



Available online at
ScienceDirect
www.sciencedirect.com

Elsevier Masson France
EM|consulte
www.em-consulte.com



ORIGINAL ARTICLE/ARTICLE ORIGINAL

***Candida* infection in the intensive care unit: A study of antifungal susceptibility pattern of *Candida* species in Milad hospital, Tehran, Iran**



Infection à Candida dans une unité de soins intensifs : étude de la sensibilité des Candida sp. aux antifongiques à l'hôpital Milad, Téhéran, Iran

S. Alimehr^a, H. Shekari Ebrahim Abad^{a,*}, F. Fallah^a,
M. Rahbar^b, M. Mohammadzadeh^{a,c}, S. Vossoghian^a,
S. Rafeei Tabatabaee^a, M. Roudbary^d, F. Zaini^e

^a Pediatric Infections Research Center, Shahid Beheshti University of Medical Sciences, Shariati Avenue, 1546815514 Tehran, Iran

^b Department of Microbiology, Iranian Reference Health Laboratory, Tehran, Iran

^c Department of Microbiology, Milad Hospital, Tehran, Iran

^d Department of Parasitology and Mycology, School of Medicine, Iran University of Medical Science, Tehran, Iran

^e Department of Medical Parasitology and Mycology School of Public Health and Institute of Public Health Research Tehran University of Medical Sciences, Tehran, Iran

Received 9 December 2014; received in revised form 15 September 2015; accepted 17 September 2015
Available online 10 November 2015

KEYWORDS

ICUs;
Candida albicans;
E-test;
Antifungal susceptibility

Summary

Objective. — The occurrence of *Candida* infections has improved during the past two decades as a result of increase in the number of immunocompromised patients. In this study the antifungal susceptibility patterns of *Candida* species isolated from sterile body sites of patients admitted in Milad Intensive Care Unit (ICU) during 6 months were determined.

Methods. — Candidal isolates were obtained from 50 patients admitted in Milad ICUs from April to September 2013. Identification of the isolates was performed by using morphological and

* Corresponding author.

E-mail address: sayeh.shekari0@gmail.com (H. Shekari Ebrahim Abad).

MOTS CLÉS

Unités de soins intensifs ;
Candida albicans ;
Candida sp. ;
 E-test ;
 Sensibilité aux antifongiques

polymerase chain reaction assay. Resistance to the antifungal agents containing caspofungin, posaconazole, voriconazole and amphotericin B was determined using E-test method.

Results. — Out of 67 *Candida* isolates 47.8% were *Candida glabrata*, 28.3% were *C. albicans*, 7.5% were *C. tropicalis*, 7% were *C. guilliermondii*, 3% were *C. krusei* and 2% were *C. dubliniensis*. *C. glabrata* was the least susceptible species, with 9.4% of the isolates resistant to amphotericin B and 6.3% resistant to posaconazole and voriconazole. No resistance to caspofungin was observed among *C. glabrata* isolates. One of the *C. krusei* isolates was resistant to amphotericin B while no resistance to voriconazole, caspofungin and posaconazole was detected among *C. krusei* strains. Increase in the prevalence of antifungal-resistant non-*C. albicans* species in recent years has become a problematic event amongst clinicians caring for ICU patients. *C. glabrata* as the most common species isolated from ICU patients in this study indicated higher levels of antifungal resistance in comparison with other species. This observation accentuates the importance of managing preventive treatments to avoid development of resistance to the current antifungal drugs.

© 2015 Elsevier Masson SAS. All rights reserved.

Résumé

Objectif. — La survenue d'infections à *Candida* s'est accrue au cours des deux dernières décennies en raison de l'augmentation du nombre de patients immunodéprimés. Dans cette étude, les profils de sensibilité aux antifongiques des espèces de *Candida* isolées à partir de sites corporels stériles de patients admis en unité de soins intensifs Milad (USI) pendant 6 mois ont été déterminés.

Méthodes. — Les *Candida* isolats ont été obtenus à partir de 50 patients admis dans les unités de soins intensifs Milad d'avril à septembre 2013. L'identification des isolats a été réalisée en utilisant la réaction en chaîne polymérase et les tests morphologiques. La résistance aux agents antifongiques, caspofungine, posaconazole, voriconazole et amphotéricine B, a été déterminée en utilisant la méthode E-test.

Résultats. — Sur 67 *Candida* isolés 47,8 % étaient *Candida glabrata*, 28,3 % étaient *C. albicans*, 7,5 % étaient *C. tropicalis*, 7 % étaient *C. guilliermondii*, 3 % étaient *C. krusei* et 2 % étaient *C. dubliniensis*. *C. glabrata* était l'espèce la moins sensible, avec 9,4 % des isolats résistants à l'amphotéricine B et 6,3 % résistants à posaconazole et voriconazole. Aucune résistance à la caspofungine a été observée chez *C. glabrata*. Un des isolats *C. krusei* était résistant à l'amphotéricine B, tandis qu'aucune résistance à voriconazole, caspofungine et posaconazole a été détectée parmi les souches *C. krusei*. L'augmentation de la prévalence des antifongiques résistants dans les espèces non *C. albicans* au cours des dernières années est devenue un événement problématique parmi les cliniciens qui soignent des patients en soins intensifs. *C. glabrata*, étant l'espèce la plus commune isolée à partir de patients en soins intensifs dans cette étude, a indiqué des niveaux plus élevés de résistance antifongique en comparaison avec d'autres espèces. Cette observation accentue l'importance de la gestion des traitements préventifs pour éviter le développement de la résistance aux médicaments antifongiques actuels.

© 2015 Elsevier Masson SAS. Tous droits réservés.

Introduction

Invasive fungal infections (IFI) are the most important reason of morbidity and mortality among patients admitted to the Intensive Care Unit (ICU) [1]. Because of the increase in the number of IFI during the past decades, determining the distribution and antifungal resistance patterns of the fungal pathogens has become more imperative. This may lead to effective antifungal therapy [1,14]. Investigations demonstrated that certain risk factors increase the chance of IFI incidence among ICU patients; these include existence of a central venous catheter, prolonged receipt of broad-spectrum antibiotics, diabetes mellitus, long-term stay in ICU, renal failure, hemodialysis, cancer, transplantation, recent surgery and burns [11,17]. Previous studies show that *Candida* species are the most frequent

opportunistic fungi leading to IFI among ICU patients [21]. These species have different antifungal susceptibility patterns and their frequency in the ICU may diverge in different parts of the world [5,19]. Consequently designing a program to survey the occurrence and resistance profiles of the non-*albicans* *Candida* species in ICUs appears essential to plan successful antifungal treatment. Therefore in this study the prevalence of *Candida* species resistance to the antifungal agents containing caspofungin, posaconazole, voriconazole and amphotericin B was determined by using the agar-based E-test method. According to the emergence of antifungal-resistant *Candida* species among ICU patients in recent years it is essential to determine the antifungal resistance patterns of *Candida* species for more appropriate and effective antifungal therapy, and control of hospital infections.

Download English Version:

<https://daneshyari.com/en/article/3219068>

Download Persian Version:

<https://daneshyari.com/article/3219068>

[Daneshyari.com](https://daneshyari.com)