



## Inflammation and Infection

## Psoas Abscess Secondary to Urinary Tract Fungal Infection



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## ABSTRACT

Psoas abscess is a rare condition where infection spreads from a nearby or distant septic focus to the psoas sheath. The causative bacterial organisms at distal sites reach the psoas via lymphatic or hematogenous spread, whereas infection from nearby sites that include the urinary system reaches the psoas directly. There are few reports that account for bacterial infection after endourological procedures as the cause of direct spread of infection to the psoas muscle.<sup>2</sup> We report a case of psoas abscess caused by fungal infection that spread from an injured left ureter to the psoas sheath.

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## Introduction

Psoas abscess is a rare condition where infection spreads from a nearby or distant septic focus to the psoas sheath. Reported infection is bacterial, usually caused by *Escherichia coli*, *Proteus*, and *Staphylococcus aureus*.<sup>1</sup> The causative bacterial organisms at distal sites reach the psoas via lymphatic or hematogenous spread, whereas infection from nearby sites that include the urinary system reaches the psoas directly. There are few reports that account for bacterial infection after endourological procedures as the cause of direct spread of infection to the psoas muscle.<sup>2</sup> We report a case of psoas abscess caused by fungal infection that spread from an injured left ureter to the psoas sheath.

## Case report

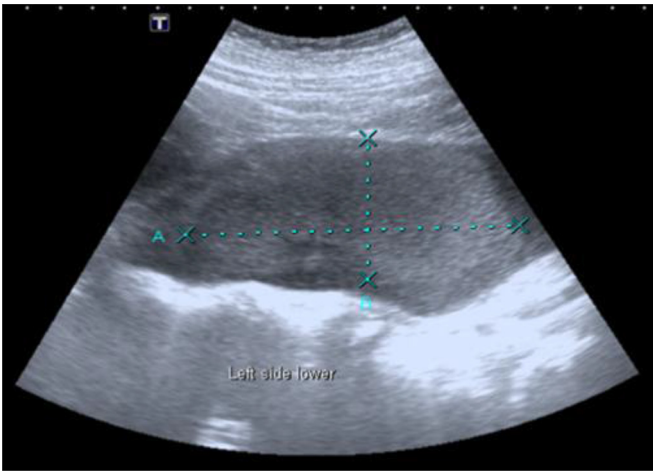
A 61 year-old diabetic lady with a history of untreated bilateral grade 3 primary vesico-ureteral reflux had recurrent episodes of acute cystitis that were controlled by antimicrobial therapy. She was admitted to another hospital where double-J stenting of the left ureter (performed for unexplained reason) was associated with a small perforation in the ureteral wall. A few days after removal of the stent, the patient developed a new severe attack of acute cystitis together with severe left loin pain, constipation and fever. She was later transferred to our hospital with elevated serum creatinine (3.1 mg/dl), leukocytosis (19.7 k/ul), acidosis (serum pH 7.1) and bad

general condition. Ultrasonography and plain CT scan showed a large left psoas collection and bilateral mild hydronephroses (Figs. 1 and 2). Urinalysis showed WBCs exceeding 100/HPF. Both urine cytology and urine culture revealed *Candida non-albicans* with no bacterial growth. There was gradual improvement in the patient's general condition after insertion of an indwelling Foley catheter and a daily dose of capsosungin medication 50 mg IV for 3 weeks to control the fungal infection. The psoas collection was drained by CT-guided insertion of a tube drain (Fig. 3). A tube drain was left in the abscess cavity (Fig. 4). Purulent discharge (400 mL) was obtained in the first 24 hours. Culture of the discharge confirmed presence of *Candida non-albicans*. Intravenous urography showed bilateral hydroureters and hydronephroses secondary to bilateral reflux (Fig. 4). Wound discharge (100–200 mL daily) did not stop for 2 weeks following insertion of the drain. A decision was made to perform surgical drainage with complete excision of the abscess wall. The psoas muscle was exposed through a left iliac incision. The abscess cavity was completely excised and sent for biopsy. Post-operatively, the drain stopped discharging pus and was finally removed. The biopsy result was positive for fungus and negative for both TB and malignancy. The patient's general condition improved significantly. She became afebrile and both her leukocytic count and renal function returned to normal values. Follow up ultrasound showed resolution of the bilateral mild hydronephroses. Post-operative urine culture was negative for fungal infection.

## Discussion

Fungal infection of the urinary tract occurs more commonly by primary involvement rather than as part of a hematogenous spread.<sup>3</sup> Primary involvement is usually from fungal infection in the bladder

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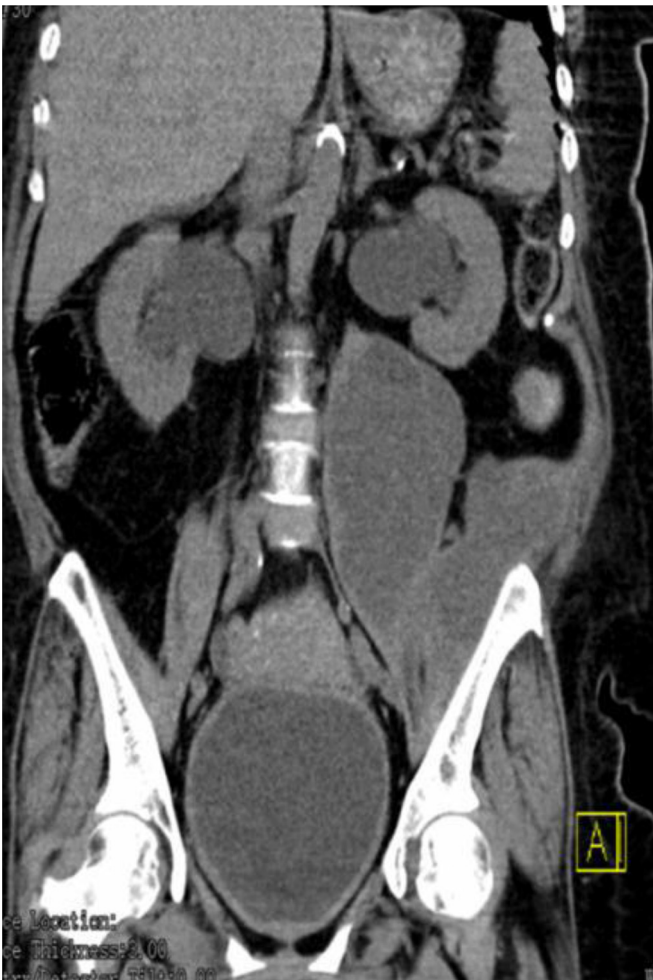
**Figure 1.** Ultrasonography of left psoas collection.



**Figure 3.** CT-guided drainage of left psoas abscess.

and urethra. The patient in this study had significant urinary fungal infection. She was a diabetic, but was immunocompetent. Fungal abscess is usually encountered in immunocompromised patients. However, there are rare occasions where it can afflict immunocompetent individuals.<sup>4</sup> Diabetes is known to have potential immunosuppressive effects that can predispose to fungal infection.<sup>5</sup>

Fungal abscesses were reported in various organs as the liver, brain, lung and spleen.<sup>6–9</sup> To the best of our knowledge, there are no reports in the literature that relate development of a psoas abscess to fungal infection. The patient in this study had bilateral primary vesico-ureteral reflux that facilitated direct spread of the fungal infection to the ureters. The infection extended further through the injured left ureter to reach the nearby left psoas sheath with subsequent development of a fungal psoas abscess.



**Figure 2.** CT-scan of left psoas collection.



**Figure 4.** IVU showing the tube drain after percutaneous drainage. Note bilateral hydroureters and hydronephroses secondary to bilateral primary vesico-ureteral reflux.

Treatment of fungal psoas abscess is usually by antifungal medication coupled with surgical drainage of the abscess.<sup>10</sup> The patient received a complete course of capsosungin. Percutaneous drainage of the abscess was not adequate. The patient developed a sinus with persistent purulent discharge. This necessitated open surgical drainage with complete excision of the abscess. The end result was a clean wound, with negative urine cultures for fungal infection in follow up studies.

#### Conflict of interest

The authors declare they have no conflicts of interest.

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