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Urinary Tract Infection with Trichosporon Asahii: A Case Report

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Abstract

Trichosporon urinary tract infection is an unusual emerging infection, caused mainly by Trichosporon asahii, described mainly in hospitalised patients.

To date, the interpretation and management of a positive Trichosporon urine culture remains a diagnostic and therapeutic dilemma for which there are no clear indications, and the challenge may be even more complicated in cases of Trichosporon infection in frail, healthy, elderly patients.

We report a case of Trichosporon asahii in a patient hospitalised with multifocal tuberculosis

***Keywords**: Trichosporon asahii, urinary tract infection, opportunistic, nosocomial*

Introduction

Trichosporon species are ubiquitous basidiomycetous yeasts that occur in nature, also as a component of the normal microbiota of the skin, respiratory tract and gastrointestinal tract. This agent can cause superficial infections and opportunistic invasive infections **[**1, 2**]**.

Invasive trichosporoniasis is an increasingly recognised life-threatening disease that occurs mainly in severely ill or immunocompromised individuals, especially those with haematological malignancies **[**2**]**. Trichosporon urinary tract infection is an unusual invasive infection, described mainly in hospitalised patients **[**3**]**, Trichosporon asahii is the most common pathogen causing invasive trichosporonosis, including urinary tract infections **[**4, 5**]**. Detection of Trichosporon asahii in urine culture samples from hospitalised patients is a clinical challenge due to the lack of information on the presence of Trichosporon asahii in urine cultures. This challenge can be further complicated in patients who typically have comorbidities. We report a case of Trichosporon asahii urinary tract infection in a person diagnosed at the laboratory of parasitology-mycology of the University Hospital of Mohammed VI, Marrakesh.

Case Report

Patient A.G, 64 years old, married, father of 5 children, hospitalized for: multineuritis probably of tuberculosis origin.

Smoking patient (since childhood) with a history of surgery: gastrectomy 20 years ago not documented. The patient presented 40 days before his admission with a brutal right facial paralysis,

20 days later the evolution was marked by the appearance of a deficit of the MID then MIG with urinary retention, associated with signs of tuberculosis impregnation (night sweats, anorexia) all evolving in a context of AEG and apyrexia.

Cerebrospinal fluid examination showed: lymphocytic meningitis,

Blood test showed hyponatremia at 118, CRP elevated to 255.37

Blood count showed HB: 11.4, WBC: 9990, PLQ: 441000 and PT: 42.7

Meningitis PCR: negative

Expert gene in cerebrospinal fluid: negative while Quantifierons is positive

Brain MRI, spinal cord MRI and thoracic CT: multifocal parenchymal involvement

Urine Mycological Examination:

Macroscopically the urine is yellow and cloudy (FIGURE 1).

Figure 1: Culture of Trichosporon asahii fungi

Discussion

Microscopic examination showed the presence of yeast, red blood cells: 217/ mm3, and white blood cells: 10.4/ mm3. The identification of the species Trichosporon asahii was performed by the automated system VITEK2

Patient died following a cardio respiratory arrest without recovery after resuscitation.

Trichisporon species are ubiquitous in the environment, mainly in soil, but also on hospital ward surfaces. The yeast could be a normal of the physiological microbiota of the skin, especially the peri-genital skin, and could occasionally colonise the gastrointestinal or respiratory tract. It can cause superficial and even life-threatening systemic infection, known as invasive trichosporonosis **[**1, 2**]**.

Colonisation of mucosal or skin surfaces is probably the first step in the pathophysiology of systemic infections, due to a breakdown in the integrity of the skin barrier and subsequent spread to the bloodstream **[**3**]**.

Invasive trichosporonosis is increasingly recognised, especially in severely immunocompromised patients. Trichosporon fungemia has become the second most common cause of disseminated yeast infections after Candida infection **[**6**]**. The hosts of invasive trichosporonosis are also critically ill patients admitted to intensive care units where they undergo invasive procedures and broad-spectrum antibiotic therapies **[**5, 7**]**

Trichosporon asahii infection is increasingly recognised even in patients without severe immunological deficiency or severe life-threatening disease. Hence the need to consider certain immunocompetent subjects at risk of infection, such as morbidly ill and frail individuals in whom many risk factors accumulate, like our patient **[**4**]**.

Trichosporon asahii infections are more common in patients with impaired innate immune response **[**8**]**. Age-associated changes in neutrophils include both altered responses and inappropriate persistence of inflammation that may result from alterations in signal transduction. Neutrophils in elderly subjects show decreased signalling via the granulocyte-macrophage colony-stimulating factor (GM-CSF) receptor, which typically mediates anti-apoptotic cell survival **[**10**]**. In addition, in patients neutrophil dysfunction is often present, which is a well-known predisposing factor for bacterial and fungal opportunistic infections **[**11**]**.

In addition, poor peripheral circulation, which is often present in this group of patients, results in decreased neutrophil delivery to sites of microbial entry. All of these factors may contribute to the development of invasive Trichosporon asahii infection in a non-immunocompromised older adult.

Trichosporon asahii cells can rapidly adhere to devices such as bladder catheters and are capable of forming biofilms that make them less susceptible to antifungal treatment **[**12**]**. Because of this ability, interpreting the growth of Trichosporon asahii in urine cultures is difficult in bladder catheterised patients treated with multiple antibiotic therapies, where the yeast can easily become a urinary contaminant.

To date, the interpretation of urine culture positivity remains a diagnostic and therapeutic dilemma for which there are no clear indications **[**2**]**. However, it should be noted that a positive urine culture may be the first step in a disseminated infection, especially if the bladder mucosa is damaged.

The European Society for Clinical Microbiology and Infectious Diseases, in its 2014 clinical guidelines for the diagnosis and management of rare invasive yeast infections, supports the use of triazoles, particularly voriconazole, for the treatment of invasive infections caused by Trichosporon asahii, which is often resistant in vitro to amphotericin B and almost always to echinocandins **[**9**]**.

Conclusion

Trichosporon asahii is the most common species found in superficial skin lesions but is increasingly responsible for invasive infection, mainly in immunocompromised subjects.

We report a case of asahii urinary tract infection in a patient with tuberculosis

The interpretation and management of a positive Trichosporon urine culture remains a diagnostic and therapeutic dilemma for which there are no precise indications, hence the interest of a clinician-biologist cooperation.

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