Candida dubliniensis abscess: A clinical case and a review of the literature

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1. Introduction

Fungal skin and soft tissue infections are associated with significant morbidity if not identified and treated early. *Candida dubliniensis*, a lesser known cousin of the infamous *Candida albicans*, is an opportunistic fungal pathogen most commonly found in the oropharynx of immunocompromised patients or individuals with a pre-existing nidus for infection [1]. However, its presence in patients without these predisposing factors is rare, especially as an isolated abscess. We report a rare case of a *C. dubliniensis* finger abscess without concomitant fungemia or *C. albicans* co-infection in a patient with uncontrolled diabetes as his only immunocompromising risk factor.

2. Case

A 56-year-old man with a history of uncontrolled diabetes mellitus type 2 on home insulin presented via emergency medical services after being found down on the street by a bystander. On presentation (Day 0), the patient would open his eyes to voice but was not oriented or able to provide any collateral history. His vital signs were significant for a temperature of 93.2°F, heart rate of 105, and blood pressure of 143/105. Physical exam was limited by the patient’s altered mentation and lack of cooperation but revealed a 2-cm laceration over the dorsum of the right index finger with an associated area of fluctuance that was draining serosanguinous fluid. There were no obvious signs of recent trauma. Labs were significant for a blood glucose of 1600, lactic acid of 6.4, leukocytosis of 17.7, and a significant anion gap metabolic acidosis (44). Urine drug screen, ethanol level, and HIV screening was negative. Urinalysis was significant for 3+ glucose and 1+ ketones. CT head without contrast was negative for any acute intracranial abnormalities.

X-ray of the right hand was negative for any acute fractures or osseous abnormalities. The patient was immediately transferred to the intensive care unit where he was initiated on early goal-directed sepsis protocol and insulin drip for hyperosmolar hyperglycemic syndrome. Blood cultures were obtained and vancomycin and piperacillin-tazobactam were initiated. Orthopedic surgery evaluated the patient and performed a bedside incision and drainage with plans to perform a debridement in the operating room pending medical stability.

On day +2, the patient’s mentation remained without improvement. He was taken to the operating room on day +3 for debridement of the skin and subcutaneous tissue of the right hand abscess due to concerns for systemic infection and to pursue source control and function optimization. Purulent and necrotic tissue were evident in the wound with tracking in a dorsal to volar direction through the first and second web spaces. The nonviable tissue was debrided and two sets of tissue were sent for analysis via matrix assisted laser desorption ionization – time of flight mass spectrometry (MALDI-TOF MS), which grew *C. dubliniensis* susceptible to fluconazole, caspofungin, and voriconazole. However, blood cultures from admission were negative for bacteremia and fungemia.

Oral fluconazole (200 mg daily) was initiated but the patient continued to remain lethargic and have persistent purulent drainage from the finger. Repeat debridement was performed in the operating room on day +10 for further wound assessment and to decrease the risk of secondary infection. Repeat wound cultures were obtained given concerns for possible contamination of the initial cultures but were positive for *C. dubliniensis*. However, the purulent drainage from the wound ceased. A final debridement and wound closure was performed on day +15. By this time, the patient was alert, oriented, and back to baseline per his family. The patient was prescribed two additional weeks of...
flunonazole on discharge with an outpatient appointment for further evaluation to determine if he required additional medication. However, the patient never presented for his follow-up appointment and multiple attempts to contact the patient were unsuccessful.

3. Discussion

Candida dubliniensis is a dimorphic yeast that was first isolated in Dublin, Ireland in 1995 by Sullivan et al. who described unusual isolates of oral Candida from HIV/AIDS patient with recurrent oral candida infections [2]. It is very closely related to its more famous cousin, Candida albicans, and shares many phenotypic characteristics including the ability to produce hyphae and chlamydospores [1]. However, C. dubliniensis is rarely found in the oral flora of healthy individuals and is significantly less likely to result in candidemia than C. albicans [3–5].

Given their similarities, distinguishing between these two closely related species has historically been difficult. However, multiple recent studies and advances in technology have led to increased diagnostic yield [6,7]. A recent study noted that 128 of 128 C. dubliniensis isolates all produced hyphal fringes after 48–72 h incubation on Pal’s agar whereas 124 of 124 C. albicans isolates produced smooth colonies under the same conditions [8]. In addition, species specific polymerase chain reaction (PCR) and MALDI-TOF MS usage has provided more definitive, and rapid, identification methods [3,9,10]. These improvements have likely led to an increase in C. dubliniensis recognition and awareness.

There have been multiple, invasive C. dubliniensis infections described in the literature, especially in immunocompromised hosts [11,12] or IV drug abusers [13–15]. C. dubliniensis fungemia has been noted in allogeneic hematopoietic stem cell transplant patients as well as those who are post cytotoxic chemotherapy [11]. Disseminated C. dubliniensis fungemia with biopsy proven multiorgan involvement in an HIV patient has been described [16]. Other reported cases include C. dubliniensis spondylodiscitis in both HIV-1 patients [12] and intravenous (IV) drug abusers [15], spinal abscess in an IV drug user [12], and healthcare-associated catheter-related blood stream infections [17]. In addition, other complications include endocarditis in IV drug abusers [12] and endophthalmitis in both intravenous drug users and patients with no such history [18,19].

In general, fungal soft tissue infections are uncommon [20]. If present, C. albicans is the most common organism but polymicrobial infections are often seen, with staphylococcus and streptococcus the most frequently isolated pathogens [20]. However, per literature review, there has been an increase in reported C. dubliniensis infections, especially in immunocompromised individuals, most likely due to an improvement in identification methods via PCR and MALDI-TOF MS [3,9,10]. In the absence of an immunocompromised state, other reported risk factors include a history of surgery, the presence of indwelling catheters [16,17], or even frenulum piercings [11]. Given that necrotizing soft tissue infections have the potential to be fatal, high index of clinical suspicion and timely intervention is critical.

4. Conclusion

This patient is the first reported case, to our knowledge, of an isolated C. dubliniensis abscess without fungemia in a patient with uncontrolled diabetes mellitus as his only immunocompromising factor, who was treated effectively with surgical debridement and flunonazole. C. dubliniensis should be considered an emerging threat, rather than being dismissed as a colonizer or contaminant. Proper management of patients suspected of fungal infections requires both medical and surgical management to optimize source control and prevent secondary infections.

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Conflict of interest

The authors have no conflicts of interest to declare.

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