

PRIMARY PSOAS ABSCESS: CASE REPORT AND REVIEW OF THE LITERATURE

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ABSTRACT

A case of primary non-tuberculous psoas abscess is reported and the literature reviewed. The aetiology of psoas abscess is varied and there is a worldwide variation in the aetiology. Primary psoas abscess is due to Staphylococcal infection. The pathophysiology, clinical features, diagnosis and treatment are discussed with emphasis on the changing pattern in the aetiology and diagnosis.

Keywords: psoas abscess, primary psoas abscess, retroperitoneal infection.

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INTRODUCTION

Abscesses in the retroperitoneum are relatively common because of the intimate association of this space with the gastrointestinal tract and axial skeleton⁽¹⁾. The psoas muscle as an integral part of the retroperitoneal space is involved commonly in infections of this region. The aetiology is varied and there is a changing pattern in the pathology of psoas abscesses⁽²⁾. This paper is presented to draw attention to the varied aetiology and the recent advances in the diagnostic techniques.

CASE REPORT

A 58-year-old Malay diabetic man presented with a 10-day history of pain in the right lower quadrant of the abdomen and femoral area. He had fever and difficulty in stretching his right thigh and was unable to walk. He was being treated for diabetes with daonil 2.5mg twice daily. There was no history of trauma, cutaneous or other infection.

Physical examination revealed a febrile, dehydrated man who was confined to bed and was in moderate distress. His temperature was 39.3°C, pulse 108/min and blood pressure 110/70mmHg. The abdomen was soft. A tender mass was felt in the right iliac fossa. The right thigh was in fixed flexion deformity. Rectal examination was normal.

Investigations done were:

- Haemoglobin = 11.2gm/dl, total white blood count was 25,200/ul with 92% neutrophils.
- Sedimentation rate was 106mm per hour.
- Random blood sugar was 24.0mmol/l and urine sugar was orange.
- Chest X-ray: Normal.
- Plain abdominal X-ray: Bulging of the right psoas outline with scoliosis of the lumbar spine concave to the right.
- Radiographs of the lumbosacral spine: Normal.
- Barium enema: Normal.
- Abdominal ultrasound: There was distortion of the homogeneous echo pattern. The muscle was filled with a hypochoic lesion.

Antibiotics were started and diabetes controlled. The patient was explored and a large abscess was seen in the right psoas. There was no evidence of haematoma or lymphadenitis. 1000ml of pus was drained and culture of the pus subsequently yielded *Staphylococcus aureus*. The drain was removed after

six days. The patient remained afebrile. Range of movement of the lower extremity returned to normal. He was discharged well after three weeks. When last seen after a month he was well.

DISCUSSION

Anatomy

The psoas muscle originates from the transverse processes and bodies of the 12th thoracic and all the lumbar vertebrae. The fibres insert on the lesser trochanter of the femur. Superiorly, it passes beneath the arcuate ligament of the diaphragm. The vertebral column lies medially, the quadratus lumborum is posterolateral and the peritoneum is anterior. Thus the psoas lies in close relationship to the kidney, ureter, pancreas, large and small intestines and iliac lymph nodes. Furthermore, the space defined by the psoas fascia is a direct communication from the mediastinum to the thigh^(3,4).

Aetiology

The aetiology of psoas abscess is varied (Table I). It was formerly synonymous with tuberculosis of the spine or sacro-iliac joint. In recent years, complicated tuberculous disease has become rare and as a result the causes of psoas abscess have

Table I - Causes of Psoas Abscess

Intestinal disorders:
Crohn's disease
Diverticulitis
Appendicitis
Carcinoma of colon
Primary Staphylococcal infection.
Osteomyelitis
Tuberculosis of the spine
Pancreatic abscess
Perinephric abscess
Foreign body reaction
Post-operative complication:
Anastomotic leak
Appendectomy
Infected haematoma

changed⁽²⁾. There is a worldwide variation in the aetiology. Ricci et al (1986) reviewed the world literature and found that the aetiology was related to the nation of origin. Three hundred and seventy-six cases of psoas abscesses were reported of which 286 (76.1%) were primary. In developing countries in Asia and Africa, 99.5% were primary abscesses. In Europe only 18.7% were primary. In developed countries psoas abscess now commonly occurs as a complication of intestinal disorder⁽⁵⁾. Leu et al (1986) reported 43 cases from Mayo Clinic from 1976 to 1984. Intestinal disease was the most frequent cause (14 patients)⁽²⁾. Bartolo et al (1987) reported 16 cases

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managed over a 10-year period at the Bristol Royal Infirmary. Eight cases were due to intestinal diseases⁽⁶⁾.

Primary psoas abscess is a definite clinical entity. The largest collective series is that of Lam and Hodgson who reviewed 24 patients⁽⁷⁾. Abscess culture yielded *Staphylococcus aureus* in 14 patients. This series and other reported cases show *Staphylococcus aureus* to be the most common aetiological organism in primary psoas abscess. Although antecedent skin or soft tissue infection may be a predisposing factor, no such source is evident in the majority of cases. The aetiology of primary psoas abscess remains speculative. Suppurative lymphadenitis⁽⁸⁾, trauma with haematoma formation and secondary infection⁽⁹⁾ and haematogenous seeding⁽⁹⁾ have been proposed as initiating factors. Most patients do not give a history of antecedent infection or trauma. Furthermore, Lam and Hodgson looked specifically for these factors at exploration. They found no evidence of haematoma or lymphadenitis even in patients with a confirmatory history. Hence, the aetiology of this disease remains uncertain; although the haematogenous origin of this infection seems likely.

Clinical features

Psoas abscesses are characterised by pain in the iliac fossa, groin or hip, flexion deformity of the thigh, a tender mass in the flank, right or left iliac fossa or in the inguinal region, fever and difficulty in walking. Pain is increased by hyperextension of the hip.

Scoliosis with paravertebral spasm is a useful sign of a retroperitoneal process rather than intraperitoneal infection⁽¹⁾. The abscess may point anteriorly above the outer portion of the inguinal ligament or may enter the adductor triangle and point in the upper third of the thigh⁽⁹⁾. Psoas abscess should not be mistaken for septic arthritis of the hip. Toren et al (1989) reported a case of delayed diagnosis of primary psoas abscess mimicking septic arthritis of the hip⁽⁹⁾. Mistakes can be avoided if hip movements are tested with the hip in the fully flexed position. In this position the movements are relatively painless whereas in septic arthritis there is no change⁽¹⁰⁾. The symptoms may be vague and delays in diagnosis and treatment are common. Lowe et al (1987) reported a 22-year-old man with a 2-year history of symptoms before the diagnosis was confirmed⁽¹⁾. When the psoas abscess is secondary to bowel disorder the patient may be debilitated with anaemia and loss of weight.

Diagnosis

Routine laboratory evaluation is rarely useful in localising the disease process. Anaemia, leucocytosis and elevation of the sedimentation rate are common.

Chest radiograph may occasionally show elevation of the hemidiaphragm or pleural effusion. Plain abdominal radiograph may reveal abnormal psoas shadow with bulging of the outline, soft tissue mass, scoliosis to the affected side or gas in the soft tissues⁽⁷⁾. An excretory urography may show medial deviation of the lower third of the ureter. A barium enema may show elevation and medial deviation of the sigmoid colon or caecum. Conventional radiological techniques are often unhelpful in the diagnosis as the signs are non-specific⁽¹¹⁾.

Ultrasound is well established for identification, localization and guidance for needle aspiration and catheter drainage of psoas abscess^(12,13). Normal psoas muscle appears as striated, homogenous bundles of intermediate echo intensity. Psoas disease appears as a distortion in the normal homogeneous echo pattern of the muscle. Psoas abscess tends to be hypoechoic. There is no pathognomonic sonographic feature that allows differentiation of one pathologic process from another⁽¹²⁾.

Computer tomographic (CT) features of psoas abscess were documented by Ralls et al (1980). They include enlargement of the psoas, rounded contour to psoas outline, reduced density

in the centre of the muscle, gas within the muscle and rim enhancement after intravenous contrast. There are no distinguishing features between abscess with drainable pus and psoas phlegmon. Psoas tumours also have diminished density and may show rim enhancement after intravenous contrast⁽¹⁴⁾. CT is essential in the early diagnosis^(11,15) and is more conclusive than the other imaging modalities⁽¹¹⁾.

In making the diagnosis bacterial culture of the pus aspirated or drained from the abscess is important⁽¹⁰⁾. If the culture showed *E coli*, *Streptococcus faecalis*, *Proteus* or anaerobic *Bacteroides* the psoas abscess may be due to extension from inflammatory or neoplastic lesions of the gastrointestinal tract or extension from perinephric abscess. In *Staphylococcal* infection the psoas abscess may be due to extension from osteomyelitis of the spine, from an adjacent retroperitoneal infection or it may be primary psoas abscess.

Treatment

The treatment for psoas abscess consists of adequate drainage and appropriate antibiotic coverage. Antibiotic coverage should be instituted at the time of the diagnosis. Selected cases may be treated with CT guided or ultrasound-guided percutaneous drainage^(11,15) combined with antibiotic therapy.

The morbidity and mortality of psoas abscess are significant. The insidious nature of the disease and frequent delay in diagnosis are contributory. Primary psoas abscess seems to have a better prognosis than those secondary to other disease states. Most of the patients reviewed responded promptly to incision and drainage and subsequently did well.

The case reported serves well to illustrate many of the salient features observed in most of the cases of primary psoas abscess reviewed in the literature. The source of infection was not evident. The patient did not give any antecedent history of infection or trauma. At exploration there was no evidence of haematoma or lymphadenitis. He was evaluated for gastrointestinal or renal disease, osteomyelitis of spine and tuberculosis but none was detected. Bacterial culture of the pus yielded *Staphylococcus aureus*. The patient responded well to drainage and antibiotics which is in keeping with most of the patients reviewed.

CONCLUSION

All patients presenting with psoas abscess should be thoroughly evaluated for gastrointestinal or renal diseases, osteomyelitis of the spine and tuberculosis. Ultrasound with guided aspiration is a useful investigation. CT is valuable in making early diagnosis. Bacteriologic culture is useful in determining the cause. Early diagnosis and prompt treatment will lead to a satisfactory outcome in most patients.

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