

## Assessment of Candidiasis Infections among Patients Visited in Hospital

Maya Barala

M.Sc. (Medical), Microbiology,  
Mahatma Gandhi Medical College &  
Hospital, Jaipur, Rajasthan, India.

### ABSTRACT

**Background:** *Candida* is the shortened name used to describe a class of fungi that includes more than 150 species of yeast. The present study was conducted to assess Candidiasis infections among patients. **Methods:** The present study was conducted in the department of Microbiology on 114 cases. Clinical examination was done for the diagnosis. Microbiological culture assessment was done in all cases. Swab was taken from the lesion of the patients and was incubated in Sabouraud's dextrose agar medium for assessment of culture growth characteristics. All the samples were incubated in the culture medium at 37°C for 1–2 days. Counting of the yeast colonies was done 48 hours after incubation. **Results:** Age group 11-20 years had 12 males and 7 females, 21-30 years had 18 males and 16 females, 31-40 years had 24 males and 15 females and 41-50 years had 10 males and 12 females. Most common type was denture induced candidiasis (DIC) seen in 20 males and 14 females, acute atrophic candidiasis (AAC) seen in 18 males and 15 females, acute pseudomembranous candidiasis (APC) seen in 12 males and 10 females, chronic hyperplastic candidiasis (CHC) in 10 males and 8 females and angular cheilitis in 4 males and 3 females. The difference was significant ( $P < 0.05$ ). Common species was *C. albicans* (52), *C. Krusei* (32), *C. tropicalis* (20) and *C. pseudotropicalis* (10). **Conclusion:** Candidiasis is a common opportunistic infection. Most cases were seen in males and most common type identified was *Candida Albicans*.

**Key words:** *Candidiasis, Hyperplastic, Microbiological*

DOI:10.21276/iabcr.2018.4.3.04

Received: 20.05.18

Accepted: 04.06.18

\*Corresponding Author

Dr. Maya Barala

M.Sc. (Medical), Microbiology, Mahatma  
Gandhi Medical College, Jaipur, Rajasthan,  
India

**Copyright:** © the author(s) and publisher. IABCR is an official publication of Ibn Sina Academy of Medieval Medicine & Sciences, registered in 2001 under Indian Trusts Act, 1882.



This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial

### INTRODUCTION

*Candida* is the shortened name used to describe a class of fungi that includes more than 150 species of yeast. In healthy individuals, *Candida* exists harmlessly in mucus membranes such as your ears, eyes, gastrointestinal tract, mouth, nose, reproductive organs, sinuses, skin, stool and vagina, etc. It is known as your "beneficial flora" and has a useful purpose in the body. When an imbalance in the normal flora occurs, it causes an overgrowth of *Candida albicans*. The term is Candidiasis or Thrush. This is a fungal infection (Mycosis) of any of the *Candida* species, of which *Candida albicans* is the most common.<sup>[1]</sup>

Hedderwick and coworkers carried out a 6-month surveillance of yeast colonization and infections in an adult

intensive care unit and found a low degree of cross-transmission for *Candida albicans*, but none for the other *Candida* species included in the investigation. Irrespective of this, the incidence of fungal infections has increased in the last three decades. This increase may be the result of the greater the number of patients with dysfunctional immune systems due to iatrogenic factors. In particular, the yeasts of the genus *Candida* are considered as the most common fungal agents of nosocomial invasive fungal infections.<sup>[2]</sup>

In recent years, the list of *Candida* species known as human pathogens has become more diverse, although the epidemiology of yeast infections is still ill-defined. *C.*

#### Access this article online

Website: <a href="http://www.iabcr.org">www.iabcr.org</a>	Quick Response code 
DOI: 10.21276/iabcr.2018.4.3.04	

**How to cite this article:** Barala M. Assessment of Candidiasis Infections among Patients Visited in Hospital. Int Arch BioMed Clin Res. 2018;4(3):10-12.

**Source of Support:** Nil, **Conflict of Interest:** None

albicans is the most frequent cause of candidemia, but *C. glabrata*, *C. parapsilosis*, *C. krusei*, *C. lusitanae* and *C. tropicalis* have emerged as agents of human infections. Moreover, these species have different susceptibility patterns toward antifungals.<sup>[3]</sup> The present study was conducted to assess Candidiasis infections among patients.

**METHODS**

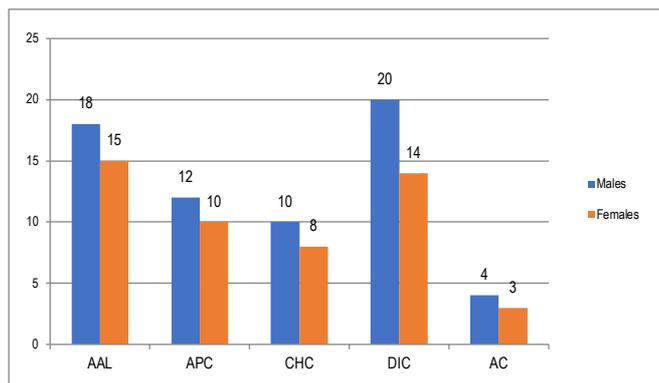
The present study was conducted in the department of Microbiology of Mahatma Gandhi Medical College & Hospital, Jaipur, Rajasthan, India. It comprised of 114 cases of oral candidiasis of both genders. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study. General information such as name, age and gender etc. was noted. Clinical examination was done for the diagnosis. Microbiological culture assessment was done in all cases. Swab was taken from the lesion of the patients and was incubated in Sabouraud’s dextrose agar medium for assessment of culture growth characteristics. All the samples were incubated in the culture medium at 37°C for 1–2 days. Counting of the yeast colonies was done 48 hours after incubation. Results thus obtained were subjected to statistical analysis using chi- square test. P value less than 0.05 was considered significant.

**RESULTS**

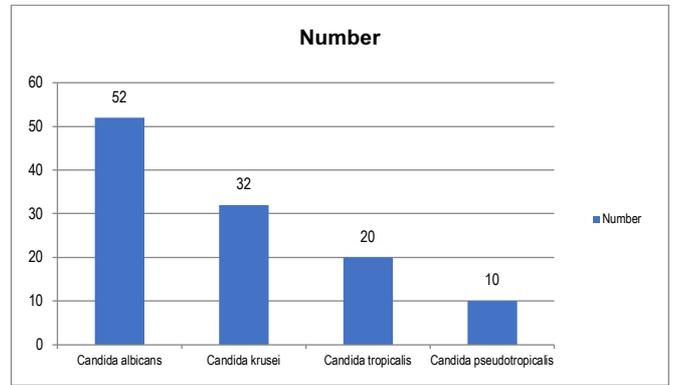
Table I shows that age group 11-20 years had 12 males and 7 females, 21-30 years had 18 males and 16 females, 31-40 years had 24 males and 15 females and 41-50 years had 10 males and 12 females. Graph I shows that most common type was denture induced candidiasis (DIC) seen in 20 males and 14 females, acute atrophic candidiasis (AAC) seen in 18 males and 15 females, acute pseudomembranous candidiasis (APC) seen in 12 males and 10 females, chronic hyperplastic candidiasis (CHC) in 10 males and 8 females and angular cheilitis in 4 males and 3 females. The difference was significant (P< 0.05). Graph II shows that common species was *C. albicans* (52), *C. Krusei* (32), *C. tropicalis* (20) and *C. pseudotropicalis* (10).

**Table 1. Age wise distribution of cases**

Age group (years)	Males	Females
11- 20	12	7
21-30	18	16
31-40	24	15
41-50	10	12
Total	64	50



**Graph I: Types of candidiasis**



**Graph II: Species identified in cases**

**DISCUSSION**

Oral candidiasis is an opportunistic infection of the oral cavity. It is common and underdiagnosed among the elderly, particularly in those who wear dentures and in many cases is avoidable with a good mouth care regimen. It can also be a mark of systemic disease, such as diabetes mellitus and is a common problem among the immunocompromised. Oral candidiasis is caused by an overgrowth or infection of the oral cavity by a yeast-like fungus, *Candida*.<sup>[4]</sup>

In present study, we assessed candidiasis infections among patients. It comprised of 114 cases with 64 males and 50 females. Age group 11-20 years had 12 males and 7 females, 21-30 years had 18 males and 16 females, 31-40 years had 24 males and 15 females and 41-50 years had 10 males and 12 females. This is in agreement with Jabra et al.<sup>5</sup> Pseudomembranous candidiasis (thrush) is characterized by extensive white pseudomembranous consisting of desquamated epithelial cells, fibrin, and fungal hyphae. These white patches occur on the surface of the labial and buccal mucosa, hard and soft palate, tongue, periodontal tissues, and oropharynx. Chronic hyperplastic candidiasis characteristically occurs on the buccal mucosa or lateral border of the tongue as speckled or homogenous white lesions. The lesions usually occur on the buccal mucosa or lateral borders of the tongue. There is an association with smoking and complete resolution appears to be dependent on cessation of smoking.<sup>[6]</sup>

We found that common type was denture induced candidiasis (DIC), acute atrophic candidiasis (AAC), acute pseudomembranous candidiasis (APC), chronic hyperplastic candidiasis (CHC) and angular cheilitis. Common species was *C. albicans* (52), *C. Krusei* (32), *C. tropicalis* (20) and *C. pseudotropicalis* (10). This is in agreement with Bishop et al.<sup>7</sup> Several studies have demonstrated that infection with candida is associated with certain pathogenic variables. Adhesion of candida to epithelial cell walls, an important step in initiation

of infection, is promoted by certain fungal cell wall components such as mannose, C3d receptors, mannoprotein, and saccharins. The degree of hydrophobicity and ability to bind to host fibronectin has also been reported to be important in the initial stages of infection. Other factors implicated are germ tube formation, presence of mycelia, persistence within epithelial cells, endotoxins, induction of tumour necrosis factor, and proteinases.<sup>[8]</sup>

In recent years there has been a growing interest in using and developing new identification methods based on molecular biology, like real-time PCR, sequencing and/or RFLP of different regions of the genome.<sup>[9]</sup> These techniques

take advantage of regions of the genome, which, in addition to being conserved in all yeast species, have a great interspecies variability. These methods provide more reliable results in a shorter period of time.<sup>[10]</sup> However, the cost of the equipment and need for highly trained staff may be disadvantages to their use.

## CONCLUSION

Candidiasis is a common opportunistic infection. Most cases were seen in males and most common type identified was *Candida Albicans*.

## REFERENCES

1. Buchner T, Fegeler W, Bernhardt H, et al. Treatment of severe *Candida* infections in high-risk patients in Germany: consensus formed by a panel of interdisciplinary investigators. *Eur J Clin Microbiol Infect Dis* 2002; 21: 337– 352.
2. Pappas PG, Rex JH, Sobel JD, et al. Guidelines for the treatment of candidiasis. *Clin Infect Dis* 2004; 38: 161– 189.
3. Hoppe JE, Frey P. Evaluation of six commercial tests and the germ-tube test for presumptive identification of *Candida albicans*. *Eur J Clin Microbiol* 1999; 18: 188– 191.
4. Borman AM, Linton CJ, Miles SJ, Johnson EM. Molecular identification of pathogenic fungi. *J Antimicrob Chemother* 2008; 61: 7– 12.
5. Jabra, Guillamón JM, Sabaté J, Barrio E, Cano J, Querol A. Rapid identification of wine yeast species based on RFLP analysis of the ribosomal ITS regions. *Arch Microbiol* 1998; 169: 387-392.
6. Nucci M, Marr KA. Emerging fungal diseases. *Clin Infect Dis*. 2005; 41: 521– 526.
7. Bishop, Holbrook WP, Hjorleifsdottir DV. Occurrence of oral *Candida albicans* and other yeast-like fungi in edentulous patients in geriatric units in Iceland. *Gerodontology* 1986; 2:153–6.
8. Samaranyake LP. Nutritional factors and oral candidiasis. *J Oral Pathol* 1986;15:61–5.
9. Silverman S, Luangjarmekorn L, Greenspan D. Occurrence of oral candida in irradiated head and neck cancer patients. *J Oral Med* 1984;39:194–6.
10. Stafford GD, Arendorf GD, Huggett R. The effect of overnight drying and water immersion on candidal colonisation and properties of complete dentures. *J Dent* 1986; 14:52–6.

