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ILIOPSOAS ABSCESS SECONDARY TO PYELONEPHRITIS WITH SUBSEQUENT UNILATERAL SACROILIITIS PRESENTING AS LOW BACK PAIN IN A YOUNG ADULT: A CASE REPORT

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Abstract

Introduction: Iliopsoas abscess is a rare but potentially life-threatening condition. Secondary iliopsoas abscess following pyelonephritis is rarely reported, and contiguous spread to the sacroiliac joint resulting in sacroiliitis is an uncommon complication. Early detection is crucial, as initial symptoms may mimic low back pain, hip or gluteal discomfort, or genitourinary tract infection, often leading to delayed diagnosis.

Case Presentation: We report a case of a young adult who presented with severe low back pain radiating to the right lower extremity. Pyelonephritis was initially diagnosed based on CT imaging and laboratory tests, including blood tests and urinalysis. Almost two months after symptom onset, MRI revealed a unilateral iliopsoas abscess with contiguous

involvement of the sacroiliac joint, resulting in secondary sacroiliitis. Methicillin-resistant Staphylococcus aureus (MRSA) was identified as the causative organism. The patient underwent percutaneous core biopsy and culture-guided antimicrobial therapy, leading to complete recovery.

Conclusion: This case underscores the importance of considering retroperitoneal and sacroiliac infections in patients with persistent, immobilizing low back pain, even when laboratory abnormalities are transient. Prompt imaging and timely management are essential to prevent morbidity and mortality associated with iliopsoas abscess and secondary sacroiliitis.

Keywords*: Iliopsoas abscess; Low back pain; MRSA; Pyelonephritis; Sacroiliitis.*

Introduction

Sacroiliitis in young adults is an uncommon but clinically important cause of low back pain (1). Its presentation frequently overlaps with musculoskeletal lumbar pain, hip and gluteal pain, or even symptoms of genitourinary tract infection. Because of this nonspecific pattern, sacroiliitis may initially be misdiagnosed, leading to delayed treatment and prolonged morbidity in those patients (2).

Iliopsoas abscess is a rare clinical entity with a recent reported incidence of approximately 1.21 per 100,000 population per year (3). Although rare, it remains a potentially life–threatening condition, with a high mortality rate, reported as 2.4% for primary iliopsoas abscess, and up to 18.9% for secondary abscess, particularly in patients with delayed diagnosis or underlying comorbidities (3,4).

Iliopsoas abscesses are classified as primary or secondary. In a primary iliopsoas abscess, the causative microorganism spreads hematogenously or via lymphatic dissemination from a distant site of infection, whereas in a secondary abscess, there is an identifiable contiguous source of infection. Secondary abscesses may arise from gastrointestinal disease, spinal infections, suppurative urinary tract infections, or other adjacent sources and account for approximately 70% of iliopsoas abscesses. Skeletal origin is among the most frequently reported source of secondary iliopsoas abscess formation (4).

Although cases of iliopsoas abscess complicated by sacroiliitis have been documented, contiguous spread of infection from the kidney through the iliacus and psoas muscle and sacroiliac joint remains exceptionally rare (5-8).

We present a case of unilateral sacroiliitis with associated iliopsoas abscess in a young adult patient presenting with intense low back pain radiating to the right lower extremity. The patient underwent treatment for pyelonephritis for nearly two months before she was diagnosed with sacroiliitis caused by MRSA.

Case Presentation

A 20-year-old female with no prior medical history presented to the general surgery department in a secondary care hospital in her hometown with complaints of intermittent lower abdominal pain, which had previously undergone a gynecological evaluation that excluded a gynecologic source of symptoms. Upon examination, the attending surgeon concluded that the patient had no signs of acute abdominal distress and suspected a urinary tract infection. Abdominal ultrasonography was performed, and laboratory tests and urinalysis were ordered. Microscopic examination of the urine revealed 30–100 leukocytes per high-power field, consistent with pyuria, with a negative urine culture. The patient was

discharged the same day and referred for further urological and gynecological evaluation. Abdominal ultrasonography was unremarkable.

Four weeks after symptom onset, the patient underwent repeat gynecological evaluation, which was also unremarkable, and showed no free fluid in the pouch of Douglas. However, speculum examination revealed signs of vaginitis and macroscopic herpes simplex infection, for which treatment was initiated according to standard clinical practice.

Approximately five weeks after initial symptom onset, the patient was evaluated by an orthopedic surgeon with complaints of persistent and gradually worsening low back pain radiating to the right gluteal region. There was no history of trauma. No clinical or radiological evidence suggestive of a significant musculoskeletal pathology was identified upon clinical evaluation, and the patient was referred for infectious disease and internal medicine assessment.

Upon examination by an infectious disease specialist, the patient was found to be febrile (38.8 °C), with stable vital signs, but unable to ambulate. Laboratory tests revealed markedly elevated inflammatory markers (CRP 339 mg/L; ESR 56 mm/h; WBC $9.60\times10^3/\mu L$; NEUT $8.89\times10^3/\mu L$). Chest, abdominal, and pelvic CT imaging was performed.

CT of the abdomen found no evidence of obstruction or nephrolithiasis; however, a striated nephrogram of the lower renal poles, more pronounced on the right, was observed, suggestive of acute pyelonephritis. There was also delayed contrast excretion with mild right ureteral dilatation.

Acute pyelonephritis was diagnosed based on clinical, laboratory, and imaging findings despite sterile urine cultures, likely due to prior broad-spectrum antibiotic therapy.

The patient was subsequently hospitalized and treated with empirical intravenous antibiotic therapy, including meropenem, intravenous fluids, analgesics, corticosteroids, proton pump inhibitors, and prophylactic low-molecular-weight heparin. Serological testing for Brucella (Rose Bengal/agglutination testing) was negative. Orthopedic consultation during the initial hospitalization did not reveal clinical or radiological evidence of septic arthritis of the right hip.

The patient was discharged after an 8-day hospitalization, afebrile and in good general condition. Laboratory results at discharge showed improvement in inflammatory markers (CRP 21.43 mg/L; WBC $10.19\times10^3/\mu L$; NEUT $6.69\times10^3/\mu L$; PCT 0.10 ng/mL). No pathogens were isolated from blood, urine, and gynecological cultures.

Approximately 2 months after the initial onset of symptoms, the patient consulted a neurosurgeon due to persistent lumbar pain radiating to the right gluteal region. Neurological examination revealed radicular pain, with a positive Lasègue test at 45 degrees on the affected side, preserved sensation in both lower limbs, and intact sphincter control. MRI of the lumbosacral spine was performed and was unremarkable. However, abnormalities were identified in the right sacroiliac joint, prompting a dedicated pelvic MRI, which revealed findings indicative of suppurative sacroiliitis of the right sacroiliac joint.

As there was no indication for neurosurgical intervention and the patient reported worsening pain in the right leg and pelvis, consultation with the orthopedic department recommended urgent referral to a center with higher diagnostic and treatment capacity.

The patient was subsequently admitted to the referred center, where comprehensive clinical, radiological (conventional X-ray, contrast-enhanced CT, and MRI), and laboratory investigations were performed. All routine laboratory parameters were within normal

reference ranges. On admission, vital signs were stable. Clinically, the patient exhibited limited hip flexion due to pain and a positive FABER test. No neurological deficits in the lower extremities were observed.

Contrast-enhanced CT of the abdomen and pelvis revealed a multiloculated, hypodense intramuscular collection centered in the right iliacus muscle with extension into the psoas muscle, showing peripheral rim enhancement and a central necrotic component, consistent with an intramuscular abscess. Several additional punctate necrotic foci measuring up to 3 mm were identified within the iliacus muscle, representing microabscesses. The primary collection extended along the right sacroiliac joint, most prominently along its distal aspect, where communication with the joint capsule was observed.

The right sacroiliac joint exhibited cortical remodeling, multiple cortical erosions, distal osseous fragmentation incorporated into the joint space, and asymmetric joint space widening. Secondary involvement of the obturator internus muscle was also noted. These findings were consistent with an iliopsoas–iliacus muscle abscess complicated by secondary sacroilitis of the right sacroiliac joint. (Figure 1).

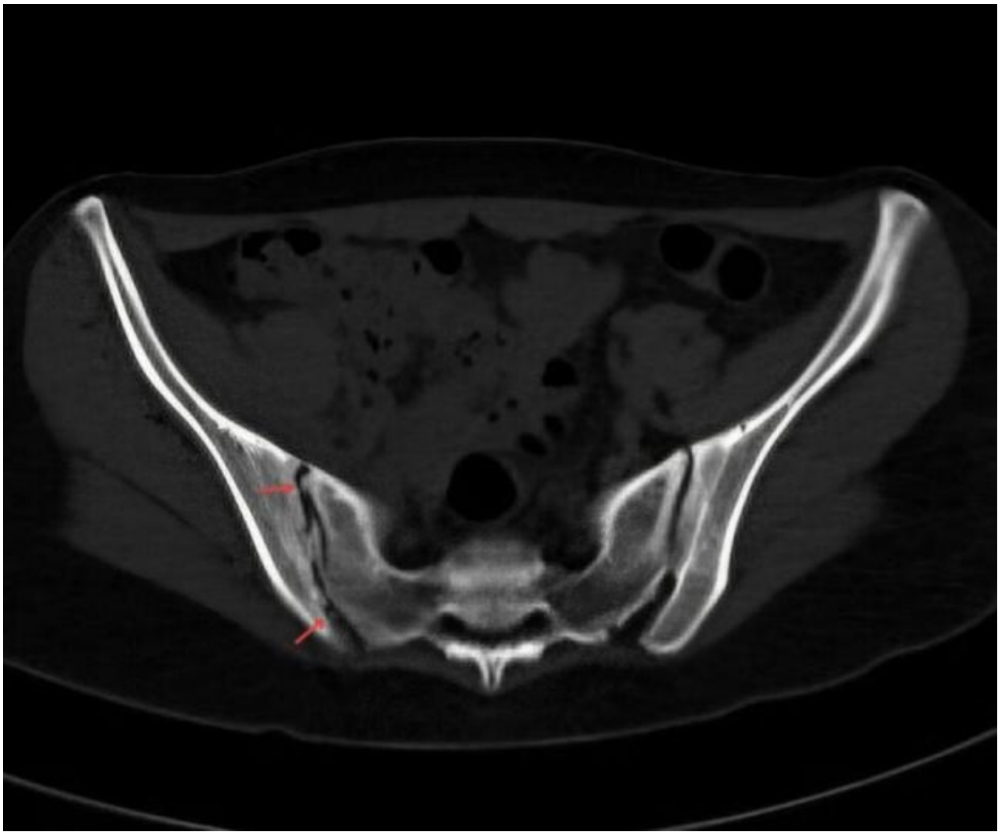

Figure 1. Axial CT image demonstrating unilateral right sacroiliac joint irregularity and cortical erosions, most pronounced inferiorly, consistent with sacroiliitis (arrow).

MRI of the sacroiliac joint demonstrated right sacral bone edema involving the sacroiliac joint and iliac wing, with cortical remodeling, erosions, and bony fragments. A 25 × 11.5 mm encapsulated collection was seen in the iliacus and psoas muscles, in close posterior contact with the iliac cortex without evidence of cortical bone destruction, showing central necrosis and peripheral pathological enhancement, consistent with an abscess. Associated edema extended into the distal sacroiliac joint, piriformis, and gluteal muscles, with reactive synovial changes. (Figures 2 and 3).

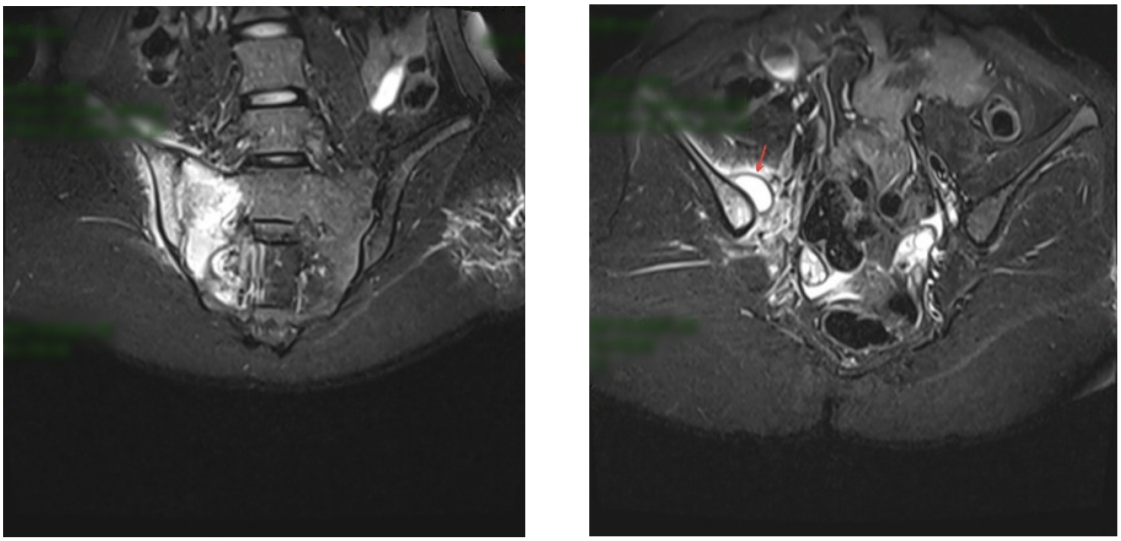

Figure 2. Coronal T2-weighted MRI displaying extensive hyperintense bone marrow edema and inflammatory changes involving the right sacroiliac joint and adjacent sacral ala, consistent with active sacroiliitis.

Figure 3. Coronal T2-weighted MRI showing a well-defined hyperintense fluid collection adjacent to the right sacroiliac joint with surrounding inflammatory changes extending into the iliopsoas region, consistent with an iliopsoas abscess (arrow).

During the second hospital stay, a biopsy of the lesion was performed 15 days after admission. Under fluoroscopic guidance, a percutaneous vertebroplasty needle (11 Gauge) was advanced to the posterior synovial portion of the right sacroiliac joint via a posterolateral approach, and sufficient tissue was obtained for histopathological examination. Approximately 1 cc of purulent fluid was obtained from the cytological sediment and submitted for cytological analysis. Smears were prepared and stained with H&E, Papanicolaou, and Giemsa. Examination revealed a proteinaceous, amorphous background containing numerous lymphocytes, plasma cells, and neutrophilic leukocytes, consistent with an inflammatory process.

Microbiological analysis of the biopsied material isolated methicillin-resistant Staphylococcus aureus (MRSA), and targeted antimicrobial therapy was initiated according to susceptibility testing, as prescribed by an infectious disease specialist. Initial treatment consisted of imipenem/cilastatin 1 g IV every 8 h, clindamycin 600 mg IV every 6 h, and amikacin 500 mg IV every 8 h for 5 days.

The regimen was subsequently continued for an additional 10 days and modified to amikacin 500 mg IV every 8 h, ciprofloxacin 400 mg IV every 12 h, and fosfomycin 4 g in 10% dextrose solution IV every 6 h.

Throughout the treatment course, the patient received supportive therapy, including intravenous fluids, probiotics, and gastroprotective medication.

Drainage was not performed because the patient remained clinically stable and responded favorably to antimicrobial therapy, with progressive improvement in symptoms and inflammatory markers.

Upon discharge, oral outpatient therapy prescribed by an infectious disease specialist included: levofloxacin 750 mg once a day for 2 weeks, combined with oral intake of linezolid 600 mg twice a day for 2 weeks, followed by an oral intake of trimethoprim/sulfamethoxazole 400/80 mg twice a day for 2 weeks.

Physical therapy was initiated during the hospital stay and continued after discharge, to maintain hip mobility and strength. The patient was discharged in good general condition with improved pain control, with all inflammatory markers within normal limits (e.g., CRP 0.6 mg/L). Blood and urine cultures remained negative during both hospital stays.

The first follow-up was performed 19 days after discharge following the second hospital stay. A subsequent follow-up was conducted approximately six months later.

The patient showed progressive clinical improvement, with markedly reduced pain and full recovery of mobility. Follow-up MRI demonstrated complete bony remodeling of the right sacroiliac joint, consistent with the findings upon admission. Mild cortical irregularity and minimal intra-articular fluid were noted. The bone marrow signal was normal. (Figure 4). Overall, there was complete regression of the previously documented sacroiliitis.

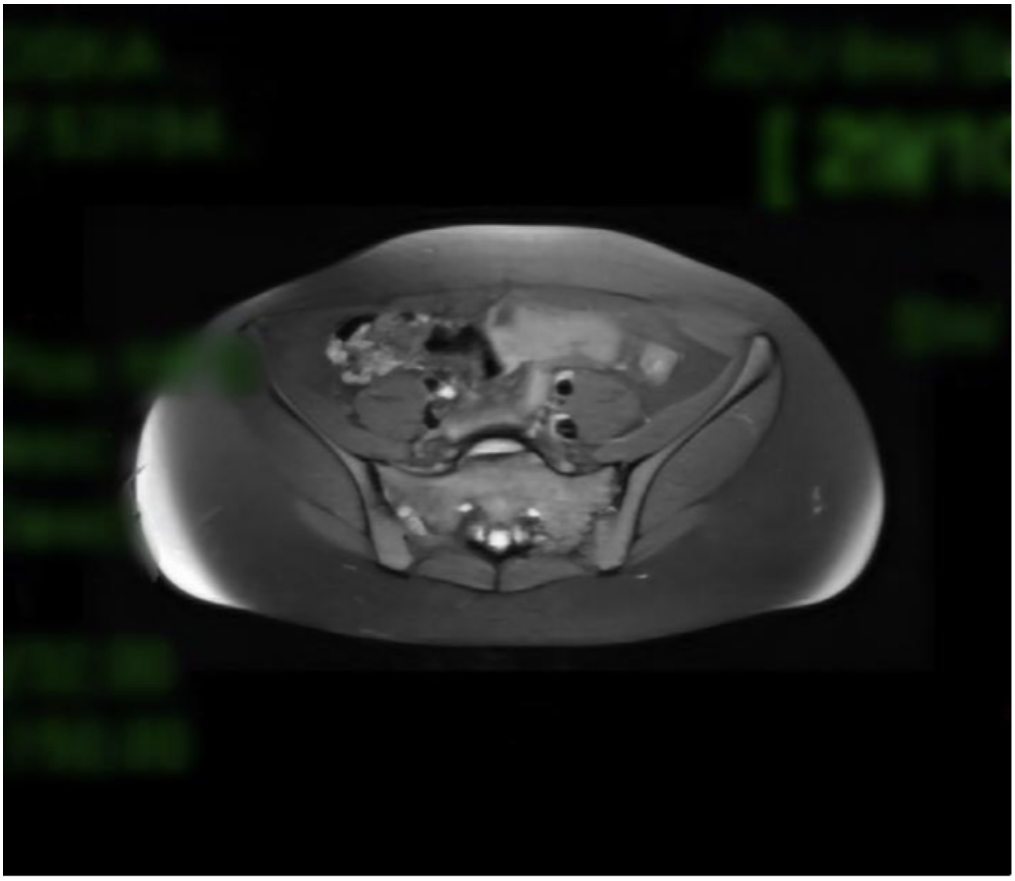

Figure 4. Follow-up axial MRI at the level of the sacroiliac joints exhibits preserved joint morphology and absence of inflammatory changes, consistent with complete regression of previously observed sacroiliitis.

Discussion

This case underscores the importance of maintaining a high index of suspicion for sacroiliitis and iliopsoas abscess in patients presenting with persistent, immobilizing low back pain,

particularly following urinary tract infections (4,5). The clinical diagnosis of acute pyelonephritis with subsequent isolation of MRSA from the sacroiliac region likely reflects secondary infectious involvement of the iliopsoas and sacroiliac region in the setting of acute pyelonephritis via recognized retroperitoneal and hematogenous pathways (4). However, the exact pathogenetic mechanism linking the initial pyelonephritis and the subsequent development of MRSA iliopsoas abscess and sacroiliitis cannot be definitively established. Although iliopsoas abscess with secondary sacroiliitis has been described (5-8), to our knowledge, reports documenting such a progression following pyelonephritis are limited, further emphasizing the uncommon nature of this presentation.

Clinicians should be aware that laboratory abnormalities may be transient and that resolution of urinary symptoms does not exclude secondary infectious complications; therefore, imaging remains essential for accurate diagnosis and assessment (4).

Reported outcomes of iliopsoas abscess in the literature are generally favorable when early diagnosis and appropriate antimicrobial therapy are initiated; however, morbidity remains significant, and a substantial proportion of patients require percutaneous or surgical drainage, particularly in cases with larger collections or inadequate response to antibiotics alone (3,4,9). Complications may include sepsis, prolonged hospital stay, and contiguous spread to adjacent structures, including vertebral and sacroiliac involvement (4,5).

Standard management typically involves a combination of targeted antimicrobial therapy and drainage when indicated (10-12). However, in the present case, a conservative approach with intravenous antibiotics guided by susceptibility testing was chosen based on the patient's clinical stability and radiological findings, along with close clinical follow-up. The patient demonstrated progressive clinical and radiological improvement without the need for

invasive drainage procedures, highlighting the variability in disease course and the importance of individualized management strategies.

Conclusion

Early recognition and prompt, individualized management with culture-guided antimicrobial therapy are critical for achieving full recovery and preventing serious complications, long-term disability, and potential mortality associated with iliopsoas abscess and secondary sacroiliitis.

Declarations

Ethics Approval and consent to participate: Not applicable.

Informed Consent: Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Conflict of Interest: The authors declare no conflict of interest.

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Availability of Data and Materials: Data are available from the corresponding author upon reasonable request.

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