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CLINICO- MYCOLOGICAL PROFILE OF CANDIDIASIS IN LEUCORRHOEA CASES

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Abstract: Candida is the most common agent causing leucorrhoea affecting women of all strata. The majority of the cases are caused by *Candida albicans*; however, episodes due to non-albicans species of Candida appear to be increasing. Most non-albicans Candida species are resistant to commonly used antifungal agents and infections they cause are often difficult to treat. Therefore studying the incidence of Candida species in leucorrhoea is of great significance. **AIM:** To study the incidence of Candidiasis in patients with leucorrhoea and identification of different species of Candida found in leucorrhoea. **MATERIALS AND METHODS:** The study was carried out prospectively in S.V Medical College over a period of one year. A total of 200 vaginal swabs were collected from sexually active women between the age group of 20-40 years with leucorrhoea and subjected to microscopy and fungal culture on Sabourauds dextrose agar. Speciation was done by Germ tube formation, Sugar assimilation and Sugar fermentation test. **RESULTS:** Among 119 positive cultures, *Candida albicans* was the predominant species (n=57, 48%). The following non-albicans species were isolated – *Candida tropicalis* (26%), *Candida glabrata* (22%), *Candida parapsilosis* (1-7%), *Candida kefyr* (1-7 %) and *Candida krusei* (0-8%). Culture positivity was significantly related to the increase in parity, use of oral contraceptives, intrauterine contraceptive devices, antibiotics and diabetes mellitus. **CONCLUSION:** The frequency with which non-albicans Candida species were isolated, emphasizes the need for species identification and necessitates vigilance since this may warrant a change in the optimal therapy of non-albicans Candida vaginitis.

Keywords: Vulvovaginal candidiasis, leucorrhoea, Candida species, non albicans Candida species.



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INTRODUCTION

Candidial vulvovaginitis is a common female infection, primarily during the fecund period. It is the most frequent vaginal infection, depending on geographical area¹. An estimated 75% of women experience at least one episode of vulvovaginal candidiasis during their lifetimes, with some experiencing two or more episodes². Prevalence increases in particular groups such as pregnant women, diabetic women, those using oral contraceptive pills or after prolonged antibiotic therapy. Vulvovaginitis is characterized by the presence of curdy vaginal discharge, soreness, vulval burning, dysuria, local pruritis and erythema.

Candidial vulvovaginitis is frequently associated with recurrence. Chronic, recurrent infections and their refractoriness to the treatment poses a medical problem³. The majority of the cases of vulvovaginal candidiasis are caused by *Candida albicans*; however, episodes due to non-albicans species of *Candida* appear to be increasing and infections they cause are often difficult to treat. This phenomenon emphasizes the importance of identification, surveillance and antifungal susceptibility of the *Candida* species in the clinical settings⁴.

MATERIALS AND METHODS

A total of 200 married sexually active non-pregnant women having symptoms of leucorrhoea between the age group of 20-40 years attending outpatient clinic of Government Maternity hospital, Tirupati were included in the study. Two sterile cotton swabs were collected from vagina after the insertion of speculum to separate the vaginal walls. They were then properly labelled and transported to the laboratory. One swab was subjected to direct smear examination and the other was inoculated on Sabouraud's dextrose agar and incubated at 25° c and 37 ° c. *Candida* species were identified by colony morphology, Gram staining, germ tube test⁵, characteristic morphology on corn meal agar⁶, urease test, carbohydrate fermentation⁵ and carbohydrate assimilation tests^{6,7}.

RESULTS

The study was conducted on 200 female patients who presented with leucorrhoea. Out of 200 females 119 were positive for candidiasis accounting to a prevalence of 59.5%. All the 119 positive isolates of *Candida* species were speciated.

Age wise distribution showed 63 % of prevalence of vaginal candidiasis in the age group of 26-30 years and 62% in the age group of 31-35 years (Table -1).

Table I: Prevalence of Candida according to the age.

Age in years	n (%)	Culture positive (%)
20 – 25	66 (33)	39 (59)
26 – 30	73 (36.5)	46 (63)
31 – 35	40 (20)	25 (62)
36 – 40	21 (10.5)	9 (43)
TOTAL	200	119

Infection rate was high (74%) among illiterate women.

Culture positivity was significantly related to the increase in parity, use of oral contraceptives, intrauterine contraceptive devices and antibiotics (Table-2).

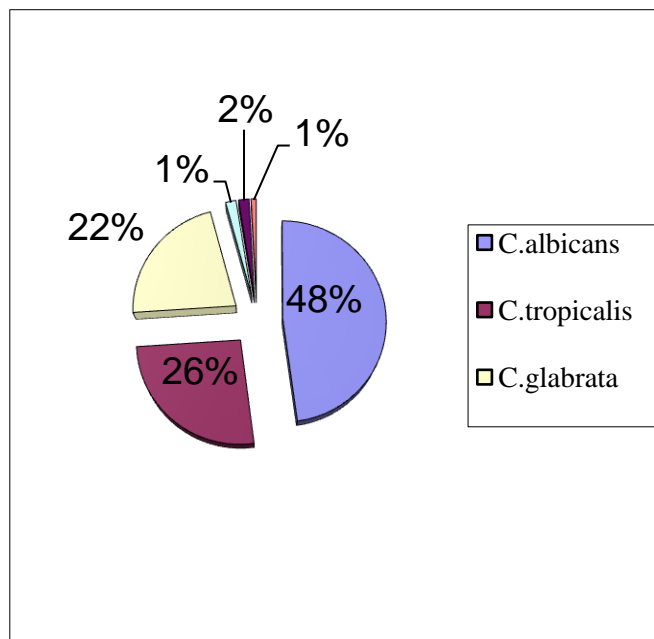
Table 2: Predisposing factors for candidiasis

Factors	No of isolates (n)	% of isolates	
Parity	One	40	67
	Two	83	61
OCP	29	65.5	
IUD	15	60	
Antibiotics	57	46	

90% of the women with positive Candida culture had vaginal discharge with or without pain abdomen, pruritis and vaginal erythema.

In the present study six species of Candida were characterized. Candida albicans was the predominant species (48%). The following non-albicans species were isolated – *Candida tropicalis* (26%), *Candida glabrata* (22%), *Candida parapsilosis* (1.7%), *Candida kefyr* (1.7 %) and *Candida krusei* (0.8%). The overall isolation of non- albicans species was 52% (Figure -1).

Figure I: Species distribution of Candida.



DISCUSSION

Candida may be either a commensal or a pathogen of the vagina, a fact which indicates, that changes in the vaginal microenvironment are generally necessary for Candida to induce pathological changes associated with clinical symptoms.

Vulvovaginal candidiasis is a common problem in women and may affect their physical and emotional health, and may cause marital disharmony. At least 70 – 75% of the women will develop one or more infections during their lifetime with 5-8% of these individuals developing recurrent infections. Vulvovaginal candidiasis is the commonest cause of vaginal discharge, soreness, vulval burning, dysuria and local pruritis in women⁸.

The peak age for vaginal candidiasis in this study was between 26-30 years (63%), followed by 31-35 years (62%) (Table -1), similar findings were reported by Barun Mathema et al⁹, Jackson et al¹⁰ and Deoki Nandan et al¹¹ where in the age group commonly effected by vaginal candidiasis was between 26-35 years which corresponds to the fertility period.

Infection rate was high (74%) among the illiterate women, such an observation was also made by N. Jindal et al¹², Leela Vyas et al¹³ and S C Panda et al¹⁴ which could be explained by their ignorance about the disease, substandard hygiene, low socioeconomic status, promiscuity and traditional taboos against openness.

Study of various putative factors responsible for vaginal candidiasis showed that the prevalence of Candida was significantly related to the increase in parity, OCP usage, IUCD insertion and

prolonged usage of antibiotics. In the current study the prevalence was high among para one (67%) and para two (61%) women when compared to the nulliparous women (52%) (Table -2) as also observed by N. Jindal et al¹². High levels of reproductive hormones present during this phase and age, provides an excellent carbon source for the growth of *Candida* organisms by providing higher glycogen content in the vaginal tissue, hence there is increased incidence of vaginal candidiasis.

Joharah M et al¹⁵ observed that OCPs led to increased colonization by *Candida*, the infection rate was 53.5% among the pill users, the commonest isolate being *Candida albicans* (38%). Similar findings were also reported by AA Omar¹⁶. In the present study the infection rate among pill users was 65% (Table -2), *Candida albicans* being the commonest isolate. This might be because of similarity between the mechanism operating during pregnancy and high estrogen OCP. The increased carriage is thought to result from the effects of hormones on epithelial cell adherence or from the glycogen and substrates available to the microorganisms as well as the direct effect of OCP on the yeast virulence.

Intrauterine contraceptive devices (IUD) are commonly associated with an endogenous infection. In the present study the infection rate was 60% among the IUD users (Table -2). This parallels with the study conducted by A.A Omar et al¹⁶ and Leela Vyas et al¹³. Significant influence of the use of antibiotics in increasing the incidence of vulvovaginal candidiasis was observed in the present study. Jindal Neeraja et al¹⁷ found a prevalence of 43% among antibiotic users. In the present study the prevalence of candidiasis was 46% (Table -2). Antibiotics suppress the bacterial flora, which allows the colonization by *Candida* species, however the risk of yeast infection increases with the duration of treatment.

Of the various symptoms a triad of vaginal discharge, pain abdomen and pruritis was present significantly in more women who were culture positive. The burning sensation of vulval epithelium is caused by the yeast metabolites. It has been noted worldwide from various authors that the incidence of vaginal candidiasis varies from 17% to 73%. In the present study vaginal swabs were collected from 200 symptomatic women with complaints suggestive of vaginal candidiasis of which 119 were culture positive accounting to a prevalence of 59%.

119 culture positive cases, were subjected to further tests for the characterization of the species which revealed that *Candida albicans* was the most frequent etiological agent which accounted for 48% of the isolates (Figure -1), similar findings have been reported by Verghese S et al¹⁸ where in *Candida albicans* was isolated from 40.4% of the cases, Jindal Neeraja et al¹⁷ (69%) and Srujana Mohanty et al⁴ (35%).

However in the present study a concomitant increase in the prevalence of non albicans species was observed accounting to 52%. *Candida tropicalis* being the commonest type (26%), followed

by *Candida glabrata* (22%), *Candida parapsilosis* (1.7%) and *Candida kefyr* (1.7%). *Candida krusei* was the least common type (0.8%) (Figure -1). Similar observations have been made by Jackson et al¹⁰ and Somansu Basu et al¹⁹. Vulvovaginitis caused by non albicans *Candida* species is clinically indistinguishable from that caused by *Candida albicans*. These non albicans yeasts are relatively non pathogenic but ultimately get selected and start appearing more frequently because of the widespread abuse of over the counter antifungals, use of single dose oral or topical azole regimens and long term maintenance regimens of oral azoles. *Candida albicans* eradication by these means causes a selection of non albicans that are resistant to commonly used drugs. Therefore for the effective control of candidiasis vaginal culture is valuable in identifying the species of *Candida* and to monitor the changing trends in the microbiology of vulvovaginal candidiasis which is essential for the complete and prolonged treatment of the patients of vulvovaginal candidiasis.

CONCLUSIONS

Vulvovaginal candidiasis cannot be definitely identified by clinical criteria alone. It requires culture for *Candida* species and its correlation with vulvovaginal symptoms. Culture is valuable not only for the accurate diagnosis of vulvovaginal candidiasis but also to avoid indiscriminate use of antifungal agents, which may ultimately decrease the incidence of vulvovaginal candidiasis caused by resistant non albicans *Candida* species.

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