

Frequency of yeast Carriage on Hands of Nurses in University Hospital Center "Mother Teresa" in Tirana

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Abstract

The aim of the study was to evaluate the frequency and distribution of yeast carriage on the hands of healthcare workers (nurses), in order to take measures to prevent nosocomial infections.

Materials and methods: In this study participated 15 nurses from the intensive care unit and 18 from the service of Hematology.

We completed a questionnaire on the number of washing hands during working hours, use or not the gloves and how often change them, use or not to hand lotions and presence of dermatitis or eczema.

Clinical samples were obtained during routine work without any prior preparation (washing hands).

We used standard methods (by using the standard Broth a bag Technique), washing hands in brain heart infusion broth with antibiotics gentamycin. An amount of 0.1 ml was taken for subculture on agar Sabouraud. The tubes with 19.9 ml liquid and the subcultures were incubations at 30 ° C for 6 days. Identification was made by the panel: Integral System Yeast Plus, Ref. 71,822. Statistical analysis was done using tests: Fisher's exact test and χ^2 .

Results: In our study about 27.2 % (9) of nurses resulted with yeast in their hands. 6 were from intensive care units and 3 of the hematology service.

The isolated species were *C. parapsilosis* with 44.4%, *C. albicans* with 33.3%, *C. guillermondi* with 11.1% and 11.1% were *Candida* sp.

Referring to the results according to completed questionnaire about 39.4% of nurses had wash hands one to three times and yeasts were isolated to nurses in this group, while 60.6% of nurses that had wash hands with more than three times, were not isolated any yeast.

About 46.6% of nurses had used gloves in the work and yeasts were not isolated from them.

The nurses haven't used lotion for hands in the study day.

About 15.1% of nurses had dermatitis and eczema on the skin and nails of the hand and only 2 of them resulted with yeast.

Conclusions: The results of the study show that the yeast colonize the hands of nurses in a high percentage. We suggest the use sensitive techniques for isolation yeast in combination with new techniques for studying the genome to determine the type of yeast (PCR techniques).

KEYWORDS: *Candida guillermondi*, Intensive care unit, nosocomial infection.

Introduction:

Yeast colonize the skin and mucous membranes of the human body. Infections by endogenous way are the most common, although exogenous source can play a role in infection. *Candida* species are now the fourth causes of systemic nosocomial infection. If hands of personnel are colonized with the yeast and do not apply strict hygiene for washing hands and do not use gloves whenever manipulated with different patients during invasive procedures like different catheterizations or during contact with body fluids, mucous membranes or the damaged skin of patients may transmission of microorganisms from healthcare workers' hands. In this way can develop nosocomial infections [1,2]

The aim of the study was to evaluate the frequency and distribution of yeast carriage on the hands of healthcare workers (nurses), in order to take measures to prevent nosocomial infections.

Materials and methods: In this study participated 15 nurses from the intensive care unit and 18 from the service of Hematology.

We completed a questionnaire on the number of washing hands during working hours, use or not the gloves and how often change them, use or not to hand lotions and presence of dermatitis or eczema.

Clinical samples were obtained during routine work without any prior preparation (washing hands).

We used standard methods (by using the standard Broth a bag Technique), washing hands in brain heart infusion broth with antibiotics gentamycin placing both hands in a bath that contained 20 ml of brain heart infusion broth. After sampling them poured into sterile tubes and were sent to the laboratory. An amount of 0.1 ml was taken for subculture on agar Sabouraud.

The tubes with 19.9 ml liquid and the subcultures were incubations at 30 ° C for 6 days. After incubation the troubled terrains were passed for subculture and day 6 was passed in subculture and terrain that had not formed turmoil. We used the control cultures. Identification was made by the panel: Integral System Yeast Plus, Ref. 71,822.

Statistical analysis was done using tests: Fisher's exact test and χ^2

Results: In our study attended 33 nurses from Intensive care units and Hematology service.

We identified the total colonization, about 27.2 % (9) of nurses resulted with yeast in their hands. The yeasts were isolated from hands in 6(40%)nurses from intensive care units and 3 (16.6%) nurses of the hematology service but not statistically significant difference which other (Fisher's exact test p=0.2).

Table.1 Colonization of hands with yeast to nurses in ICU and hematology service

Services	Total nurses Nr = 33	Colonization N (%)	95%CI
ICU	15	6 (40.0%)	16.3-67.7
Hematology	18	3 (16.6)	3.5-41.3
Total	33	9 (27.2)	19.7-61.4

The isolated species were *C. parapsilosis* with 44.4%, *C. albicans* with 33.3%, *C. guilliermondi* with 11.1% and 11.1% were *Candida* sp. *C. parapsilosis* was isolated more often but not statistically significant difference with other types of *Candida* ($\chi^2=3.0$, $p=0.4$).

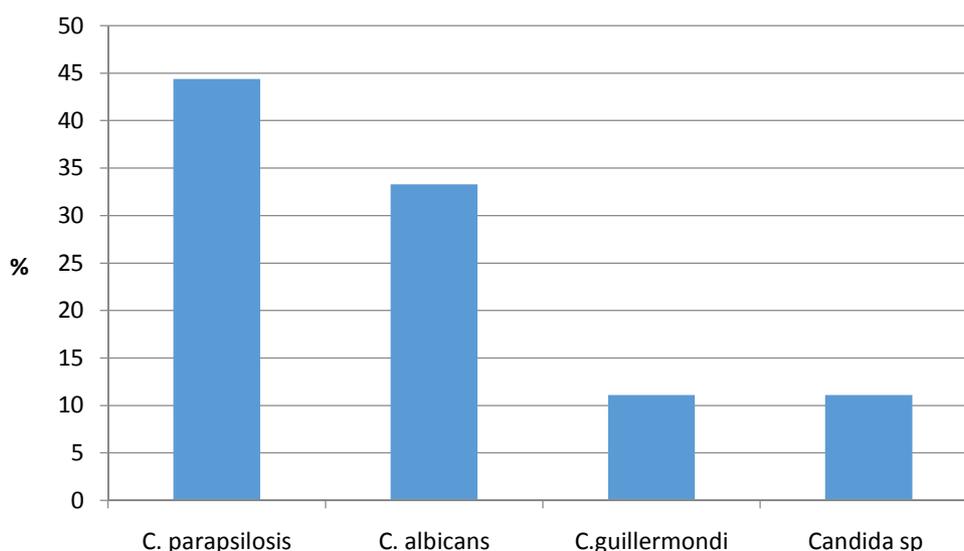


Figure 1 *Candida* species isolated from the hands of nurses in ICU and Hematology service.

Referring to the results according to completed questionnaire about 39.4% of nurses had wash hands one to three times and yeasts were isolated to nurses in this group, while 60.6% of nurses that had wash hands with more than three times were not isolated any yeast.

About 46.6% of nurses had used gloves in the work and yeasts were not isolated from them.

The nurses haven't used lotion for hands in the study day.

About 15.1% of nurses had dermatitis and eczema on the skin and nails of the hand and only 2 of them resulted with yeast.

Discussion:

In our study we examined the hands of our medical staff about yeasts colonisation. There are many previous studies about hand colonisation of medical personnel with bacteria as source of nosocomial infection but there are no data about their colonisation with fungi. Colonisation of medical personnel hands with yeasts has been identified in 40% at ICU and 16.6% in hematology ward personnel. *C. parapsilosis* was the most frequently identified species. Study results showed that nurses carry yeasts on their hands. Practices like hand washing and gloves wearing affect hand colonisation with yeasts. Our study results are compatible with study results from other authors.

There might be incompatible result if different methods applied are not compared [3,4].

A study published by Odds using cotton swabs for sampling resulted non sensitive. The percentage of yeasts isolated was low. Yeasts were isolated when their concentration was high [5].

Other authors who have applied more sensitive techniques reported a higher percentage of yeasts isolation from personnel hands. For example Horn and colleagues isolated yeasts in 54% of nurses at the Oncology service and 28% of nurses at the Dermatology service. *Rhodotorula* sp. and *C. parapsilosis* were isolated more frequently [6].

In another study published by L. Brunetti and colleagues hand colonisation of personnel with yeasts at three departments, Surgery, ICU, Obstetric Gynecology resulted respectively 50%, 61% and 65%. [7]. High percentage isolation of yeasts on personnel hands is referred to more sensible techniques, use of antibiotic and selective media for yeasts isolation. Transmission of yeasts from personnel hands to patients is difficult to be defined because is not sufficient yeasts isolation and identification but it requires molecular diagnostic procedures like PCR to demonstrate that strains isolated from patients are identical to those isolated from personnel hands. [9]

Conclusions: The results of the study show that the yeast colonize the hands of nurses in a high percentage. Washing hands and use gloves can reduce the colonization of pathogenic yeast hands of preventing nosocomial infections. [8] We suggest the use sensitive techniques for isolation yeast in combination with new techniques for studying the genome to determine the type of yeast (PCR techniques). [9]

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