

A Rare Case of Fungus Balls of the Urinary Bladder Due to *Candida Tropicalis*

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ABSTRACT

A fungus ball of the urinary bladder is unusual and it is even more so in cases in which the causative agent is *Candida tropicalis*. We present such a case and briefly discuss the management of a fungus ball of the urinary tract caused by *Candida tropicalis*.

INTRODUCTION

Candiduria has been widely reported in the literature with varied presentations. Most commonly, the responsible fungus was *Candida albicans*. However, a case of candidiasis in the bladder caused by *Candida tropicalis* was infrequently encountered. Did it have a different clinical outcome? We attempted to present such a case and discuss the various cases of bladder candidiasis due to *Candida tropicalis*.

CASE REPORT

A 73-year-old man, not known to have any other medical illness except hypertension, presented with a 2-week history of fever, pyuria, and difficulty with micturition. The patient never had any lower urinary tract symptoms prior to this. He subsequently developed acute urinary retention, and a urinary catheter was inserted with ease at a district hospital. However, the urinary catheter developed blockage very frequently due to thick pus and filamentous tissue within a few days despite constant washout with normal saline. This required repeated catheter changes. The refractory urinary retention had deteriorated the

patient's renal function with rising serum urea and creatinine levels, reaching levels as high as 31 mmol/L and 495 μ mol/L, respectively. His blood sugar level remained within normal range throughout. The patient was subsequently referred to our center for further management.

An emergent cystoscopic examination revealed empyema of the bladder with the presence of multiple soft, white, ball-like lesions adhering to the bladder wall. Endoscopic removal of these lesions using various endoscopic instruments, including an Ellik evacuator and forceps, was unsuccessful as these strands of tissue were extremely adhesive to the bladder mucosa (Figure 1). Failing to remove these lesions endoscopically, a suprapubic cystotomy was performed. Balls of filamentous tissue were seen in the bladder cavity, along with a thickened and hardened bladder wall. The lesions were successfully evacuated (Figure 2) and a suprapubic catheter and a urinary catheter were inserted intraoperatively. Based on a clinical diagnosis of fungal infection of the bladder, empirical intravenous fluconazole was prescribed. Histological examination of the specimen revealed large numbers of yeast and pseudophyphae, and the fungal culture of the specimen tested positive for *Candida tropicalis*.

KEYWORDS: Fungus ball, bladder

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Figure 1. Cystoscopic view showing the fibrous nature of the fungal bezoar, which we failed to remove endoscopically.

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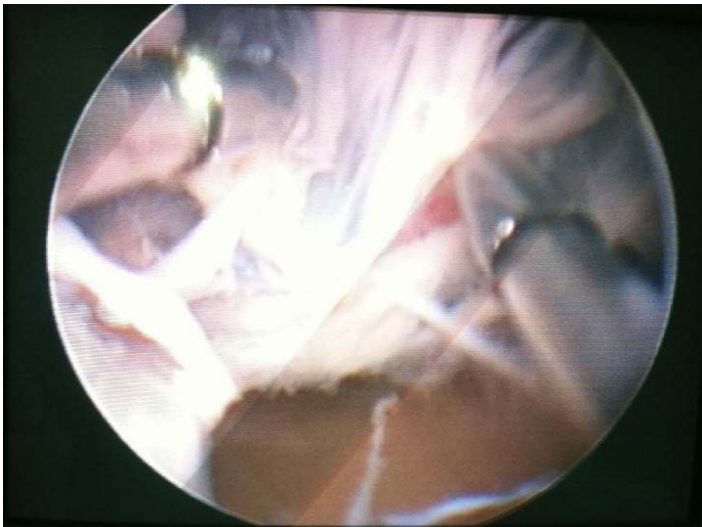


Figure 2. The fungal specimen after being removed via cystotomy.

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Post-operatively, the patient never experienced urinary retention and he responded well to the antifungal therapy, given in the intravenous and then oral forms, each lasting 1 week. His renal function improved gradually. Although he developed wound breakdown at the surgical site, it had healed when the patient returned for a review in the clinic 1 month later. The patient has since been able to void spontaneously without catheter assistance and his repeat urine culture was free of candidiasis.

DISCUSSION

Candiduria was commonly observed in populations with known risk factors and its presence did not necessitate treatment [1,2]. In fact, there was no clear guideline on the management of patients with candidiasis in the urine [3]. Among these cases, *candida albicans* had been traditionally identified as the most common fungus culture in the urine [3]. However, there is a growing emergence of non-*albicans* candidiasis (NAC) and, in fact, up to 60% of these were the non-*albicans* [4,5]. One of these reported NAC was *candida tropicalis* and, depending on localities, it constituted 4 to 24% of all episodes of candidaemia [6]. Because of rarity, the non-*albicans* group had not been studied as extensively as the more common *albicans* group, and as a result, the clinical course of this group of candidiasis was

not well defined [4,6,7].

Regardless of the various opinions cited, an undesirable clinical outcome of patients who suffered from *candida tropicalis* was repeatedly mentioned. In a clinical study comparing the clinical outcome of *candida tropicalis* versus other species of candida over a period of 24 years, Munoz et al. reported a higher in-hospital mortality rate of 61% among the *candida tropicalis* group compared to the other group, which had a rate of 44% ($p = 0.03$). They concluded that the isolation of *candida tropicalis* increased the risk of dying by 2.6-fold [6]. In another study comparing *candida tropicalis* and *candida albicans*, Kontoyiannis et al. reported that patients infected with *candida tropicalis* had a tendency of having a longer period of positive blood culture ($p = 0.02$) and a longer stay in the intensive care unit ($p = 0.01$) [8]. Counteracting this unfavorable clinical course was the challenge in overcoming infection with *candida tropicalis*. Fluconazole was commonly recommended as a treatment of choice for candidiasis for the reasons of safety, high urinary concentration, and availability in various forms [1,2]. However, there was a growing trend of resistance toward this antifungal drug among the *candida tropicalis* patients [4]. As a matter of fact, the dominance of NAC was attributed to the widespread use of fluconazole [4]. In this regard, the alternative could be amphotericin B, which significantly reduced the phospholipase activity in *candida*

Table 1. Reported cases of *candida tropicalis* fungal bezoar of the urinary system.

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Case Report	Pathology	Patient Characteristics	Intervention Performed	Systemic and Antifungal Therapy	Outcome
Scerpella et al.	fungus balls of bilateral ureters	56/male; diabetic	fragmentation of fungus balls by guide wire manipulation and irrigation with AB via nephrostomy	IV AB	patient survived
Comiter et al.	fungus balls of the bladder with bladder rupture	40/male; diabetic; paraplegic with indwelling urinary catheter	failed bladder irrigation with AB; proceeded to cystotomy and evacuation of fungus ball	IV AB followed by oral fluconazole	patient survived
Yang et al.	fungus balls of bilateral ureters	77/male; diabetic	ureteroscopy and stenting	IV AB and IV fluconazole	patient died due to multiorgan failure
Abbass et al.	fungus balls of bilateral ureters	56/male	first admission: bilateral ureteric stent and nephrostomy second admission: surgery to evacuate fungus balls	first admission: oral fluconazole second admission: IV micafungin and then oral fluconazole but developed resistance; treatment switched to IV voriconazole	patient died due to multiorgan failure
Sanchez et al.	fungus ball of right upper urinary tract	not known	irrigation with AB via nephrostomy	oral fluconazole	patient survived
Jiang et al.	bilateral renal pelves	77/male; diabetic	ureteroscopic removal of fungal bezoar followed by AV infusion via nephrostomy	oral fluconazole and then changed to caspofungin due to cholestasis	patient survived
Sivaneswaran et al.	fungus balls of the bladder	73/male; hypertensive	failed endoscopic evacuation; proceeded to cystotomy and evacuation of fungus balls	IV and then oral fluconazole; each form lasted 1 week	patient survived

IV: Intravenous; AB: Amphotericin B

tropicalis [4]. Irrigating the bladder with amphotericin B (ABBI) has been described since 1960 [9]. A meta analysis was conducted by Tuon et al. on asymptomatic candiduria, and it seemed that ABBI was probably just as effective as fluconazole in clearing the fungus in the urine although it did not offer systemic treatment [9].

Was local therapy necessary if there was already a well-established systemic therapy? Our search yielded us 6 other cases of urinary tract candidiasis due to *candida tropicalis* [10-15]. Table 1 illustrates a summary of the cases we managed to retrieve from the literature. Among these, as well as our cases, the fungus had grown into sufficient size to cause obstructive uropathy. A mere systemic treatment with antifungal therapy was deemed insufficient and interventional measures were employed in all the cases in order to clear the fungus, although it could range from a simple irrigation with amphotericin B to operative methods. Despite an attempt to eradicate the fungus, 2 out of these 7 patients (28.6%) succumbed to the illness. Clearly it is an infection that should not be taken lightly.

It was our hope that by compiling these rare yet emerging and potentially lethal cases of candidiasis from literature the clinical implication of *candida tropicalis* could be better understood, thus translating into improved health care for patients.

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