International Journal of Scientific Research in Science and Technology
Available online at : www.ijsrst.com
Print ISSN: 2395-6011 | Online ISSN: 2395-602X
doi : https://doi.org/10.32628/IJSRST2310615

Isolation of Candida in A Different Clinical Specimen in Anand, Gujarat

Jinal Patel[1]* Dr. Sonal Chitroda[2]

[1]Department of School of Sciences, P P Savani University, Kosamba, Surat, Gujarat, India

[2]Department of Smt. L. P. Patel Institute of MLT, Bhaikaka University, Karamsad, Anand, Gujarat, India

*** Corresponding Author** : jinalmlt@gmail.com

ARTICLEINFO

Article History:
Accepted: 05 Jan 2024
Published: 12 Jan 2024

Publication Issue :
Volume 11, Issue 1
January-February-2024
Page Number :
113-116

ABSTRACT

The aim of the present study was to determine the predominant Candida species responsible for Candidiasis in patients across various clinical specimens at our hospital located in Karamsad, Anand. A total of fifty different *Candida spp.* were isolated from different specimens (Blood, Pus, Urine, Stool, etc.) by conventional methods from the samples received at the Microbiology Laboratory, Shree Krishna Hospital, Karamsad, Anand, India from Jun 2013 to Sept. 2014. Available quantitative parameters was described in terms of frequency and percentages. *C. non-albicans* was the most common yeast contributing 79.16% of the isolates followed by *C.albicans* 20.83%. Conclusion: C. *non-albicans* was the predominant fungus found in this area of Anand.

Keywords: Candidiasis, Species, Conventional Method, Prevalence.

I. INTRODUCTION

Candida species, including various yeasts, can cause a wide range of infections, affecting both individuals with weakened immune systems and those with normal immune function. Among these infections, systemic candidiasis is frequently associated with *Candida albicans,* which is the most common culprit. However, in the past decade, there has been an increasing occurrence of systemic Candida infections caused by other Candida species. Notably, some of these *non-albicans* Candida isolates, such as *C. glabrata, C. tropicalis,* and *C. parapsilosis*, have become more prevalent. Distinguishing Candida species at the specific level is crucial for accurate diagnosis, treatment, and disease management. This approach allows healthcare professionals to avoid prescribing antifungal medications that may not be effective against certain species. [1,2,3]

For instance, *Candida krusei* is naturally resistant to fluconazole, a common antifungal drug, while *Candida parapsilosis* may not exhibit such resistance. Therefore, identifying the exact Candida species involved in an infection is essential to tailor the treatment strategy effectively. [1]

II. METHODS AND MATERIAL

Specimen Collection

A variety of clinical specimens (Urine, Pus, Blood, Sputum, Stool etc.) that were sent to a microbiology lab. On a suspicion of infection made by clinicians, The microbiology laboratory received the clinical specimens for culture and sensitivity testing. After receiving the specimen, it was inoculated on various culture media in accordance with the manual's normal operating procedures. [4]

Conventional culture method

A gram stain of each clinical specimen was performed and if the result of gram stain showed presence of yeast cells, the clinical specimen was inoculated on Sabouraud's Dextrose agar, the culture media was incubated at 37^0 temperature for 24hr. and was examined subsequently for growth of organisms. Following incubation if SDA showed growth of organisms, their colony characteristics were noted with respect to size, colour, texture, etc. A gram stain was performed from the colonies to confirm presence of budding yeast cells.

The colonies from SDA were then followed for species identification as per the conventional method. [4,5,6] To distinguish between *Candida albicans* and *Candida non-albicans*, a germ tube test was performed.[6,7] The isolated organism was also tested for its ability to ferment as well as assimilate various sugars by sugar fermentation respectively, the results of which was helpful for the identification of species. Finally the organism was also inoculated on corn meal agar media and incubated at 25 °C for 48 hours. The results of cornmeal agar as well as the germ tube test and sugar fermentation together confirmed the identification of the yeast.

Statistical analysis: All the information entered into an Excel sheet and analyzed using SPSS 22. Descriptive statistics was uses. Available quantitative parameters was described in terms of frequency and percentages.

III. RESULTS AND DISCUSSION

Specimen wise distribution of different isolates

The microbiology lab isolated a total of 50 different candida species from the specimens it received. Out of 50 isolates, 48 could be identified using standard methods; the two remaining undetermined isolates were excluded from the study.

Maximum isolates were from urine and blood which constituted 31.25%, followed by sputum8.33%, Endotracheal aspirate (ET) 16.66%, Pus 8.33%, stool 2.08% and other specimen 2.08%. (Table 1)

Table 1. Specimen wise distribution of different isolates (n=48)

Specimen	*C.albicans*	*C.tropicalis*	*C.parapsilosis*	*C.glabrata*	*C.krusei*	Total
Urine	4	8	1	2	-	15
Blood	2	8	4	1	-	15
Pus	1	3	-	-	-	4
Endotracheal aspirate	1	5	-	1	1	8
Sputum	2	2	-	-	-	4
Stool	-	-	-	1	-	1
Other	-	1	-	-	-	1

Candida is a type of microorganism that can be found in a wide range of clinical specimens and is associated with various clinical conditions. In our study, we observed that Candida species frequently cause infections in the urinary system and bloodstream. Specifically, our findings showed that the highest number of Candida isolates came from urine and blood, accounting for 33.33% each. Additionally, we found isolates in sputum (8.33%), endotracheal tube samples (16.66%), pus (8%), and other specimen types (4%). These observations are consistent with similar studies conducted by other researchers. [8]

For example, in a study by Zevita Venisha et al in 2013, 68.5% of yeast isolates were from urine and blood. Similarly, in a 2009 study by Patel L et al, which included 430 Candida isolates, urine had the highest number of isolates (30.5%), followed by sputum (28.1%) and blood (26%). [9] Candida-related urinary tract infections are also common in the pediatric population, as noted in a study by Prakash Gelotar, where Candida sp. was responsible for 14% of pediatric UTIs. [10] In another study by Saldanha Dominic R.M. et al in 2011, high vaginal swabs (38%) were the most common sample, followed by blood (16%), urine (12%), sputum (11%), and other specimens (23%). [7]

Bloodstream and urinary tract infections are particularly common because Candida is a part of the normal skin flora and can sometimes be found in the genitourinary tract. This makes it easier for Candida to colonize and cause infections, especially in immunocompromised or hospitalized patients.

Out of the 48 patients from whom Candida was isolated in our study, 37 were male and 11 were female. The most frequently isolated Candida species was *C. non-albicans*, accounting for 79.16% of the isolates, followed by *C. albicans* at 20.83%.

IV. CONCLUSION

Accurate identification of Candida species is of paramount importance for the prompt and efficient treatment of infections. This is especially crucial as non-albicans Candida species are being isolated with growing frequency, and their responses to antifungal therapies can vary significantly. [11]

Traditionally, the identification of Candida species could take up to 72 hours or even longer using conventional methods. However, advancements in diagnostic techniques have introduced valuable alternatives such as Chrom agar and the Vitek 2 system. These methods offer a more rapid and efficient means of identifying Candida species, enabling healthcare professionals to make timely decisions regarding appropriate antifungal treatments. By reducing the turnaround time for species identification, these technologies contribute to more effective patient care and better outcomes in the management of Candida infections.

ACKNOWLEDGMENT

The authors acknowledged the Head of, the Microbiology department, Dr. Suman Singh, PSMC Bhaikaka University, Karamsad for providing the research facilities and guidance.

V. REFERENCES

[1]. Rosemary A. Barnes, Early diagnosis of fungal infection in immunocompromised patients, Journal of Antimicrobial Chemotherapy, (2008); 61(1): i3-i6.

[2]. Sood P, Mishra B, Dogra V, Mandal A. Comparison of Vitek yeast biochemical card with conventional method for speciation of Candida. Indian J Pathol Microbiol. (2000). 43(1): 143-5.

[3]. Graf D, Adam T, Zill E, Gobel UB. Evaluation of Vitek 2 system for Rapid Identification of Yeasts

and Yeast-like Organisms. J Clin Microbiol. (2000). 38(5):1782-5.

[4]. Jagdish chander textbook of medical mycology, 3rd addition, Mehta Publishers:(2009):20:266-283.

[5]. Lu JJ, Lee SY, Chiueh TS. In vitro antifungal susceptibility testing of Candida blood isolates and evaluation of the E-test method. J Microbiol Immunol Infect,(2004) ;37:335-42.

[6]. Méan M, Marchetti O, Calandra T. Bench-to-bedside review: Candida infections in the intensive care unit. Crit Care (2008);12:204.

[7]. Saldanha Dominic R.M., Shivanand Dharwad, Candida speciation and anti-fungal susceptibility, Journal of Clinical and Diagnostic Research: (2011).

[8]. Zevita V. Characterisation of yeasts isolated from various clinical sample and their antifungal susceptibility, Rajiv Gandhi University of Health Sciences, Karnataka, Bangalore. (2013):1-58.

[9]. Lata R Patel, Jayshri D Pethani, Palak Bhatia, Sanjay D Rathod, Parul D Shah, Prevalence of candida infection and its antifungal susceptibility pattteren in thertiary care hospital, Ahmedabad. Netional Journal of medica research. (2012):439

[10]. Prakash Gelotar, Kapil M Gandha, Mala Sinha, Candida Urinary Tract Infection (UTI) inPaediatric Population in Jamnagar District Department of Microbiology, M P Shah Medical College. International Journal Of scientific Research (2012):154.

[11]. Lata R Patel, Jayshri D Pethani, Palak Bhatia, Sanjay D Rathod, Parul D Shah, Prevalence of candida infection and its antifungal susceptibility pattteren in thertiary care hospital, Ahmedabad. Netional Journal of medica research. (2012):439.

[12]. Jain N, Mathur P, Misra MC, Behera B, Xess I, Sharma SP. Rapid identification of yeast isolates from clinical specimens in critically Ill trauma ICU patients. J Lab Physicians (2012);4:30-4

[13]. Agarwal S, Manchanda V, Verma N, Bhalla P. Yeast identification in routine clinical microbiology laboratory and its clinical relevance. Indian J Med Microbiol 2011;29:172-7.

Cite this article as :

Jinal Patel, Dr. Sonal Chitroda, "Isolation of Candida in A Different Clinical Specimen in Anand, Gujarat", International Journal of Scientific Research in Science and Technology (IJSRST), Online ISSN : 2395-602X, Print ISSN : 2395-6011, Volume 11 Issue 1, pp. 113-116, January-February 2024. Available at doi : https://doi.org/10.32628/IJSRST2310615

Journal URL : https://ijsrst.com/IJSRST2310615