the steroid is injected into the hamstring tendon (8). Fat atrophy can occur with chronic steroid injections (8).

Given the history of the fall on the ipsilateral hip preceding symptoms, symptom location, and findings seen on imaging, IFI is the most likely diagnosis in this particular case. This particular patient had risk factors for IFI that included trauma and female gender. Pelvic x-rays of this patient also showed bilateral acetabular dysplasia, or shallow acetabula (9). Acetabular dysplasia has a known relationship with increased femoral anteversion, which may have made this patient more susceptible to IFI (9). This report is limited to one case, but the presence of acetabular dysplasia could help lead to the diagnosis.

CONCLUSIONS

IFI is an important differential diagnosis in patients with unilateral buttock pain, especially for patients with particular risk factors. These characteristics may include female gender, trauma, or prior hip surgery. Patients with acetabular dysplasia especially may be vulnerable to development of IFI due to increased femoral anteversion. Further research is required to aid in diagnostic challenges and earlier identification of this syndrome.

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