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Original Research Article

## A study to identify the prevalence of vulvovaginal candidiasis in second trimester

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### ABSTRACT

**Background:** Vaginal candidial infections are due to excessive growth of *Candida*. These are normally present in the vagina in small numbers. Vaginal infections are typically caused by the yeast species *Candida albicans*. It is found that candidial infection increases the risk of preterm labour. Aims and objectives of the study were to determine the prevalence of vulvovaginal candidiasis and influence of maternal age, parity and weeks of 2nd trimester on its occurrence among pregnant women in 2<sup>nd</sup> trimester, attending the antenatal clinic in our hospital.

**Methods:** A prospective study conducted in BMCRI for a period of 3 months (October 2019-December 2019) on patients in second trimester. Consent of patients taken. High vaginal swabs were collected from the pregnant patients in second trimester and sent for culture. *Candida* positive cases were noted and results were analysed.

**Results:** A total of 100 high vaginal swabs were collected and reported in our study. Among them 54 swabs were positive for *Candida* growth (54%) and 46 swabs were negative for growth (46%). Culture positive patients' clinical details were analysed and tabulated.

**Conclusions:** Our study concluded that candidiasis is more prevalent in pregnant women but there was no statistical significance in occurrence of vaginal candidiasis among various age groups, parity or trimester. Hence it is better to screen all the patients in I early II trimester in order to find out and treat positive cases early to prevent preterm births attributed to vaginal candidiasis.

**Keywords:** Preterm birth, Pregnancy, Vulvovaginal candidiasis, *Candida albicans*, Candidial infection

### INTRODUCTION

*Candida* is the leading cause of vaginitis, and 75% of women have at least one episode in their lifetimes.<sup>1,2</sup> Pregnancy is a predisposing factor for vulvovaginal candidiasis.<sup>3-5</sup> During pregnancy, there is an increase in progesterone and oestrogen levels, especially in the last trimester.<sup>6-8</sup> Progesterone has an inhibitory effect on the anti-*Candida* activity of neutrophils.<sup>6</sup> On the other hand, oestrogen reduces the ability of vaginal epithelial cells to inhibit the growth of *Candida albicans* on them.<sup>9</sup> However, about 75% of women generally harbour this fungus without it causing harm to them.<sup>10-12</sup> During normal pregnancy, candidiasis is frequently encountered without significant risk for the foetus. Nevertheless, pregnancy

may be negatively affected by vulvovaginal candidiasis. If untreated, vaginal candidiasis can lead to chorioamnionitis with subsequent abortion and prematurity in pregnant women, congenital infection of the neonate and pelvic inflammatory disease (PID) resulting in infertility in non-pregnant women.<sup>12</sup> Vulvovaginal candidiasis could be a risk factor for candidemia in preterm neonates during normal pregnancy. Amongst *Candida* species isolated from vaginal specimens, *C. albicans* is the most predominant, followed by other non-*albicans* *Candida* (NAC) such as *C. glabrata*, *C. tropicalis*, *C. dubliniensis* and *C. krusei*.<sup>13-15</sup> There is an emerging evidence that eradication of *Candida* during pregnancy may decrease the risk of preterm births and late miscarriages. If preterm births are reduced significantly, it

will be reflected in reduction of the need of the neonatal facilities, hospitalization and prolonged care for preterm babies. In addition, it also reduces the financial burden for the patients and health sectors.

### Aims and objectives

Aims and objectives of the study were to determine the prevalence of vulvovaginal candidiasis and influence of maternal age, parity and weeks of 2<sup>nd</sup> trimester on its occurrence among pregnant women in 2<sup>nd</sup> trimester, attending the antenatal clinic in our hospital.

## METHODS

A prospective study conducted in BMCRI over a period of 3 months from the October 2019 to December 2019. The study population was selected from the patients who were attending the antenatal outpatient department after getting the detailed informed consent. patients in second trimester were included. A detailed clinical history was taken from the patients; age, parity, presence or absence of symptoms (vaginal discharge, itching or burning) and risk factors (diabetes, use of antibiotics in the past, previous history of candidiasis and history of immunosuppression) associated with vaginal candidiasis were recorded. Under sterile precautions high vaginal swabs were taken, placed immediately in the case, labelled and sent to department of microbiology for growth. In Candida positive cultures, *Candida albicans* or nonalbicans were differentiated and recorded. Growth results were recorded with patient details. The results were statistically analysed and tabulated.

### Inclusion criteria

Patients in second trimester, patients consenting to the study, patients with or without symptoms of candidiasis were included in the study.

### Exclusion criteria

Patients not consenting to the study and patients in first or third trimester were excluded from the study.

## RESULTS

### Age distribution

Majority of patients were in age group between 26-30 years. Least belonged to group >35 years. 42 patients were of group 20-25 years. 31-35 years group had 12 patients.

**Table 1: Age distribution.**

Age (years)	No. of patients
20-25	42
26-30	44
31-35	12
>35	2

### Parity

Gravida 2 was the most common parity on our study. Next common group was primi. Lowest was G3 and G4.

**Table 2: Parity.**

Parity	No. of patients
Primi	23
G2	55
G3	16
G4 and above	6

### Socio economic status

Most of our study patients belonged to middle class. Lower class were 13. Very few patients were from the upper class.

**Table 3: Socio economic status.**

Socio economic status	No. of patients
Upper	18
Middle	69
Lower	13

### Period of gestation

Most of our patients in the study were in the 18+1-22 weeks (40%), next common group was 22+1-28 weeks (36%). 24% was contributed by 14+1-18 weeks.

**Table 4: Period of gestation.**

Period of gestation (Weeks)	No. of patients
14+1-18	24
18+1- 22	40
22+1-28	36

### Number of patients with symptoms

Most of our patients were asymptomatic 77%.

**Table 5: Number of patients with symptoms.**

Variables	No. of patients
Symptom's present	23
Symptom's absent	77

### Common symptoms

Itching and curdy white discharge was the most common symptoms. Foul smell and burning sensation were the other few symptoms.

### Culture results

Majority of the cultures were positive for candidial growth

**Table 6: Common symptoms.**

Common symptoms	No. of patients
Itching	8
Curdy white discharge	7
Burning sensation	5
Foul smell	3

**Table 7: Culture results.**

Total no. of patients	Culture result
54	Positive
46	Negative

***Distribution of vaginal candidiasis among different age groups***

In our study, the highest number of positive cases were found to be in 26-30 years of age group (51%) followed by 20-25 years (24%). 31-35 years and >35 years were almost the same (11%).

**Table 8: Distribution of vaginal candidiasis among different age groups.**

Age (years)	No. of patients
20-25	13
26-30	28
31-35	6
>35	7

***Distribution of vaginal candidiasis in relation to parity***

Primi and G2 were almost the same in distribution (38.8%). G3 had (10%) of distribution.

**Table 9: Distribution of vaginal candidiasis in relation to parity.**

Parity	No. of patients
Primi	20
G2	21
G3	12
G4 and above	1

***Distribution of vaginal candidiasis in second trimester***

The 22+1-28 weeks had most distribution of cases (68%).

**Table 10: Distribution of vaginal candidiasis in second trimester.**

Distribution of cases (Weeks)	No. of patients
14+1-18	8
18+1-22	9
22+1-28	37

**DISCUSSION**

Pregnant women have 2-fold increases in prevalence of vaginal candidiasis when compared to nonpregnant women.<sup>16</sup>

Vulvovaginal candidiasis is an important cause of morbidity in pregnancy which can result in miscarriages, Candida chorioamnionitis, subsequent preterm delivery and emotional stress.<sup>17,18</sup>

In our study, the highest number of positive cases were found to be in 26-30 years of age group (51%) followed by 20-25 years (24%). 31-35 years and >35 years were almost the same (11%).

In relation to parity, primi and G2 were almost the same in distribution (38.8%). G3 had (10%) of distribution. In relation to 2<sup>nd</sup> trimester, in our study, the highest number of positive cases were found to be in 26-30 years of age group (51%) followed by 20-25 years (24%). 31-35 years and >35 years were almost the same (11%). 22+1-28 weeks had the most distribution of cases (68%).

23% of Candida positive women were symptomatic and the remaining 77% were asymptomatic.

As preterm labour is a result of chronic inflammatory process, it is better to screen all patients in early/mid II trimester to pick up the cases early to initiate the treatment. The safety of any proposed intervention in pregnancy is of great importance. Clotrimazole is classified as category A drug, which has been used by large number of pregnant women without any proven increase in the frequency of malformation or harmful effects on the fetus.<sup>19,20</sup>

Local application of clotrimazole vaginal pessaries or cream is generally well tolerated, can be used for 6 days which is supported by the Cochrane systematic review of treatment for Candida eradication in pregnancy and was the regimen used in the kiss trial.<sup>21</sup> As there is a high prevalence of vaginal candidiasis in pregnancy and its associated complications, it is better to screen all pregnant women and treat the positive patients.

**CONCLUSION**

Early detection and diagnosis may improve the clinical condition of the pregnant women and reduces the number of preterm term births significantly. If preterm births are reduced significantly, it will be reflected in reduction of the need of the neonatal facilities, hospitalisation and prolonged care for preterm babies. In addition, it also reduces financial burden for patients and health sectors.

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