

Overtreatment of Candiduria at an Academic Medical Center

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#1436

Revised Abstract

Background: Candiduria is a common finding in hospitalized patients. In 2009, Infectious Diseases Society of America (IDSA) released treatment guidelines for the management of candiduria. *Candida* is known to commonly represent bladder colonization in asymptomatic patients, especially in the setting of a urinary catheter, and does not necessitate treatment. We describe overtreatment in one large academic center.

Methods: We conducted a retrospective study of patients with candiduria at a single academic medical center in Chicago, IL from March 2009 to March 2010. Data was collected for presence of a urinary catheter, symptoms, pyuria, *Candida* species, colony count, and co-morbidities. Patients with neutropenia or other immunosuppression, bone marrow or solid organ transplantation, pregnancy, or recent urologic procedure were excluded. Treatment was deemed appropriate for patients with symptomatic infection. Data was analyzed using SPSS.

Results: 143 patients were included in the study with a total of 160 episodes of candiduria (*C. albicans* 70%, *C. glabrata* 13.8%, *C. tropicalis* 7.5%, *C. parapsilosis* 3.1%, *C. krusei* 3.1%, *C. lusitaniae* 2.5%). The median age was 65 years and 61.5% were females. 36 episodes (23%) of candiduria were treated with antifungal agents, of which only 33% were appropriately treated based on the IDSA guidelines. Presence of symptoms, pyuria ($p=.002$) and urinary catheter ($p=.022$) were all associated with initiation of treatment. Presence of a urinary catheter was associated with inappropriate treatment ($p<.001$).

Conclusions: Based on IDSA recommendations, treatment of asymptomatic candiduria in a normal host is not indicated. Despite this, overtreatment occurred commonly at our institution. Presence of symptoms, urinary catheter, pyuria, and admitting service were risk factors for treatment. Presence of a urinary catheter was a risk factor for inappropriate treatment.

Introduction

Candiduria is a common occurrence in the hospital setting. Most patients with candiduria have no symptoms suggestive of a urinary tract infection.^{1,2} Determining whether candiduria represents a urinary tract infection or colonization can be difficult. Clinicians frequently make therapeutic decisions based primarily on personal anecdotal experience.¹ Many risk factors have been associated with candiduria, including diabetes mellitus, recent surgical procedure, recent antibiotic use, urinary tract abnormalities and malignancy.¹ The finding of pyuria or quantification of organisms may not be helpful, especially in the setting of a urinary catheter.² The Infectious Diseases Society of America (IDSA) released treatment guidelines in 2009.³

Objective

To evaluate how providers at one large academic healthcare center manage candiduria and whether it is consistent with current IDSA guidelines.

Methods

Patients with *Candida* isolated in urine culture were identified during March 2009 through March 2010. Charts were retrospectively reviewed for co-morbidities, demographics, symptoms, presence of a urinary catheter, pyuria (>5 white blood cells in urinalysis), culture results, and management. Patients were excluded for presence of invasive fungal infection or other requirement for systemic antifungal therapy, neutropenia, organ transplant, pregnancy or recent urologic procedure. Patients were categorized as either appropriately managed or inappropriately managed based on our study definitions.

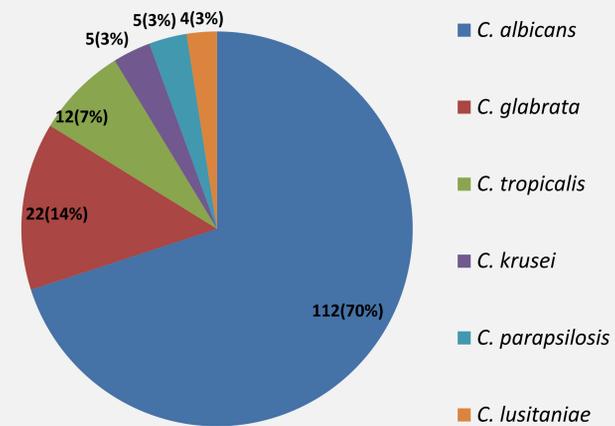
Definitions

•Appropriate management: receiving antifungal therapy for symptoms of urinary tract infection (i.e. dysuria, frequency, urgency, abdominal pain, CVA tenderness, and/or fever without an alternative cause) or no antifungal therapy for asymptomatic candiduria

•Inappropriate management: receiving antifungal therapy without symptoms of urinary tract infection or lack of antifungal therapy with symptoms of urinary tract infection

Data was analyzed using SPSS using total patient episodes. Each different admission was considered a new episode.

Candida Species
N=160



| Risk factors for Treatment | Treated n/N (%) | Not Treated n/N (%) | p value |
|---|---------------------------------|---------------------------------|---------|
| Urinary catheter | 31/112 (28%) | 81/112 (72%) | .022 |
| Symptomatic candiduria | 13/13 (100%) | 0/13 | <.001 |
| Yeast seen in urinalysis | 26/95 (27%) | 69/95 (73%) | .529 |
| Pyuria | 32/96 (33%) | 64/96 (67%) | .002 |
| Colony count in urine culture $\geq 10^5$ | 9/24 (38%) | 15/24 (62%) | .056 |
| Candida species | <i>C. albicans</i> 24/112 (21%) | <i>C. albicans</i> 88/112 (79%) | .681 |
| | Non-albicans 12/48 (25%) | Non-albicans 36/48 (75%) | |
| Diabetes mellitus | 13/70 (19%) | 57/70 (81%) | .341 |
| Admitting service | Medical 17/104 (16%) | Medical 87/104 (84%) | .006 |
| | Surgical 17/45 (38%) | Surgical 28/45 (62%) | |

Results

- There were 404 total episodes of candiduria. 160 episodes collected from 143 patients met the inclusion criteria. 88/143 (62%) were women, 62/143 (43%) had diabetes, and median age was 65 years (26-98 years).
- Of the 160 unique episodes, 36 patients (23%) received antifungal therapy (fluconazole) for candiduria. 24 of these 36 patients (67%) were inappropriately managed, as per our study definition. All of the untreated episodes were managed appropriately.
- Patients with a urinary catheter were appropriately managed 89/135 (66%) of the time, while patients without a urinary catheter were appropriately managed 46/48 (96%) of the time ($p=.008$).
- There was no significant difference between symptoms in patients with or without a urinary catheter.

Conclusions

- Candiduria is still commonly overtreated, despite published infectious diseases guidelines.
- Presence of a urinary catheter, symptomatic candiduria, pyuria, and admitting service are all significant risk factors for treatment.
- Presence of a urinary catheter is a significant risk factor for inappropriate treatment.
- Limitations of the study included: 1) Retrospective study and 2) majority of patients having urinary catheters, making it difficult to assess for symptoms.
- Future study planned for evaluating reduction in treatment rates following a change in microbiology reporting of *Candida* species in urine cultures.

References

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