

Geotrichum Candidum: A Unique Urinary Pathogen.

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Received date: 23 September 2023; Accepted date: 26 October 2023; Published date: 31 October 2023

Citation: Syed S, Abbas MW, Ali H, Kaleem F, Ishtiaq S, et al. (2023) *Geotrichum Candidum*: A Unique Urinary Pathogen.. J Med Case Rep Case Series 4(18): <https://doi.org/10.38207/JMCRCS/2023/OCT041802132>

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Abstract

Background: *Geotrichum candidum* is ubiquitous in nature, mostly isolated from plants, cereals, and dairy products. Its pathogenicity is witnessed as opportunistic when its immune status is compromised. Herein, we report a case of *G. candidum* isolated from urine.

Case report: We present a case of a 54-year-old immunocompromised female who was catheterized, and her repeated urine cultures yielded growth of *G.candidum*.

Conclusion: Our case highlighted the importance of frequently isolated but rarely reported fungus, revealing its potential as uropathogenic.

Keywords: *Geotrichum candidum*, immunocompromised, UTI

Introduction

Globally, *Geotrichum candidum* is a relatively common fungus. It is typically found in soil, air, water, milk, silage, plant tissues, and the digestive tract in humans and other mammals. [1] It is notoriously involved in pulmonary infections causing disease in humans and animals, but bronchial, oral, vaginal, cutaneous, and alimentary infections are also commonly reported. [2] This species is widely used as a supplement in the maturation of cheese and dairy products. The genus *Geotrichum* is composed of 18 species. A recent taxonomic revision concluded that the old *Galactomyces geotrichum*/ *G. candidum* complex contains four species. [3]

G. candidum, an environmental fungus, belongs to the class Endomycetaceae. They are found as commensals in the oral, respiratory, gastrointestinal, and genitourinary tracts of humans and animals. Previously considered to be non-pathogenic, it is now considered responsible for opportunistic infections in immunocompromised. Infections are not only limited to bronchial, oral, intestinal, and cutaneous sites but may also be disseminated. [2] Only a few cases of urinary tract infections caused by *G. candidum* have been reported till now. [4-6] Here, we report a case of *G. candidum* isolated from a medical unit of a tertiary care hospital.

Case Report

The patient was a 54-year-old female with a history of space-occupying lesion in the brain for which she underwent craniotomy 3 years ago. She presented in the emergency department with complaints of profuse vomiting, loss of consciousness, decreased appetite, and shortness of breath. The patient was diagnosed and treated as a case of aspiration pneumonia. Her condition deteriorated, and due to severe chest pain and shortness of breath, she was shifted to the ICU and put on a ventilator.

Clinical findings included: BP: 148/83mmHg, Oxygen saturation: 91%, BSR: 128 mg/dl, GCS: 11/15, fever: 100° F, and bilateral crept on chest examination. The patient was hemodynamically stable but later went into cardiac arrest. During her stay in the hospital, all her baseline tests, as per ICU protocols, were sent to the laboratory. Significant results were as follows: TLC: 21.8/μL, ESR: 62 mm/h, CRP: 123.6 mg/L. A urine specimen collected aseptically from the catheter was sent for microscopy and culture. Macroscopically, the urine was turbid and slightly green, whereas urine R/E showed numerous pus cells, RBCs, and fungal hyphae (Figure 1).

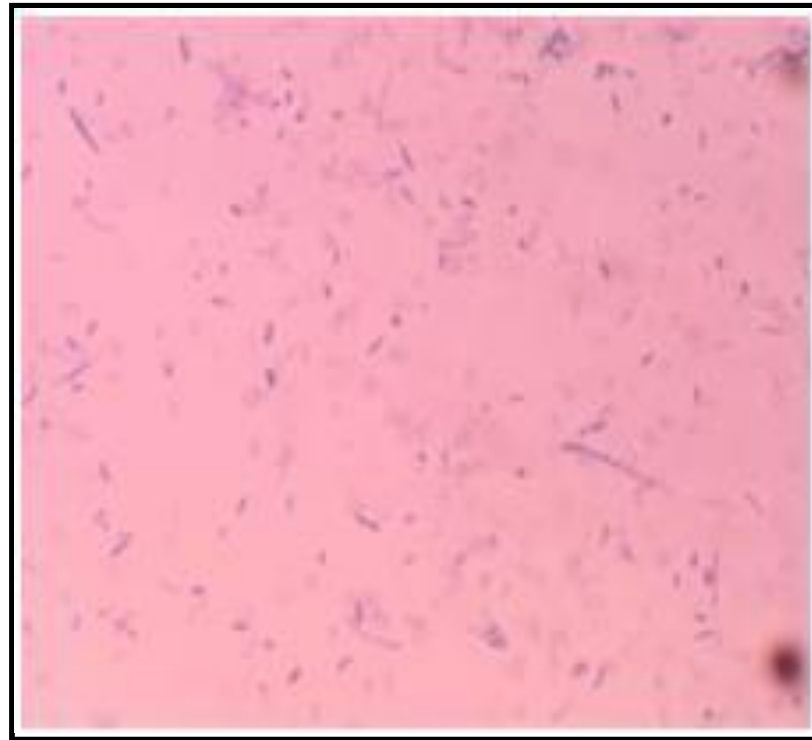


Figure 1: Urine microscopy showing fungal hyphae

The urine was cultured on CLED agar and incubated at 37°C. After 24 hours of incubation, white, dry, powdery to cottony colonies appeared on CLED agar. The specimen was further inoculated on SBA, which was incubated at 37°C, and on SDA, which was set at

25°C. After an incubation period of 24 hours, there was pure growth on both agars. The colonies appeared off-white, shiny, and round, as shown in the figure (**Figure 2**).



Figure 2: *G. candidum* colonies on SBA

For Gram staining, an isolated colony was picked from the media using a sterile loop, and a thin smear was prepared by gently mixing it with a drop of normal saline on a glass slide. Microscopy showed

numerous barrel-shaped septate hyphae arranged in chains. The hyphae were segmented with variable-sized rectangular arthroconidia (**Figure 3**).

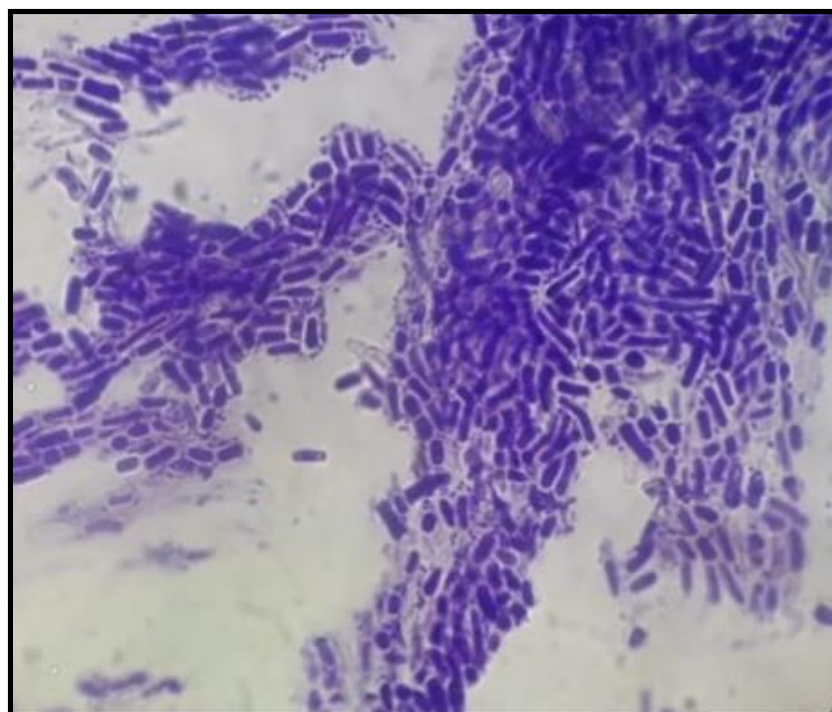


Figure 3: Gram stain finding

Based on macroscopic and microscopic appearance, assimilation tests were performed using API 20 AUX (bioMérieux), where the isolate was identified as *G. candidum*. Treatment with fluconazole was started, but the patient did not respond. Later, the patient was put on voriconazole and amphotericin B. Despite continuous antifungal treatment, repeated urine cultures remained positive for *G. candidum*. The persistence of fungi was attributed to the underlying chronic illness and catheterization. The patient's condition worsened over the next few days, and eventually, the patient was lost.

Discussion

G. candidum may present as an environmental saprophyte or a commensal in humans. It uses host factors like immune suppression, malignancy, prolonged antibiotic therapy, metabolic dysfunction, and chemotherapy to cause infection. *G. candidum* is usually considered pathogenic when isolated from bronchi, skin, gastrointestinal tract, and some other viscera. UTIs are rarely reported. *G. candidum* causing human UTIs may be worth reporting since rare cases improve our understanding of their predisposing factors, virulence, and complications.

Our patient was hospitalized for an underlying debilitating illness and developed a UTI following catheterization. Indwelling catheters are a nidus for bacterial and fungal growth and cause UTIs. Chronic ailments, prolonged treatment, and catheterization turned the commensals into opportunistic pathogens causing disseminated disease.

Conclusion

G. candidum infections are under-reported due to identical clinical and morphological findings with other fungal infections such as *Candida* spp. The current study emphasizes its pathogenic potential. Early identification may help improve our understanding of

its true incidence, progression of disease, treatment of choice, and response to therapy.

Abbreviations:

ICU: intensive care unit

BP: blood pressure

BSR: blood sugar random

GCS: Glasgow coma scale

TLC: total leukocyte count

ESR: erythrocyte sedimentation rate

CRP: C-reactive protein

R/E: routine examination

RBC: red blood cell

CLED: cystine lactose electrolyte deficient

SBA: sheep blood agar

SDA: Sabouraud dextrose agar

API: analytical profile index

UTI: urinary tract infection

Acknowledgements: The authors thank the primary care physicians for general support.

Conflict of interest: No conflict of interest.

Funding: Our research received no specific grant from any external or internal funding agency.

Ethical Approval: Approval to conduct the study was acquired from Ethical Review Committee, Fauji Foundation Hospital, Rawalpindi.

Consent: The Ethical Review Committee approved waiver of the participants' consent.

Guarantor: Saima Syed is the guarantor of this article. The data in this article are available with the guarantor and can be reached on request.

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