

Endogenous endophthalmitis as a septic complication postureteroscopy candiduria

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Abstract Ureteroscopy (URS) is commonly used by urologists to treat ureteral stones. It is a relatively low-risk procedure. Both urinary tract obstruction and contamination of instrument can cause candiduria post-URS, and this infection can be treated with an antifungal medication. Candidemia is known as hematogenous dissemination, and ocular tissue is a common invasion. However, endogenous endophthalmitis, due to postureteroscopy candiduria, has not been reported up to date. This is a devastating complication that may lead to visual loss. Here, we describe a case of endogenous endophthalmitis as a consequence of candiduria after URS.

Key Words: Candidemia, candiduria, endophthalmitis, ureteral stone, ureteroscopy

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INTRODUCTION

Candiduria is a *Candida* urinary tract infection (UTI), which is common for hospitalized patient with urological stone disease and long-term indwelling urethral catheter. It is a known complication of ureteroscopy in the treatment of ureteral stones. Candidemia is known as hematogenous dissemination, and ocular tissue is a common invasion. The predilection for ocular tissue invasion is most likely due to a high vascularity of the choroid. This is a devastating complication that may lead to visual loss.

CASE REPORT

A 46-year-old man underwent ureteroscopy treatment for his right vesicoureteral junction stone. His preoperative

urine analysis showed negative for leukocyte and nitrite. Intraoperatively, the procedure was completed in 1 h without any complication. Ureteral stent was inserted. Two days postoperatively, he complained of frequency, dysuria, suprapubic pain, and fever. Despite initial treatment with antibiotics, the symptoms did not diminish. He started to notice a rapid deterioration in the vision of his right eye in the following 2 days. The affected eye was also painful, red, and swollen. He is a known case of diabetes mellitus and hypertension.

On examination, his best-corrected visual acuity was 6/60 for the right eye and 6/6 for the left eye. There was associated lid

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swelling and conjunctival injection, with reduced red reflex. Fundus examination of the right eye showed vitreous haze secondary to vitritis, deep yellow subretinal lesion with fluffy edges, “string of pearls” abscess, and swollen optic discs. There was no retinitis or vasculitis noted [Figure 1]. The left eye examination was unremarkable.

His urine and ureteric stent culture grew *Candida albicans*, which was sensitive to amphotericin B, voriconazole, fluconazole, and caspofungin. Blood sample and vitreous tapping were negative. He was also given intravitreal amphotericin B 5 mcg in 0.1 ml and intravitreal voriconazole 100 mcg in 0.1 ml. He was initially treated with intravenous (IV) amphotericin B and IV fluconazole. IV amphotericin B was changed to intravitreal injection due to nephrotoxicity. IV fluconazole was substituted with tablet voriconazole. Repeat urine samples were clear after 1 week.

Due to nonclearing vitritis, he underwent transscleral pars plana vitrectomy (TPPV) after 1 month, with intravitreal injections of amphotericin B, vancomycin, and ceftriaxone. Second TPPV and phacoemulsification, with intraocular lens implant, were performed after 3 weeks. He was followed up in the eye clinic. One month after the second operation, the best-corrected visual acuity of his right eye was 6/60.

DISCUSSION

Candiduria is a common presentation for hospitalized patients, especially for patients with urological stone disease and long-term indwelling urethral catheters. Chen reported that *C. albicans* is the most common fungus species isolated from the urine, accounting for 85.2%, followed by *Candida glabrata* (27.8%) and other *Candida* species, including *Candida parapsilosis*, *Candida Tropicalis*, and *Candida kefyr*, which account for 6.2%.^[1] The range of presentation of candiduria

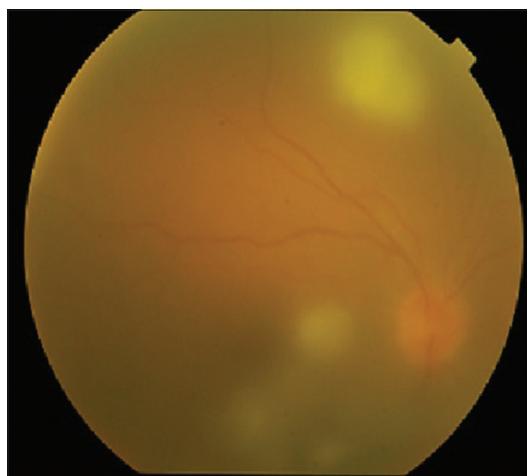


Figure 1: Fundus of the right eye showed vitreous haze, deep subretinal/choroidal lesions with fluffy edges, “string of pearl lesion,” and hyperemic optic disc

is asymptomatic colonization to disseminated candidiasis. A *Candida* growth urine sample can be interpreted as either urine contamination from normal perineum flora, colonization of the bladder, or true infection of the urological system. The absence of standard guidelines and excellent diagnostic tests make the diagnosis of candidal UTI difficult compared to diagnosing bacterial UTI.

Hematogenous spread to distant organs is a rare but major complication of candiduria. *Candida* may invade the eye, heart, skeleton, and central nervous system. Edwards *et al.* showed that *Candida* has a high predilection for ocular tissue. According to their study, 78% of patients with autopsy-proven disseminated candidiasis had retinal involvement.^[2] *C. albicans* is the most frequently cultured organism for endogenous fungus endophthalmitis (EFE).^[3] Although cases of EFE due to candiduria have been reported worldwide, none were directly related to the endoscopic procedure or had organism culture from ureteric stent. The predilection for ocular tissue through hematogenous spread is most likely due to high vascularity of the choroid. Hence, this explains the deep fungal abscess at choroidal level seen on funduscopy.

Diagnosis of EFE is relatively difficult. Fungal endophthalmitis is confirmed by fungus culture from the vitreous fluid, with complementary evidence of hematogenous spread by positive fungus blood culture. However, a negative vitreous tap and/or blood culture does not negate the possibility of fungal endophthalmitis. Rodriguez concluded that only 18% of *Candida* EFE is associated with detectable retinal or vitreal lesion.^[4] In another study, less than 50% of patients with autopsy-proven candidiasis had positive *Candida* blood cultures. In view of the above, diagnosis of EFE is necessarily challenging and should be based on associated history and clinical presentations, complemented by a positive culture from the possible primary site of infection.^[5] In this case, the patient had positive *Candida* culture from urine and ureteric stent; his fundus examination showed “fluffy ball” and “string of pearl” lesions, which are highly suggestive of fungus endophthalmitis. Despite negative fungal culture for blood and vitreous fluid, diagnosis of EFE was made in view of the simultaneous finding of urine culture and ocular presentation. Diabetes mellitus, particularly the poorly controlled ones, is also an important risk factor for developing EFE.

Amphotericin B has been an important and effective treatment for systemic fungus infections for decades. This drug is particularly effective for the treatment of *Candida* infections. However, due to the intolerable side effects of nephrotoxicity and retinal toxicity, fluconazole has instead gained popularity for fungus treatment over amphotericin B. Fluconazole may be given orally, and topically, it is well tolerated; most importantly, in this case, it has good ocular penetration. Newer antifungal

agents have been developed in recent years, such as voriconazole and caspofungin. Voriconazole is a triazole antifungal, second-generation synthetic derivative of fluconazole, and caspofungin is an antifungal cell wall synthesis inhibitor. Sean showed good results with combined treatment of voriconazole and caspofungin for EFE.^[6] Vitrectomy with intravitreal antifungal is recommended for diagnostic and therapeutic indications. A vitreous sample, taken from PPV, may be sent for culture with a higher chance of microbial infections detection, as the sample volume is larger, and complete PPV will help to remove the fungal load.

CONCLUSION

Funguria can be a very mild disease. However, its systemic disseminating consequences are devastating. Antifungal agents should be initiated as early as possible once systemic fungus is confirmed. This can significantly reduce the prevalence of EFE.

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Conflicts of interest

There are no conflicts of interest.

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