

Trichosporon asahii causing urosepsis: A case report

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ABSTRACT

Trichosporonosis is an emerging, life-threatening opportunistic pathogen, implicated in superficial and mucosal infections. However, systemic infections are known to occur in immunocompromised conditions like cancer, burns, transplant patients as well as patients on steroids, peritoneal dialysis, prolonged mechanical ventilation and those undergoing prosthetic valve surgeries. Here, we report the case of *Trichosporon asahii* isolated from the urine sample of a 69-year-old male patient presented with septic shock. Early diagnosis and management of trichosporonosis which mimic disseminated candidiasis will reduce the mortality rate by selecting appropriate antimicrobial therapy.

Keywords: *Arthroconidia*, *Immunocompromised*, *Subcutaneous*, *Trichosporonosis*.

Trichosporonosis is an emerging infection of immunocompromised host predominantly caused by *Trichosporon asahii* which is a ubiquitous anamorphic yeast [1,2]. *Trichosporon spp* as a part of normal flora of the skin and respiratory tract, isolated as a causative agent of superficial and deep fungal infections. Systemic infections are known in immunocompromised conditions like cancer, burns, transplant patients, patients on steroids, peritoneal dialysis, prolonged mechanical ventilation and those undergoing prosthetic valve surgeries [3,4].

Till now, only a few case reports of disseminated trichosporonosis been reported from various parts of India but there is no exact information on the incidence of disseminated trichosporonosis [5-7]. Globally, the majority of the cases of trichosporonosis and geotrichosis were reported in North American medical centers (33.9%), followed by medical centers from Europe (27.6%) and Asia (23.3%). In another study, trichosporonemia reported in 74.7% of patients and disseminated infection in 50.6% of cases, which appears relatively high [8]. A Study done by Chitasombat *et al* [9] has estimated an increase in the incidence of invasive yeast infections by *Trichosporon spp*, which accounts for 20%. We report the case of *Trichosporon asahii* isolated from an immunocompromised patient presented with urosepsis in a tertiary care centre.

CASE REPORT

A 69-year-old male patient admitted to the hospital with complaints of fever, edema, and oliguria. The patient was a known case of chronic kidney disease since 6 years along with

multiple underlying comorbidities such as type 2 diabetes mellitus, hypertension, acute coronary syndrome and history of cardiac arrest which was successfully resuscitated.

On examination, the patient was vitally stable. During the course of stay in the hospital, the patient was intubated and was on a mechanical ventilator. Hemodialysis was initiated and continued. Blood, urine and endotracheal aspirate were sent for bacterial, fungal culture and sensitivity.

In view of persistent fever and septicemia, the patient was started on Fosfomycin, Polymyxin B and Caspofungin empirically for 10 days. The urine sample was inoculated with a standard loop on Cysteine lactose electrolyte deficient agar and Sabouraud's dextrose agar and incubated at both 37°C and 22°C, which showed significant growth of dry creamy white colonies after overnight incubation (Fig. 1). Gram stain and lactophenol cotton blue mount revealed hyaline septate hyphae with arthroconidia and few budding yeast cells were also seen (Fig. 2). In Corn meal agar, arthroconidia was seen. Budding yeast cell with hyaline septate hyphae, negative germ tube test, positive urease test and arthroconidia in Corn Meal test were suspected as *Trichosporon spp*. Following which the isolates were identified to be *Trichosporon asahii* by hydrolysis of urea, fermentation of sugars and further confirmation was done by MALDI-TOF. Antifungal susceptibility was done in Muller Hinton Agar supplemented with 2% glucose and methylene blue by E-test (HiMedia laboratories, India) for fluconazole, itraconazole, voriconazole, amphotericin B and caspofungin. The organism appeared sensitive to voriconazole with minimal inhibitory concentration (MIC) of 0.094 µg/ml and was found to be resistant to other antifungal agents like amphotericin B, fluconazole,



Figure 1: Growth of *Trichosporon asahii* on Sabouraud's Dextrose Agar

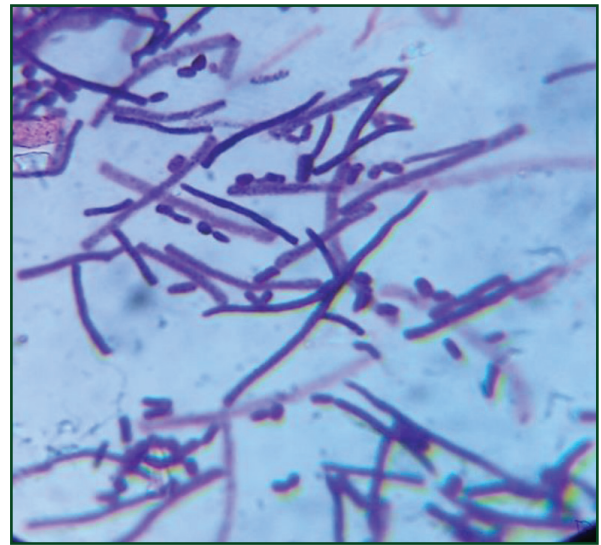


Figure 2: Gram stain of *Trichosporon asahii* showing arthroconidia and blastoconidia

itraconazole, and caspofungin. The patient was advised for repeat sample to confirm pathogen and to rule out contaminant, which again showed a similar picture of growth and sensitivity as that of the first sample. Blood culture was sterile and in endotracheal aspirate, *Acinetobacter baumannii* was isolated which was sensitive only to Polymyxin B. In view of culture report, Inj Caspofungin was stopped and the patient was started on voriconazole and polymyxin B. Though the patient recovered slowly, subsequent urine cultures turned out to be sterile and because of multiple underlying comorbidities, the patient suddenly developed another episode of cardiac arrest and could not be revived.

DISCUSSION

Trichosporon spp is an opportunistic fungal pathogen which has recently emerged as a significant problem in immunocompromised hosts. In our case, we have isolated *T. asahii* from the urine sample of an immunocompromised patient with an indwelling catheter who was on treatment for multiple comorbidities. *T. asahii* which was identified phenotypically was further confirmed by an automated system. Antifungal susceptibility done by E-test revealed multidrug resistance with preserved susceptibility only to voriconazole. Broadly, Trichosporonosis refers to superficial and deep infections caused by genus *Trichosporon*. Superficial infections include white piedra (hair shaft), onychomycosis and otomycosis, and invasive infection. Invasive infection can be further divided into localized deep tissue infection and disseminated (hematogenous) infection. The most frequently affected organ is the lungs, representing approximately 33% of localized deep tissue infections [10].

The major pathogen responsible for invasive infection is *Trichosporon asahii*. *Trichosporon* species grow as yeast-like colonies in vitro; in vivo, however, hyphae, pseudohyphae, and arthroconidia can also be seen. Systemic infection occurs almost

exclusively in immunocompromised hosts, including those who have hematologic malignancies, are neutropenic, have received a solid organ transplant, or are receiving glucocorticoids [11]. Renal involvement in disseminated infection is quite common and occurs in 75% of the cases. Urine cultures positive for *Trichosporon spp* suggests disseminated disease in a neutropenic patient. On Sabouraud dextrose agar, *T. asahii* grows readily showing smooth, shiny gray to cream-colored yeast-like colonies with radiating furrows that become dry and membranous with age [12].

Rates of response to Amphotericin B have been disappointing, and many *Trichosporon spp* are resistant in vitro. Voriconazole appears to be the antifungal agent of choice and is used at a dosage of 200–400 mg twice daily. The mortality rates for disseminated infections due to *Trichosporon spp* have been as high as 70% but should decrease with the use of newer azoles, such as voriconazole, however, patients who remain neutropenic are likely to succumb to this infection [11].

CONCLUSION

A high index of clinical and microbiological suspicion is required for an optimal diagnosis of infections due to *Trichosporon spp* for further management. Presence of multiple comorbidities with variable clinical response and administration of multiple antimicrobials would further complicate the prognosis of the patient. Early diagnosis and management of Trichosporonosis which mimic disseminated candidiasis will reduce the mortality rate by selecting appropriate antimicrobial therapy.

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