

# A Study on the Prevalence & Isolation Pattern of Genital Candida Species in Female Patients Attending STD Outpatient Department

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**Abstract:** Introduction: Vulvovaginal Candidiasis is an infection and inflammation of the female external genitalia caused by *Candida* species. *Candida* species are the second most common cause of Vulvovaginitis worldwide. Aim: To study the prevalence and isolation of various *Candida* species in female patients with vaginal discharge. Material and Methods: 200 female symptomatic and asymptomatic patients who attended STD O.P of Institute of Venereology, Chennai from August 2014-July 2015 were selected randomly. A detailed history and thorough pelvic examination was done using Cusco vaginal speculum. Results: Among 200 females, 106 were asymptomatic and 94 were symptomatic. 43% had highest prevalence of VVC. Vaginal discharge was the common complaint. Among 28 symptomatic VVC patients, 78.5% were culture positive and 39.2% were smear positive. With speciation in CHROME Agar *Candida glabrata* was grown in 30 & *C. albicans* in 10 patients. Conclusion: The correct identification of *Candida* species allow an early and appropriate antifungal therapy.

**Keywords:** Vulvovaginal Candidiasis (VVC), Vaginal Discharge, Culture, Microscopy, Prevalence

## 1. Introduction

Vulvovaginal candidiasis is an infection and inflammation of the female external genitalia caused by *Candida* species. *Candida* species are the second most common cause of Vulvovaginitis worldwide. The prevalence of Vulvovaginal candidiasis (VVC) is increasing due to the extensive utilization of broad-spectrum antibiotics as well as increased cases of immunocompromised patients and diabetes. *C. albicans* is the most common and clinically relevant species that accounts for 85–90% of VVC. However, there has been a significant trend towards the emergence of other species such as *C. glabrata*, *C. krusei* and *C. parapsilosis* which show more resistance to the first line antifungal treatments.

## 2. Aim

To study the prevalence & isolation of various *Candida* species in female patients with vaginal discharge.

## 3. Material & Methods

200 female symptomatic and asymptomatic patients who attended the STD Out Patient Department, Institute of Venereology, Madras Medical College, Chennai from August 2014- July 2015 were selected randomly. Patients with complaints of vaginal discharge, vulval itching, lower abdominal pain, dyspareunia were taken as symptomatic patients. The vaginal discharge was collected from the

posterior fornix of the vagina or from vulva using a sterile cotton swab. Two swabs were used one for microscopic examination using Gram's stain and one for culture in Sabouraud's dextrose agar medium.

Study principle used was

Test 1: Culture in Sabouraud's dextrose agar medium.

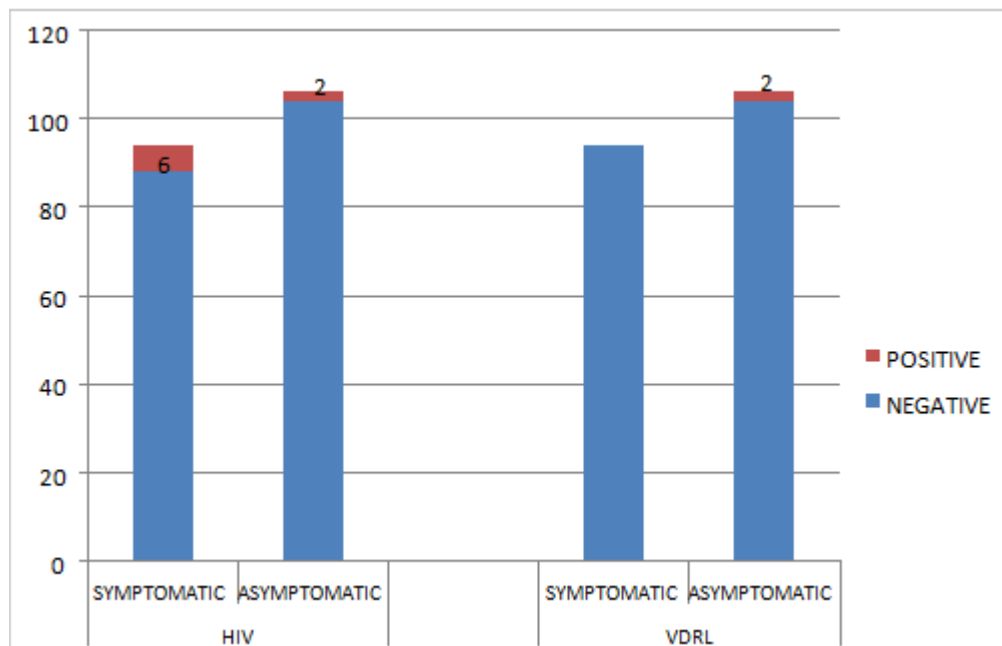
Test 2: Subculture of growth if present in CHROM agar for speciation based on colour.

Test 3: Germ tube test.

## 4. Results

Among 200 female patients, 106 were asymptomatic and 94 were symptomatic. 114 (57%) patients were in the age group of 26 – 40 years. Majority (43%) of the females in the study population had completed high school. Prevalence of VVC was highest in those who had completed high school (13.5%). 192 (96%) were married females and 8 (4%) were unmarried females. 22.67% patients who had undergone puerperal sterilisation had VVC when compared to 19.51% who practised no contraception. Only 5 (17.24%) had VVC among females with known risk factors.

8 (4%) patients tested positive for HIV. Only 2 (1%) patients were VDRL reactive with one Reactive in 1:4 dilutions and other Reactive in 1:1 dilution. Both were TPHA positive. (Fig : 1)

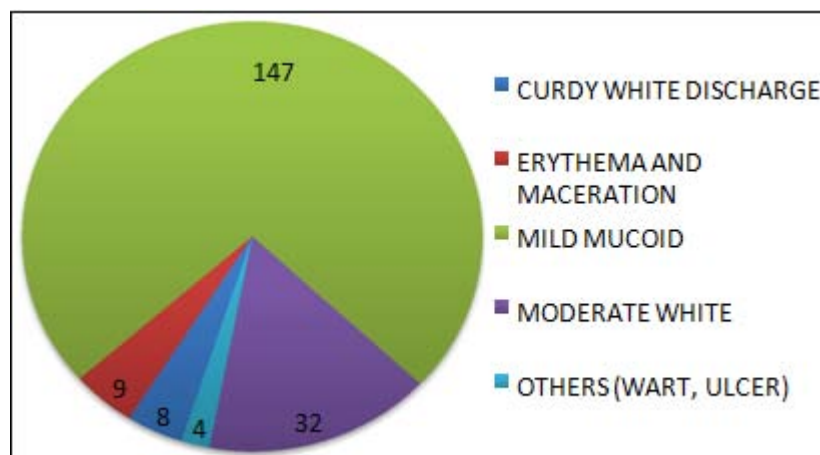


**Figure 1:** Distribution of HIV and VDRL Status among Symptomatic and Asymptomatic Female Patients

The most common complaint among symptomatic patients was vaginal discharge (36.17%). Of the 28 VVC patients in symptomatic group, 43% were patients complained of vaginal discharge, 11% were patients with itching genitalia, 28% were patients with both discharge and itching and 18% were patients with other symptoms like soreness and dyspareunia. Among 28 symptomatic VVC patients, 78.57% were culture positive while only 39.29% were smear positive.

The most common finding on clinical examination of patients was mild mucoid discharge (73.5%).

Among 200 patients, 147 had mild mucoid discharge, 32 with moderate white discharge, 9 had erythema & maceration, 8 with curdy white discharge. (Fig:2)



**Figure 2:** Distribution Based on Clinical Findings

14 (7%) females had pseudohyphae and spores on microscopic examination. 19 (9.5%) patients had clue cells. 25 (12.5%) females had >30 pus cells on microscopic examination. 35.71% (5 out of 14) patients with pseudohyphae and spores on microscopy had growth in culture.

Speciation in CHROM AGAR was done to identify various Candida species. *C. glabrata* was seen in 30 (61.22%) patients. 20.4% culture growth was due to *C. albicans* and 8.16% was due to *C. krusei*. *C. tropicalis* was present in 6.12% of culture growth. 4.08% had mixed infection with either *C. albicans* and *C. krusei* or *C. tropicalis* and *C. krusei*. (Table :1)

**Table 1**

Species	Colour	N = 49	Percentage (%)
<i>C.glabrata</i>	Cream	30	61.22
<i>C.albicans</i>	Green	10	20.4
<i>C.krusei</i>	Pink	4	8.16
<i>C.tropicalis</i>	Blue	3	6.12
<i>C.albicans</i> and <i>C.krusei</i>	Green and Pink	1	2.04
<i>C.tropicalis</i> and <i>C.krusei</i>	Blue and Pink	1	2.04

Germ tube was positive in 18.37% (9 out of 49) isolates. 90% of *C.albicans* showed positive germ tube formation.

## 5. Discussion

Of study population of 200, 114 (57%) patients were in the age group from 26 to 40. Maximum number of VVC cases was in the 36- 40 age group (7.5%). In a study by Paulitsch<sup>1</sup> et al, females in the age group of 21 to 40 years were shown to be more prone for Vulvovaginal Candidiasis.

36.17% had vaginal discharge as their sole complaint. 11.7% complained of itching and 35.11% complained of both discharge and itching. 17.02% had other complaints. In studies conducted by Anderson<sup>[2]</sup> et al and Mycoschaaf<sup>3</sup> et al showed that symptoms and signs cannot differentiate between causes of vaginitis and are limited in their diagnostic power.

Culture for *Candida* in Sabouraud's Dextrose Agar was positive in 49 (24.5%) patients. This is similar to studies conducted by Eckert<sup>4</sup> et al where samples from 774 female patients were cultured with 24% (186) culture positivity and by Hopwood where samples from 277 women were cultured with 24% culture positivity.

Of the total symptomatic females, 22.91% were culture positive and of the asymptomatic females, 25.96% were culture positive. In a study by J.D.Oriel<sup>5</sup> et al 20% of the asymptomatic females were culture positive comparable to our study.

Patients with the classical curdy white discharge associated with VVC were easily detected by both culture and microscopy. This is similar to the study by Zdolsek<sup>6</sup> et al which showed that microscopy and culture was equally sensitive in patients with classical symptoms and signs. A study by Zdolsek<sup>6</sup> had concluded along the same lines saying that microscopy may be the first line diagnostic tool.

Overall prevalence of non albicans *Candida* species is 79.59% in our study. In a study by Srujana<sup>7</sup>, yeasts isolated consisted of *Candida glabrata* (50.4%), *C. albicans* (35.1%), *C. tropicalis* (10.8%), *C. krusei* (2.7%) and *C. parapsilosis* (0.9%). Overall prevalence of non-albicans *Candida* species was 64.8 per cent which is similar to our study.

## 6. Conclusion

In our study the prevalence of Vulvovaginal Candidiasis proven by either culture or microscopy was 29% (58 patients). Risk factors like HIV, diabetes and steroid intake

did not have any effect on the prevalence of VVC. Prevalence of VVC was highest in those who complained of vaginal discharge (35.29%). Patients with vaginal discharge showed maximum culture positivity (83.33%). Maximum culture positivity was seen in patients with curdy white discharge (100%). Maximum smear positivity was seen in patients with erythema and maceration (100%).

*C.glabrata* seen in 30 patients (61.22%) was the most common species isolated followed by *C.albicans* (20.4%). Germ tube was positive in 18.37% (9 out of 49) isolates. 90% of *C.albicans* showed positive germ tube formation.

## References

- [1] Geiger, Ann M, Foxman, Betsy Risk Factors for Vulvovaginal Candidiasis: A Case- Control Study among University Students. J stor Vol. 7, No. 2 (Mar., 1996), pp. 182-187
- [2] Anderson MR, Klink K, Cohrsen A Evaluation of vaginal complaints.AMA [2004, 291(11):1368-1379].
- [3] Veena Manjunath,Vidya GS, Archana Sharma, Mridula Raj Prakash,Murugesh Speciation of *Candida* by Hicrome agar and Sugar assimilation test in both HIV infected and non infected patients. International Journal of Biological & Medical Research 2012; 3(2): 1778-1782
- [4] Divya A. Patel,Brenda Gillespie, Jack D. Sobel, Debbie Leaman, Paul Nyirjesy, M.VelmaWeitz, Betsy Foxman Risk factors for recurrent vulvovaginal candidiasis in women receiving maintenance antifungal therapy: Results of a prospective cohort studyAmerican Journal of Obstetrics and Gynecology Volume 190, Issue 3, March 2004, Pages 644–653.
- [5] J. D. Oriel, Betty M. Partridge, Maire J. Denny, and J. C. Coleman Genital Yeast Infections Br Med J. 1972 Dec 30; 4(5843): 761–764
- [6] Saroj Golia,K.Mallika Reddy, K. Sujatha Karjigand VivekHittinahalli Speciation of *Candida* using chromogenic and cornmeal agar with determination of fluconazole sensitivity Al Ameen J Med Science 2013; 6(2) :163-166 \_ ISSN 0974-1143
- [7] Eckert, Linda; Hawes, S. E; Stevens; Koutsky, L; Eschenbach; Holmes, Vulvovaginal Candidiasis: Clinical Manifestations, Risk Factors, Management Algorithm.JObstetGynec 1998 Nov;92(5):757-6