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Distribution and antifungal resistance of Candida species isolated from intensive care units

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To the Editor,

The frequency of invasive fungal infection caused by yeasts in intensive care units (ICUs) is increasing. Impairment of the skin and mucosal barrier in the ICUs (catheters, surgery, intubation etc.), renal failure, parenteral nutrition, steroid therapy, and use of broad-spectrum antibiotics are risk factors for invasive candidiasis (1,2). Identification of the strains is important for treatment, prediction of the prognosis, and performing infection control measures to prevent Candida infections (3). In the present study, we aimed to demonstrate retrospectively the distribution and antifungal susceptibilities of Candida strains isolated from the ICU of our hospital.

One hundred and twenty-one Candida isolates obtained from the ICU between January 2010 and May 2014 were evaluated retrospectively. Recurrent strains obtained from the same materials in the same patient and isolates unidentified as to species were not included in the study. A germ tube test was performed on yeast fungi and the identification was performed by VITEC 2 Compact (BioMérieux) system. Susceptibilities of 47 strains to amphotericin B, flucytosine, fluconazole, voriconazole, and caspofungin were investigated by VITEC 2 Compact (BioMérieux) system. Since antifungal susceptibilities of the strains were studied by using various antifungal susceptibility test cards of the VITEC 2 automated system, each antifungal agent was not studied in all strains. We used VITEC breakpoints for testing the antifungal susceptibility of Candida species.

A total of 121 Candida strains (65 urine samples, 33 blood samples, 18 deep tracheal aspirate samples, 3 wound samples, and 2 catheter samples) were isolated. Distribution of the strains was as follows: 82 Candida albicans (67.8%), 20 Candida parapsilosis (16.5%), 8 C. tropicalis (6.6%), 6 C. glabrata (5%), 3 C. famata (2.5%), and 2 C. krusei (1.7%). C. albicans was the most commonly isolated Candida species in all sample groups. The second leading strain is C. parapsilosis in all sample groups. All of the Candida strains were found to be susceptible to amphotericin B, caspofungin, and voriconazole. Rates of resistance to flucytosine and fluconazole were 3.7% and 2.1%, respectively. Intermediate susceptibility (4.3%) to fluconazole was determined in only C. tropicalis isolates among all of the strains.

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In terms of the distribution of Candida species, C. albicans was the most commonly isolated strain in our study. In a study including 1122 Candida strains performed by Sav et al., C. albicans was the most common strain, similar to our findings (4). When the Candida growth in blood cultures in our study was evaluated, the most commonly isolated strain (42.4%) was C. albicans. C. parapsilosis (30.3%) was the second leading isolated strain in our blood cultures. The rate of C. parapsilosis ranged between 12% and 32% in studies reported from Turkey about candidemia (5). Non-albicans Candida species were isolated in 57.6% of our blood cultures. The frequency of non-albicans Candida species isolated from blood cultures in our ICU suggests that knowing the distribution of Candida species in each hospital is important regarding infection control measures and antifungal treatment. The presence of different susceptibilities of species to antifungal agents can be seen with non-albicans Candida species; this shows that in vitro antifungal susceptibility tests are very important.

Fluconazole resistance was determined at a rate of 1.4% in 20,576 C. albicans strains and at a rate of 3% in 2406 C. parapsilosis strains (6). The fluconazole resistance rate was 2.1% in our study, and all Candida strains were found to be susceptible to voriconazole, caspofungin, and amphotericin B. In a previous study reported from Turkey, caspofungin, voriconazole, and amphotericin B resistance was not determined in any Candida isolates (7).

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In conclusion, voriconazole, caspofungin, and amphotericin B resistance was not determined in *Candida* strains isolated from our ICU. Fluconazole resistance was not seen in the other strains except *C. krusei*. *C. albicans* is the most commonly encountered *Candida* strain in our ICU and fluconazole resistance was not determined. However, since the distribution of *Candida* species can change over time, identification of the isolates and susceptibility tests for antifungal agents should be performed to enable the development of resistance to be followed.

References