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Medical Case Studies

Case Report

The great mimicker: A rare case of Iliopsoas abscess associated with vertebral and sacroiliac osteomyelitis

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A 21-year-old, recent Indian migrant to Australia, presented to the Emergency Department with a 3-week history of worsening right buttock and thigh pain and weakness, associated with fever of up to 39°C and weight loss of 3 kg. On examination, the patient demonstrated a right-sided antalgic gait with a limp and weakness of right hip flexion. The patient was tachycardic with a heart rate of 140, and had raised inflammatory markers with white blood cell count of 13.0 × 10^9/ L and C-reactive protein of 246 mg/L. Subsequent MRI pelvis revealed a 69 mm × 25 mm × 38 mm, right-sided iliopsoas abscess with oedema extending to the right paraspinal muscle at the level of 5th lumbar vertebra, associated with the enhancement of 5th right hemi-lumbar vertebra, the right side of the sacrum and adjacent ilium consistent with osteomyelitis of these bones. CT-guided percutaneous drainage of the iliopsoas abscess was performed, and 30 ml of haemopurulent fluid was aspirated and sent for microbial culture. Abscess cultured methicillin-sensitive *Staphylococcus aureus*. The patient was treated with 2 weeks of intravenous flucloxacillin, and further 3 weeks of oral flucloxacillin. At follow-up in 3 months, the patient was pain free and inflammatory markers had normalised.

Key words: Abscess, iliopsoas, osteomyelitis, drainage, CT-guided, osteomyelitis, vertebral, osteomyelitis, sacroiliac

INTRODUCTION

Iliopsoas abscess (IPA) is a rare general surgical condition with a reported incidence of 0.4 cases in 100,000 persons per annum (Bartolo et al., 1987). IPA occurs when abscess forms underneath the dense psoas fascia where the iliopsoas muscle is invested in. It has a wide range of clinical manifestations, often with non-specific symptomatology. For this reason, coupled with its rarity, IPA frequently poses diagnostic challenge on presentation at Emergency Departments. Currently, our understanding of IPA is largely based on case-based literatures. We herein present a rare case of IPA associated with vertebral and sacroiliac osteomyelitis where we faced an initial diagnostic challenge and where the usage of magnetic resonance imaging facilitated the diagnostic process.

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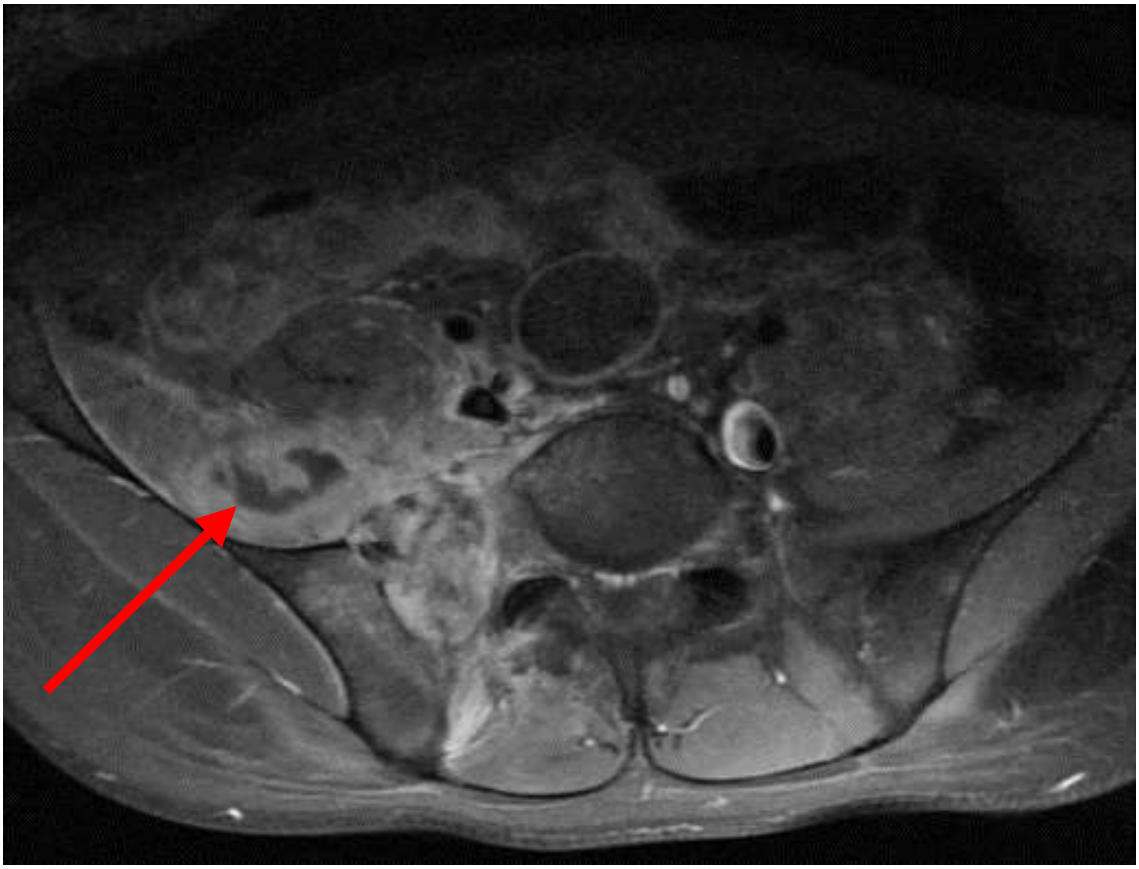

Figure 1. MRI demonstrating the right iliopsoas abscess.

METHODS

An informed consent for publication was obtained from the patient in the form of written documentation. A literature search of the EMBASE, MEDLINE, PubMed, UpToDate Anywhere, and BMJ Best Practice electronic medical databases was conducted using the terms 'iliopsoas abscess', 'iliopsoas collection', 'iliopsoas *Staphylococcus aureus* abscess', and 'psoas abscess'.

CASE REPORT

A 21-year-old, recent Indian migrant to Australia, presented to Emergency Department with 3 week history of worsening right buttock and thigh pain and weakness, associated with fever up to 39°C and weight loss of 3 kg. This was in the setting of preceding upper respiratory tract infection treated with a course of oral antibiotic. There was no significant past medical history and risk factors for immunosuppression. There was no known history of tuberculosis or tuberculosis contact, and the patient denied any risk factors for sexually transmitted infections and any illicit intravenous drug usage. On examination, the patient demonstrated a right-sided antalgic gait with a limp and complained of difficulty with weight bearing on the affected side. Neurological examination demonstrated weakness of right hip flexion without any sensory deficit. There was no bowel and bladder dysfunction. The thigh and gluteal muscles were not tender; however, there was tenderness on palpation over the right paraspinal muscles from L3 to S1 levels, extending to posterior superior iliac spine.

On presentation, the patient was tachycardic with a heart rate of 140, and had raised inflammatory markers with the white blood cell count of 13.0 × 10^9/L, C-reactive protein of 246 mg/L, and erythrocyte sedimentation rate of 107 mm/h. Pelvic X-ray did not demonstrate any bony pathology. Subsequent MRI pelvis revealed a 69 mm × 25 mm × 38 mm, right-sided iliopsoas abscess (Figure 1) with oedema extending to the right paraspinal muscle at the level of 5^{th} lumbar vertebra (Figure 2), associated with the enhancement of 5^{th} lumbar vertebra (Figure 3), the right side of the sacrum and adjacent ilium consistent with osteomyelitis of these bones (Figure 4).

CT-guided percutaneous drainage of the iliopsoas abscess was performed, and 30 ml of haemopurulent fluid was aspirated and sent for microbial culture.

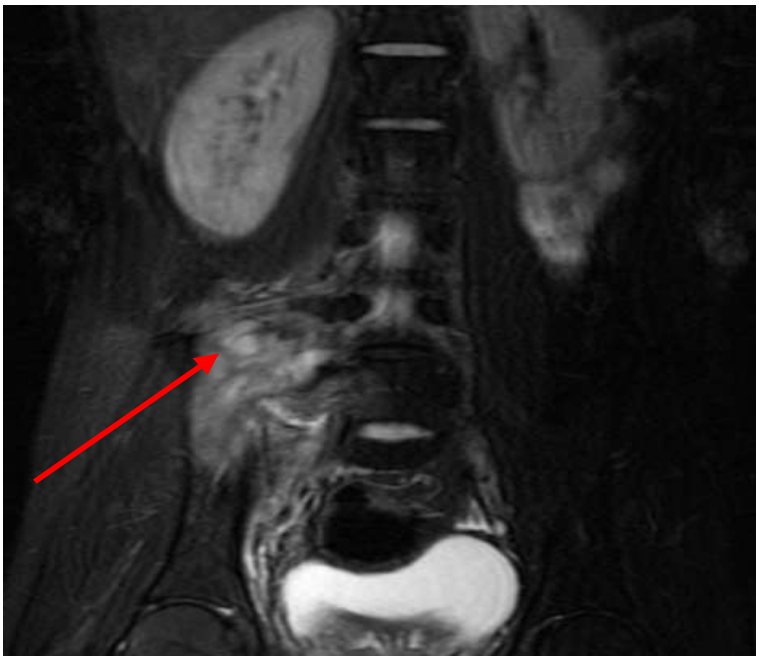

Figure 2. MRI demonstrating the right iliopsoas abscess with oedema extending to the right paraspinal muscle at the level of 5th lumbar vertebra.

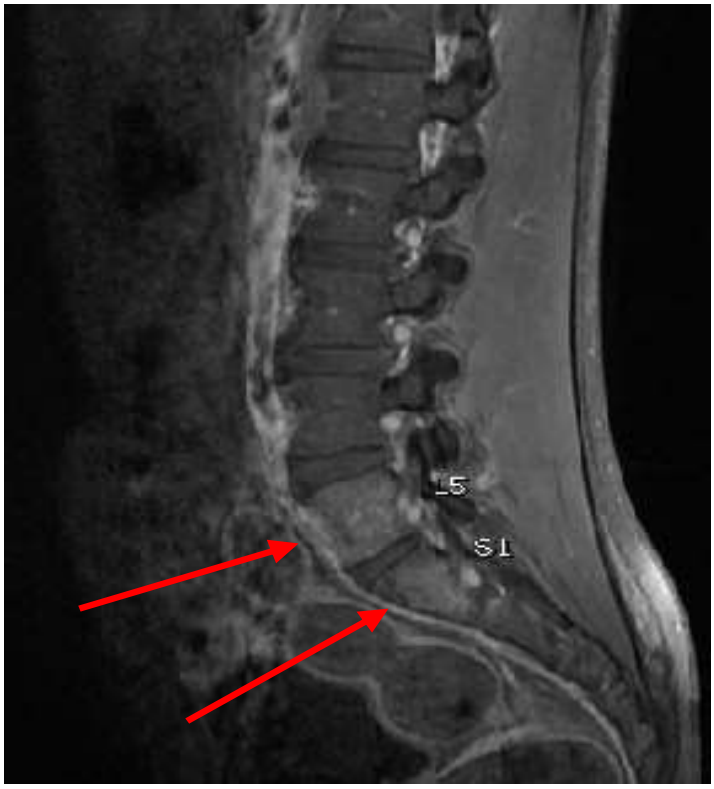

Figure 3. MRI enhancement of 5th lumbar and 1st sacral vertebrae, consistent with osteomyelitis.

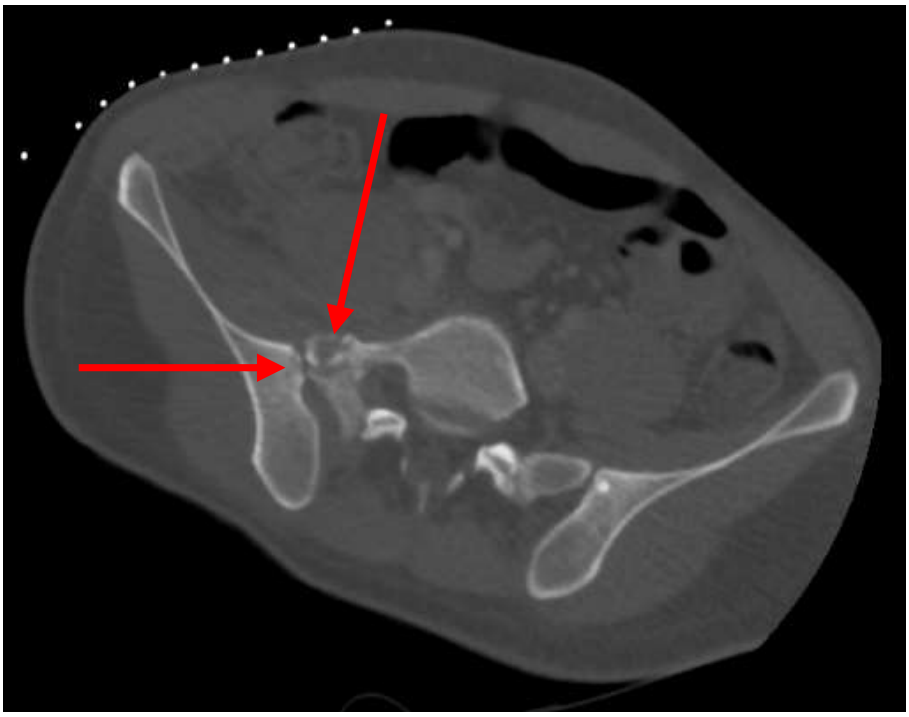

Figure 4. CT demonstrating bony destruction of 5th right hemi-lumbar vertebra, the right side of the sacrum and adjacent ilium, consistent with osteomyelitis.

Abscess cultured methicillin-sensitive *S. aureus*. The patient was treated with a total of 2 weeks of intravenous flucloxacillin, and further 3 weeks of oral flucloxacillin. Immunosuppression screening with hepatitis and HIV serology testing was all negative. Quantiferon-Gold tuberculosis assay was negative. Progress CT 7 days following the percutaneous drainage showed almost complete resolution of the abscess over the iliopsoas muscle. However, it demonstrated marked erosion and destruction of the right 5th lumbar vertebra and 1st sacral vertebra joint and superior sacroiliac joint consistent with ongoing osteomyelitis. At follow-up in 3 months, the patient was pain free and inflammatory markers had normalised.

DISCUSSION

Iliopsoas is an infrequently encountered site for abscess formation. First reported by Mynter in 1881, iliopsoas abscess has been described with the classic triad of fever, flank pain and limp (Mynter, 1881). However, it is only present in 20-30% of patients (Chern et al., 1997; Asai et al., 2013), and more often it presents with an insidious onset of nonspecific constitutional symptoms such as fever, malaise and weight loss which may progress into various combinations of more specific symptoms (Shields et al., 2012). Hence, its clinical diagnosis is often difficult and diagnostic and treatment delays are common. Such was the case for our patient, where it was initially thought to be epidural abscess or hip joint pathology, leading to the patient being referred to the orthopaedic and neurosurgical units which caused further delay in appropriate treatment.

Its aetiology can be classified into either primary or secondary. Primary IPA occurs when there is haematogenous or lymphatic spread of the infection from a distant site to the iliopsoas, whereas secondary IPA occurs when there is direct spread of infectious process from an adjacent primary site of infection (Shields et al., 2012). Therefore, it is also important to investigate for the underlying cause for iliopsoas abscess. Crohn's disease is the commonest aetiology of secondary iliopsoas abscess followed by other gastrointestinal infection, such as appendicitis and diverticulitis (Ricci et al., 1986; Bartolo et al., 1987). Risk factors include conditions that put patients in immunocompromised state, such as diabetes, long-term steroid therapy, HIV, and chronic renal failure (Walsh et al., 1992; van den Berge et al., 2005; López et al., 2009), as well as trauma to the muscle and intravenous drug abuse (Levin et al., 1971; Yacoub et al., 2008). In our case, the patient did not have any risk factors for IPA and all the screening investigations for possible underlying cause were

negative. Based on the MRI finding, our case was deemed most likely a secondary IPA, where there was an extension of the infection to iliopsoas from the adjacent vertebral and sacroiliac osteomyelitis.

In terms of the choice of imaging modality, it has been shown in the case series by Lopez et al. (2009) that only CT or MRI allows reliable diagnosis with 100% accuracy, whereas X-ray or ultrasonography only aided in diagnosis in 14 and 53% of the time, respectively. This was, again, the case for our patient as the accurate diagnosis was only made after the usage of MRI. In the author's opinion, if accessible, MRI offers diagnostic advantage over CT as MRI is also useful in excluding other differential diagnosis such as epidural abscess and other myeloradicular pathologies.

The two commonest causative organisms in IPA are *S. aureus* and *Escherichia coli*. Other less common organisms include Bacteroides, Mycobacterium, Streptococcus, and Enterococcus (López et al., 2009; Asai et al., 2013). Though becoming less common in developed countries, Mycobacterium tuberculosis is an important causative organism to be considered especially in developing countries as 5% of patients with spinal tuberculosis develop a psoas abscess (Kyle, 1971). Given that our patient was a recent migrant from India, various investigations were performed to exclude tuberculosis as an underlying cause, including the QuantiFERON-TB Gold assay, tuberculosis culture of the abscess aspirate and sputum.

The treatment of IPA requires an early initiation of empirical broad spectrum antibiotic therapy with *S. aureus* and *E. coli* cover (Shields et al., 2012). In the retrospective review by Yacoub et al. (2008), IPAs less than 3 cm in greatest dimension were deemed safe to be managed with antibiotic therapy alone without recurrence. However, it is ideal to isolate the causative organism from abscess culture for more targeted antibiotic therapy to prevent emergence of antibiotic resistance or inadequate treatment. Larger IPAs or IPAs that are associated with sepsis will less likely resolve with antibiotic therapy alone, and more likely to require drainage of the abscess. Before the time of radiological interventions, open surgical drainage was the treatment of choice (Shields et al., 2012). However, with the advent of image-guided percutaneous intervention allowing more complex interventions than ever before, CT-guided percutaneous drainage is being deemed equally effective and safe option without the potential risks associated with open drainage (Dinc et al., 2002; Yacoub et al., 2008). Open surgical drainage may still be required in cases of complicated recurrence (Yacoub et al., 2008) and for secondary IPAs from complex intraabdominal pathology such as Crohn's disease or diverticulitis which may require simultaneous bowel resection (Ricci et al., 1986; Shields et al., 2012). Our current case was successfully managed with CT-guided percutaneous drainage and targeted antibiotic therapy. However, due to the underlying osteomyelitis the patient required a prolonged course of oral antibiotics, despite the resolution of the abscess on repeat imaging.

Conclusion

Iliopsoas abscess is a rare general surgical condition with a wide range of clinical manifestations. IPA frequently poses diagnostic challenge on presentation, but with the utilisation of CT and MRI the diagnostic process can be facilitated. It is important to always consider a new diagnosis of underlying pathology of secondary IPAs. CT-guided percutaneous drainage is a safe and effective treatment option for iliopsoas abscess which provides adequate source control and allows isolation of causative organism for targeted antibiotic therapy. Open surgical drainage may still be required in selected cases.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

ABBREVIATIONS

IPA, Iliopsoas abscess; **CT,** Computer tomography; **MRI,** Magnetic resonance imaging.

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