



Case report

A rare presentation of iliopsoas abscess - A case report

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ABSTRACT

Introduction: Psoas abscesses are usually confined to the psoas compartment due to its fascial attachments. However, in rare situations, the infection can locally spread beyond the psoas sheath.

Case presentation: A 65-year-old patient presented with; 3 weeks of lower back and right hip pain, progressive inability to walk and one week of urinary incontinence. CT abdomen showed a right psoas abscess with pneumoretroperitoneum extending to the right gluteus muscle, posterior compartment of the upper thigh and mediastinum. Exploration in theatre showed copious amounts of pus, visible between the fascial layers and muscles of the thigh, tracking to the level of the knee and the gluteal region.

Discussion: Psoas abscesses are usually confined to the psoas compartment. However, in this case, it was spread to the posterior compartment of the thigh, gluteal region and pelvis with fascial necrosis and pus. Due to the extensive nature of the disease and the patient's clinical deterioration, he underwent open drainage of the psoas abscess, exploration and debridement of the posterior compartment of thigh and gluteal region with a good outcome.

Conclusion: Psoas abscesses can penetrate the psoas sheath to cause extra pelvic extension. A high index of suspicion and early imaging, if necessary, should be arranged if in doubt. Depending on the clinical severity, patients may need to be managed with open drainage and debridement than conventional CT-guided drainage.

1. Introduction

Psoas abscess was first described in the literature in 1881 by Mynter [1]. The early description of the classic triad of symptoms is fever, back pain and limp [1]. However, a patient's clinical symptomatology can be nonspecific in presentation, making it difficult to diagnose or make a wrong diagnosis [2].

Psoas abscesses are usually confined to the iliopsoas compartment due to their fascial attachments. However, in rare situations, the infection can spread locally beyond the psoas sheath, resulting in catastrophic outcomes.

Here we discuss a rare occurrence of a psoas abscess spreading to gluteal and posterior compartments of the thigh extending distally to the knee. This article will discuss the presentation, radiological findings, management and clinical anatomy.

This case report has been reported in line with the SCARE criteria [3].

2. Presentation of case

A 65-year-old rural patient presented to his general practitioner (GP) with three weeks of lower back and right hip pain, progressive inability to walk, one week of urinary incontinence associated with poor urine output and unintentional weight loss. His comorbidities included type II diabetes; which he takes empagliflozin for. He is a current smoker. Computed tomography (CT) lumbar spine was arranged initially, which showed a psoas abscess. He was redirected to the emergency department (ED) for further management.

In the local hospital, a CT abdomen with porto-venous phase was arranged for more clarification, which showed a 9 × 11 cm right psoas abscess with free gas in the right side abdominal wall, extending to the pelvis and right lower limb up to the upper calf, presumably representing necrotising fasciitis. He was started on intravenous vancomycin, tazobactam and piperacillin, and a 6F pigtail drain was inserted into the abscess cavity which drained 40mls of pus (Figs. 1 and 2).

Later that day the patient became unwell with septic shock and ketoacidosis. Repeat imaging again showed a large right psoas abscess

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Fig. 1. Coronal view of the CT scan- showing the right psoas abscess with pneumoretroperitoneum tracking through to the gluteal compartment. Pigtail drain can be viewed in the abscess cavity.

measuring 9 × 10 cm in the axial dimension. Infection and the pneumoretroperitoneum now extended to the right gluteus muscle and the posterior compartment of the thigh with loss of the fat plane between the muscles. There was associated pneumomediastinum, likely extending from the pneumo-retroperitoneum (Figs. 3 and 4). He was transferred to our tertiary hospital for definitive surgical management.

On arrival, he was afebrile, blood pressure was 104/64Hgmm on single strength noradrenaline 3 ml/h. His other observations were stable. He was lying in the left lateral position with his right hip flexed. Active hip movements were painful with a tender right gluteus and upper thigh posteriorly. His abdomen was soft, non-tender, without any skin changes in the abdomen or the back, and no crepitus felt. Images



Fig. 3. Coronal view of CT scan- showing the right psoas abscess and gas tracking distally into the lateral abdominal wall, gluteus muscle, pelvis and thigh.

were re-reviewed on arrival, which showed right-sided hydronephrosis and hydroureter. This raised concerns of an infected obstructed kidney being the cause of psoas abscess.

He was taken to the theatres for exploration, starting with drainage of the psoas abscess. Under general anaesthesia, he was positioned on



Fig. 2. Axial view of the CT scan- showing right psoas abscess with an air fluid level.



Fig. 4. Sagittal view of the CT scan- showing air tracking into the gluteal compartment and posterior compartment of the thigh spreading distally beyond knee.

the left lateral, an 8 cm incision was made 4 cm above the ileal crest, posterior to the mid axillary line and entered into retroperitoneum without breaching the peritoneum. Copious amounts of pus were drained which was sent for microscopy and culture. Then after a thorough washout, a Yeates drain was left in the abscess cavity for ongoing drainage.

Next, an incision was made in the right upper posterior thigh to the lower thigh to enter the posterior compartment and a lateral incision over the gluteal region to explore the gluteal compartment (Fig. 5). Copious amounts of Pus were visible in between the fascial layers and muscles tracking craniocaudal to the level of the knee. Musculature in the compartment was healthy; however, the fascial layers showed signs of necrosis. An extensive debridement was undertaken. The wound was then packed with the view to relook in 48 h.

The patient had three re-look surgeries along with debridement and washout in the next eight days. On the third relook, he had a negative pressure dressing applied until it was ready for primary closure. On week seven from initial presentation, he had primary closure of his wound.

He grew *Klebsiella oxytoca* from blood cultures, psoas abscess pus and necrotic tissue samples sent during thigh debridement, which was treated with antibiotics as per sensitivity. He had a prolonged stay in the hospital, including ICU stay for septic shock. Post debridement he made a quick recovery and was sent to the surgical ward and subsequently discharged after a period of rehabilitation.

3. Discussion

The psoas muscle is situated in the posterior abdominal wall, lies in the gutter between the transverse processes and the bodies of T12 to L5 vertebrae, travels through the retroperitoneum mediolaterally downwards along the pelvic brim and behind the inguinal ligament into the thigh and inserts on the lesser trochanter of the femur. It's covered anteriorly in its own fascia called psoas fascia. This extends to the pelvis and is attached to the iliopubic eminence at the margins of the muscle. In some anatomical books, this is named as psoas compartment. This attachment helps to retain the pus of a psoas abscess inside the psoas compartment, which could present as a lump at the groin. Due to this enclosed nature, it is not common for a psoas abscess to spread directly

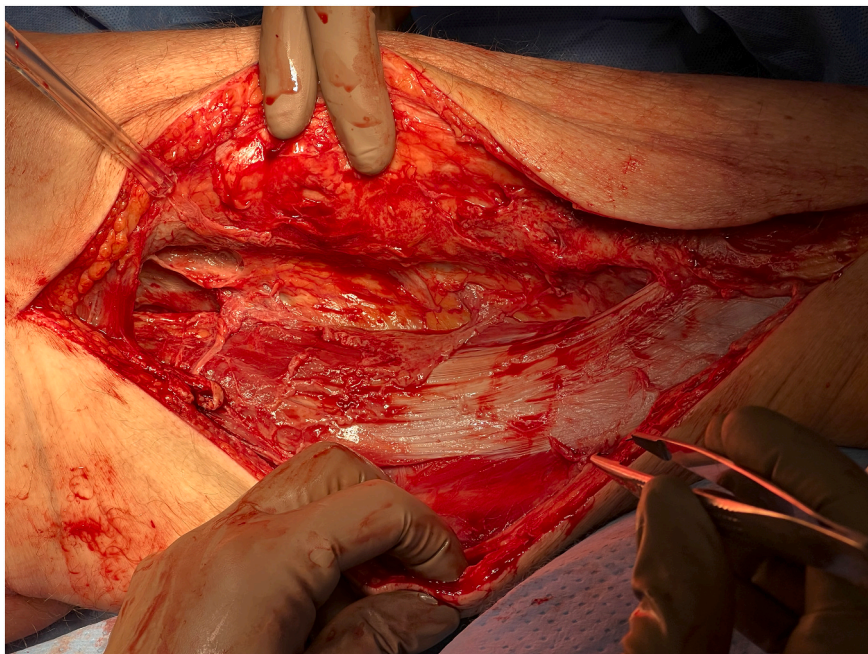


Fig. 5. Open exploration of the posterior compartment of the right thigh- showing the necrosed fascial layers with healthy musculature.

to other parts of the body [4].

However, in this scenario, pus and infection tracked through the psoas fascia to the posterior compartment of thigh, gluteal compartment and pelvis. There was necrosis of fascial layers and pus was tracking through these layers more distally to the knee. There is not much literature available on extra pelvic extension of psoas abscesses; Jae HY et al. discussed a case report on a psoas abscess presenting as a gluteal abscess [5], and Zhongjie Z et al. published a case report on psoas abscess spread to thigh adductors [6].

Also, in this scenario the clinical presentation was associated with pneumo-mediastinum. This was thought to be extending from the pneumo-retroperitoneum. This is most likely by retroperitoneal air tracking through the aortic and oesophageal hiatus, and lumbosacral arches, as endothoracic and transversalis fascia are continuous at the level of diaphragm. This allows the communication between mediastinum and retroperitoneum [7].

The clinical symptoms can be nonspecific, making diagnosing hard and delaying treatment [2]. As in this case, the symptoms have been going on for three weeks before the presentation, and due to the symptomatology, the GP has requested a CT lumbar spine to rule out a musculoskeletal cause.

Aetiology for psoas abscesses can be classified as primary and secondary [4]. Primary abscesses derive from haematological spread from an occult site [4], and the commonest organism is *Staphylococcus aureus* [8]. Moreover, the rich blood supply to the psoas muscle is thought to be predisposing to haematogenous spread [9]. Secondary abscesses derive from direct spread through retroperitoneal or abdominal organs [8], commonly small bowel, kidney, appendix, spine etc. [4].

This is a case of secondary psoas abscess. The causative aetiology was an infected obstructed kidney. Initial CT scans showed right side hydronephrosis and hydroureter secondary to an obstructing lesion at the vesicoureteric junction. Once the patient had damage control surgery under us, the urologist undertook a biopsy and inserted a ureteric stent to relieve the obstruction. Histology from initial biopsy came back as low-grade bladder transitional cell carcinoma (TCC). For this he underwent transurethral bladder resection with curative intention.

Our patient grew *Klebsiella oxytoca* from blood cultures, pus from psoas abscess and necrotic tissue samples sent during thigh debridement. It is a commensal of the gastrointestinal tract [10] and can cause urinary tract infections and bacteraemia [11]. His urine was sent for microscopy and culture quite late in the course, which only grew *Candida* species.

The mainstay of treatment for psoas abscess would be CT-guided percutaneous drainage and antibiotics, empirical or as per sensitivity from the cultures [12]. In this case, we opted to open drainage of the abscess with exploration, given the clinical deterioration and extensive spread of infection, gas and myofascial necrosis shown in the CT scan. Extensive nature of his disease may be due to his uncontrolled diabetes mellitus and smoking status.

4. Conclusion

Here we discuss a rare occurrence of a psoas abscess spreading to gluteal and posterior compartments of the thigh extending distally to the knee as well as pneumo-retroperitoneum spreading cephalad to the mediastinum causing pneumomediastinum. Nonspecific symptomatology and presentation of psoas abscess make it a dilemma for early diagnosis causing delays in treatment which can lead to unnecessary complications. A high index of suspicion and early imaging if necessary should be arranged if in doubt. This could prevent catastrophic complications. Depending on the clinical severity patients may need to be managed with open drainage and debridement than conventional CT-guided drainage.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the editor-in-Chief of this journal on request.

Ethical approval

Patients' anonymity is maintained throughout. Informed consent was obtained from patient for publication.

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CRedit authorship contribution statement

Mihindukulasuriya Yvonne Presadini Pinto: Conceptualization, Writing – original draft, Writing – review & editing, Validation. **Joshua Salim:** Writing – review & editing, Supervision, Validation.

Declaration of competing interest

The authors have no competing interests to disclose.

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