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Letter to the Editor

Candida Blankii Candidemia an Emerging Threat

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Dear Editor-in-Chief

Candidemia is one of the most common forms of *Candida* infections in hospitalized patients and depending on the species, the mortality rate may vary from 30->50% (1). An increasing clinical failure, morbidity, and mortality of candidemia caused by non-*Candida albicans Candida* (NCAC) species is reported (2). Moreover, the lack of appropriate identification tools allowed the dominance of one of the scariest *Candida* species, which nowadays is a matter of public health concern in developing countries. *Candida blankii* as a novel *Candida* species first reported in 1968 (3).

Recently, these species have been recorded as one of the newly emerging pathogenic *Candida* species that in some cases has led to candidemia, particularly in patients with cystic fibrosis (4). The first human case of *C. blankii* was reported in the 1990 decade by a prospective candidemia study in Norway (5). In addition, *C. blankii* was isolated from atopic dermatitis of a two-month-old neonate in Russia (6). Subsequently, candidemia caused by *C. blankii* was diagnosed from a 14-year-old boy patient with cystic fibrosis whose this yeast was isolated from his respiratory specimens in 2015 (7). In the next report, the situation was a little different. The patient was a 27-week-old preterm neonate in Kuwait who had necrotizing enterocolitis and needed surgery. Unfortunately, after the surgery, the patient was suffering from a blood infection. Preliminary blood culture results showed bacterial infection with *Staphylococcus epidermidis* and *Enterococcus faecalis*, which led to the administration of antibiotic therapy. Before the second operation, the results of a blood culture showed that there was a *Candida* species. After various tests, it was determined as *C. blankii* (8). In India, by sequencing of internal transcribed spacer (ITS) and D1/D2 regions had diagnosed *C. blankii* fungemia in nine infants. All nine neonates received fluconazole as a treatment but four of them died (9).

Despite these limited reports, it can be assumed that *C. blankii* is not limited to people with cystic fibrosis. *C. blankii* is not a normal flora of human skin and mucosal membranes but it may colonize damaged skin as it was isolated from the skin of an atopic dermatitis patient (6). Like *C. auris*, *C. blankii* can adhere to plastic surfaces and form biofilms, so great care must be taken with the plastic equipment used in these patients, especially catheters (5, 9). *C. blankii* can tolerate high temperatures and high salt concentration so it is able to be a human colonizer and pathogen (9).

The pathogenicity of *C. blankii* was compared with *C. albicans* in the *Galleria mellonella* insect model. *C. blankii* was significantly less virulent

than the *C. albicans* (4). In vitek2 yeast identification system, *C. blankii was* misidentified as *Stephanoascus cifferi* with 89% probability (8). Mostly, *C. blankii* remained unidentified by MALDI-TOF mass spectrometry (8). In fact, not all MALDI-TOF MS libraries can identify *C. blankii*. In a study, a MALDI-TOF in-house database was created using the first two molecularly identified strains (9). *C. blankii* produces typical yeast-like white to cream colonies with a smooth surface and entire margins in sabouraud dextrose agar, and initially developed pink colonies in CHROM agar Candida. Thus they both have almost the same colony with the difference that *C. blankii* subsequently developed into dark metallic blue similar to *C. tropicalis* (4, 8).

However, the best method to identify *C. blankii* is sequence analysis of the internal transcribed spacer 1 and D1/D2 region from the 26S subunit of the rRNA. Various antifungals by using microdilution and E-test methods were tested against this species, altogether micafungin and amphotericin B had potent activity against this species (4, 5, 7-9). As the number of studies and recorded cases are very limited, it is expected that there will be no accurate and complete information about the treatment of patients with *C. blankii* infection (4). In some neonate cases, the patient expired despite using fluconazole and micafungin in the early days of diagnosis. However, one of the evidence recorded is that amphotericin B had strong in vitro activity against *C. blankii* and is recommended for the treatment of *C. blankii* infections.

In conclusion, due to the decreased antifungal susceptibility of *C. blankii*, treatment failure has incremented. However, more diagnosis and treatment considerations should be taken for suspected *C. blankii* candidemia cases.

Conflict of interest

The authors declare that there is no conflict of interest.

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