



FUNGAL PROFILE OF VULVOVAGINAL CANDIDIASIS IN A TERTIARY CARE HOSPITAL.

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ABSTRACT Vulvovaginal candidiasis(VVC) is a common gynaecological finding among the women worldwide. The commonest causative organism is *Candida albicans* which is a fungi. But nowadays it can even be caused by *Candida non-albicans* species signifying the changes in fungal profile. Sabouraud's Dextrose Agar(SDA) is the most common culture medium used. Chromogenic culture medium is used for speciation. To know the fungal profile of vulvovaginal candidiasis using *Candida* CHROM agar in our tertiary care hospital. High Vaginal Swabs of clinically suspected vulvovaginitis were collected and sent to the Microbiology department in Saveetha Medical College and Hospitals. *Candida* identification was done according to the standard method. Speciation was done by CHROM agar. There were 27 culture confirmed (25.7%) cases out of 105 suspected cases of VVC. *Candida glabrata*(37.0%) was the most common species isolated, followed by *Candida tropicalis*(33.3%) and then *Candida albicans*(29.6%). From this study, *Candida non-albicans* species were found to be the commonest species isolated.

KEYWORDS : *Candida* CHROMagar, fungal infection, *Candida non-albicans*

INTRODUCTION:

Vulvovaginal candidiasis (VVC) is an infection of the genital mucosa caused by different species of the genus *Candida*^[1]. It is a common gynaecological finding among the women worldwide^[2]. VVC occurs in about 75% of all women during reproductive age, and around half of those will have at least the recurrent episode. It is clinically characterized by curd like discharge, itching, burning, cracking, erythema, vulvar oedema, leucorrhoea^[3] and several hosts related and behavioural risk factors have been proposed as predisposing factors for VVC. Host related factors include pregnancy, hormone replacement, uncontrolled diabetes, immunosuppression, antibiotics, glucocorticoids use and genetic predispositions. Behavioural risk factors include use of oral contraceptives, intrauterine device, spermicides, condoms and some habits of hygiene, clothing and sexual practices. Although the majority of vulvovaginal candidiasis cases are caused by *Candida albicans* (*C. albicans*), *Candida non-albicans* like *C. glabrata*, *C. tropicalis*, *C. parapsilosis* are emerging as important and potentially resistant opportunistic agents of VVC. The distribution of *Candida* species in VVC cases varies widely depending on the geographical locations as well as the population studied. During lifetime, about 75% of women may experience at least one episode of vulvovaginal candidiasis, and second episode may experience by 40-45% of initially infected women^[4]. Recurrent vulvovaginal candidiasis (RVVC) is defined as four or more episodes of symptomatic within a year^[5]. It has been observed that less than 5% of women with vulvovaginal candidiasis may develop RVVC.

The aim of the study is to know the fungal profile of vulvovaginal candidiasis using *Candida* CHROMagar in our geographical location.

MATERIALS AND METHODS:

A total of 105 clinically suspected cases of vulvovaginal candidiasis presented at department of obstetrics and gynaecology from Jan 2019 to April 2019 in our tertiary care hospital. The patients were from 20-64 years of age with mean age of 36(±9) years. Culture confirmed cases of vulvovaginal candidiasis were included in the study which was approved by the Institute Ethics Committee (IEC). The collection of clinical specimens into fungal structures were done after gynaecological inspection. A sterilized swab with a long stem was used which was introduced directly into the vaginal canal, in the vaginal fornix and endocervical region, gently rolled and was sent for further processing in the laboratory. Growth was confirmed as yeast by doing Gram's stain. *Candida* species were identified by germ tube test. Speciation was done by CHROM agar and based on colonial colour

and morphology they were differentiated [Table/fig-2]. These special media yield microbial colonies with varying pigmentation secondary substrates that react with enzymes secreted by microorganisms.

RESULT:

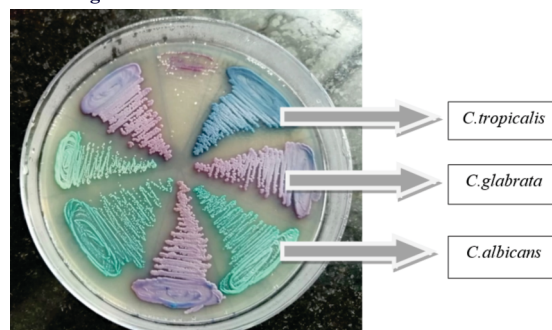
During the study period, nearly 105 clinically suspected cases of vulvovaginal candidiasis were presented. Among 105 suspected cases, 27 cases were confirmed clinically. They yielded positive yeast on culture which accounts for 25.7%. Culture confirmed cases of VVC were from age group of 20-55 years. Direct microscopic examination of High Vaginal Swabs (HVS) revealed budding yeast cells in only 4(14.8%) cases. A colony count of $\geq 10^5$ colonies/ml were observed in 11 HVS (40%), whereas a colony count between 10^4 - 10^5 colonies/ml was observed in 11 HVS (40%) and 5 swabs (20%) showed a colony count between 10^2 - 10^4 colonies/ml.

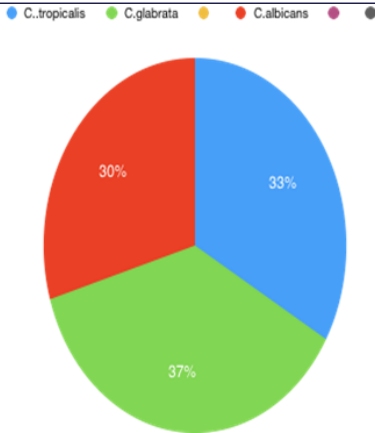
Among the confirmed cases, *Candida glabrata* was found to be the most common isolate and was observed in 10 cases (37.0%), followed by *Candida tropicalis* in 9 cases (33.3%), 8 cases of *Candida albicans* (29.6%) [Table/fig-1] [Table/fig-3]. All confirmed cases of *Candida albicans* were germ tube test positive.

[Table/fig-1]: Isolates found and its prevalence in this study.

| ISOLATES | PREVALENCE |
|---------------------------|------------|
| <i>Candida glabrata</i> | 37.0% |
| <i>Candida tropicalis</i> | 33.3% |
| <i>Candida albicans</i> | 29.6% |

[Table/fig-2]: Morphology and colour of yeast on *Candida* CHROMagar.





[Table/fig-3]:Percentage of candida species isolated in the culture plates.

DISCUSSION:

Vulvovaginal candidiasis is a common gynaecological finding among the women worldwide. During our study period, nearly 105 clinically suspected cases were presented. Among which 27 participants (25.7%) yielded positive yeasts. Most of the participants (nearly 45%) were from age group of 20-32 years which is similar to other studies^[6,7]. No risk factors were recorded in any of the confirmed cases of vulvovaginal candidiasis. Risk factors would have shown if the patients were sent for tests such as screening for blood sugar level with proper history.

Direct microscopic examinations revealed budding yeast cells only in 4(14.8%) cases. This emphasizes the fact that culture is more sensitive than microscopy. Majority of high vaginal swabs-22(81%) revealed pus cells that is ≤ 5 pus cells/HPF. There were neither pus cells nor yeast cells in 1 case. Therefore, this indicates that vulvovaginal candidiasis is not associated with the presence of original pus cells either. 11 high vaginal swabs (40%) gave a colony count $\geq 10^5$ colonies/ml. This helps in differentiating between causative pathogen and colonizers.

Just like other studies^[8,9,10,11], even in this study there is only one causative agent of vulvovaginal candidiasis. There was no mixed infection. *Candida non-albicans* species (70.3%) were isolated more than the *Candida albicans* (29.6%) in the study. Among the *Candida non-albicans* species, *C. glabrata* (37.0%) was the most common species isolated in 10 participants followed by *C. tropicalis* (33.3%) in 9 participants. Similar to my study, various studies^[9,4,12] on fungal profile of vulvovaginal candidiasis observed *C. glabrata* as the most common species, a study from AIIMS, New Delhi, India by Mohanty S et al and Ray et al observed 50.4% and 61.9% vulvovaginal candidiasis by *C. glabrata* respectively. A study from Vijaya D et al., observed 26.4% *C. tropicalis*^[8] which is indicative of my study as it observes *Candida non-albicans* species to be the commonest cause of vulvovaginal candidiasis.

CONCLUSION:

This study in a tertiary care centre reveals that *Candida non-albicans* to be the commonest isolates and recommends laboratory-based diagnosis to identify the species and treat it accordingly. Therefore, speciation is helpful in the treatment of vulvovaginal candidiasis.

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