Iliopsoas abscesses

I H Mallick, M H Thoufeeq, T P Rajendran

Iliopsoas abscess is a relatively uncommon condition that can present with vague clinical features. Its insidious onset and occult characteristics can cause diagnostic delays, resulting in high mortality and morbidity. The epidemiology, aetiology, clinical features, and management of iliopsoas abscess are discussed.

Before the discovery of modern antituberculous treatment iliopsoas abscess was characteristically a well recognised complication of tuberculosis of the spine. However with the decreasing prevalence of tuberculosis, iliopsoas abscess is becoming uncommon in the developed countries. Iliopsoas abscess is a collection of pus in the iliopsoas compartment. Iliopsoas abscess was first described by Mynter in 1881 who referred to this as psoitis.5

ILLUSTRATIVE CASE HISTORY
A previously well 40 year old man presented with a two day history of right loin groin pain and nausea. He denied any dysuria, fever, or chills. Physical examination was unremarkable except for moderate tenderness in the right loin on pressure. Urine dipstix was 1+ positive for blood, however urine microscopy was normal. His white cell count was raised at 14.0 x 10^9/l.

A plain radiograph of the kidney ureter bladder did not show any evidence of a calculus. An ultrasound scan of the abdomen revealed a right hydronephrotic kidney with a right hydro-ureter. No definite renal calculus was seen. An intravenous urogram (IVU) was performed which confirmed the ultrasound findings (fig 1). The pain settled down and it was assumed that the stone had been passed. He was discharged home on analgesics with a follow up appointment. One week later he was seen again urgently with similar pain. Cystoscopy with right retrograde pyelogram was performed which did not show any obstruction of the renal tracts. Meanwhile his blood haemoglobin dropped to 77 g/l. Three units of red cells were transfused to correct the anaemia. Computed tomography of the abdomen and pelvis was performed which revealed a right iliopsoas abscess (fig 2). Broad spectrum intravenous antibiotics were started for a week. The pus grew Escherichia coli and the histology of the specimen was confirmed as Crohn’s disease. A month later he presented with a recurrent iliopsoas abscess, which was drained surgically. The ureteric stent was removed two months after its insertion. A repeat IVU was normal with no hold-up of contrast. Two years on, he is doing well without any further complications.

ANATOMY
The iliopsoas compartment is an extraperitoneal space which contains the iliopsoas and iliacus muscles. The psoas major is a long fusiform muscle placed on the side of the lumbar region of the vertebral column and brim of the lesser pelvis (fig 3). It arises from the lateral borders of T12 to the L5 vertebrae. The muscle proceeds downward across the brim of the lesser pelvis and diminishing gradually in size, passes beneath the inguinal ligament and in front of the capsule of the hip joint and ends in a tendon. The tendon receives nearly the whole of the fibres of the iliacus muscle and is inserted into the lesser trochanter of the femur. The psoas major and iliacus are sometimes regarded as a single muscle named the iliopsoas. It is innervated by the branches of L2, 3, and 4, and it is the primary flexor of the hip joint. The psoas muscle lies in close proximity to organs such as the sigmoid colon, appendix, jejunum, ureters, abdominal aorta, kidneys, pancreas, spine, and iliac lymph nodes. Hence infections in these organs can spread to the iliopsoas muscle. The abundant blood supply of the muscle is believed to predispose it to haematogenous spread from occult sites of infection.2

AETIOLOGY
Iliopsoas abscess may be classified as primary or secondary, depending on the presence or absence of underlying disease. Primary iliopsoas abscess occurs probably as a result of haematogenous spread of an infectious process from an occult source in the body. The group of patients in which primary iliopsoas abscess occurs is summarised in box 1.3 Crohn’s disease is the commonest cause of secondary iliopsoas abscess.4 The other causes of secondary iliopsoas abscesses is summarised in table 1. Patients who have had instrumentations or procedures performed in the groin, lumbar, or hip area are at a particular risk of developing an iliopsoas abscess.5 6 7 In a review of 367 cases, Ricci et al noted world wide differences in its aetiology. In Asia and Africa, over 99% of iliopsoas abscess are primary.

Abbreviations: IVU, intravenous urogram; PCD, percutaneous drainage
whereas 17% and 61% are primary in Europe and North America respectively. Iliopsoas abscess is common in the young compared with the elderly. It is reported to be commoner in males than females. Bresee et al in a study of 142 paediatric patients with iliopsoas abscess found a 57% occurrence on the right side, 40% on the left side, and 3% had bilateral abscesses. The mortality rate in primary iliopsoas abscess is 2.4% and in secondary abscesses is 19%. Ricci et al suggested that the mortality rate in untreated patients is 100%.

**MICROBIOLOGY**

*Staphylococcus aureus* is the causative organism in over 88% of patients with primary iliopsoas abscess. Secondary iliopsoas abscess is caused by streptococcus species 4.9% and *E coli* 2.8%. *Mycobacterium tuberculosis* as a cause of iliopsoas abscess is currently uncommon in the western world, but common in the developing countries. The other causative organisms include *proteus*, *Pasteurella multocida*, *bacteroides*, *clostridium*, *Yersinia enterocolitica*, *klebsiella*, *methicillin resistant Staphylococcus aureus*, *salmonella*, *Mycobacterium kansasii*, and *Mycobacterium xenopi*.

**CLINICAL FEATURES**

The clinical presentation of iliopsoas abscess is often variable and non-specific. The classical clinical triad consisting of fever, back pain, and limp is present in only 30% of the patients with iliopsoas abscess. As the psoas muscle is innervated by L2, L3, and L4, pain can radiate to hip and thigh. Other symptoms are vague abdominal pain, malaise, nausea, and weight loss. The clinical features are summarised in box 2.

A diligent physical examination is essential for the prompt diagnosis of this condition. The diagnosis may be obvious if the patient is noted to favour the position of greatest comfort.

<table>
<thead>
<tr>
<th>Box 1: Primary iliopsoas abscess can occur in:</th>
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<tr>
<td>• Diabetes mellitus.</td>
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<tr>
<td>• Intravenous drug abuse.</td>
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<tr>
<td>• AIDS.</td>
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<tr>
<td>• Renal failure.</td>
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<td>• Immunosuppression.</td>
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**Table 1**

<table>
<thead>
<tr>
<th>Conditions associated with secondary iliopsoas abscess</th>
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<tr>
<td>Gastrointestinal: Crohn’s disease, diverticulitis, appendicitis, colorectal cancer</td>
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<tr>
<td>Genitourinary: Urinary tract infection, cancer, extracorporeal shock wave lithotripsy</td>
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<tr>
<td>Musculoskeletal: Vertebral osteomyelitis, septic arthritis, infectious sacroiliitis</td>
</tr>
<tr>
<td>Vascular: Infected abdominal aortic aneurysm, femoral vessel, catheterisation</td>
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<tr>
<td>Miscellaneous: Endocarditis, intrauterine contraceptive device, supplicative lymphadenitis</td>
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ultrasound is diagnostic in only 60% of the cases. The retroperitoneal space can be difficult to visualise ultrasonically and can be obscured by bowel gas. Computed tomography should be done for definitive diagnosis and is considered the “gold standard.” Some authors believe that magnetic resonance imaging is superior to computed tomography because of better discrimination of soft tissues and the ability to visualise the abscess wall and the surrounding structures without the need of an intra-vascular contrast medium.

**MANAGEMENT**

Tumours arising from the structures within the pelvis or lumbar area may mimic an iliopsoas abscess. A physician attending such a patient must be aware as the treatment is different in these cases.

**INVESTIGATIONS**

Laboratory investigations may reveal a raised white cell count, raised C-reactive protein, anaemia, and raised erythrocyte sedimentation rate. Blood cultures may be positive for a particular organism causing the abscess. Initial radiological investigations may include radiography of the kidney ureter bladder, an IVU, or barium enema. These are neither specific or sensitive and are unhelpful in the diagnosis of iliopsoas abscess. Sometimes gas forming abscesses can be seen as mottled gas shadows in the retroperitoneum. Ultrasound is inexpensive, has no radiation effects, and is easy to perform but is extremely operator dependent. Ultrasound is diagnostic in only 60% of the cases. The retroperitoneal space can be difficult to visualise ultrasonically and can be obscured by bowel gas. Computed tomography should be done for definitive diagnosis and is considered the “gold standard.” Some authors believe that magnetic resonance imaging is superior to computed tomography because of better discrimination of soft tissues and the ability to visualise the abscess wall and the surrounding structures without the need of an intra-vascular contrast medium.

**Box 2: Clinical features**

- Flank/back/abdominal pain.
- Fever.
- Limp.
- Malaise.
- Weight loss.
- Lump in the groin.

**Box 3: Tests to elicit iliopsoas inflammation**

1. The examiner places his hand just proximal to the patient’s ipsilateral knee and the patient is asked to lift his thigh against the examiner’s hand. This will cause contraction of the psoas and results in pain.
2. With the patient lying on the normal side, hyperextension of the affected hip results in pain as the psoas muscle is stretched.

NB: These tests may be positive in appendicitis in which there is inflammation of the iliopsoas without the formation of iliopsoas abscess.

**CONCLUSION**

It is prudent that this condition is recognised and managed promptly. Early management and drainage of the abscess reduces the morbidity and mortality.

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REFERENCES