VULVOVAGINAL CANDIDIASIS IN PREGNANCY –
A COMPARATIVE STUDY

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ABSTRACT
Vulvivaginitis is one of the major problems encountered in obstetrics and gynaecological practice. Vulvovaginal candidiasis is an infection of the Vulva and Vagina caused by yeast like grow positive fungi of candida species. The present study reveals the prevalence of vulvovaginal candidiasis in pregnant women and also confirms the symptomology of the affected patient. Pre-disposing factors, associated pathology and comparison of the laboratory test has also been discussed. The study shows that the prevalence of vulvovaginal candidiasis in pregnancy is found to be 22% and also it reveals, KOH smear provides a screening test for candidiasis.

Keywords: Pregnancy, Vulvovaginal Candidiasis, Symptomatology, KOH

INTRODUCTION
Amonkar (1961) reported the increased incidence of vaginal candidiasis during pregnancy and different cases are discussed. Amitava et al., (1993) done antenatal screening of STD’s found that prevalence of Trichomonas vaginalis infection was 9.2% candida 19.2%, H.vaginalis 16% , Chlamydia 1.2%, Gronococus 0%, AIDS 0%, syphilli 3.2%, leucorrhoea is the common symptoms of the Candida, trichomonas vaginalis and H.vaginalis. Amitava et al., (1993) has done a comparative study of laboratory investigation in trichomonosis and candidiasis in 500 patients. The prevalence of trichomonosis infection of candida by culture 78%, KOH smear 59%. Trichomonas was diagnosed by wet mount 61.02% and culture 84.74% showed that in both cases (infection) culture was the best method of diagnosis. Ameet et al., (1995), studied management of Vulvovaginal candidiasis in pregnant and non-pregnant women with symptoms and determine the prevalence of candidiasis in pregnant women is 46% and non-pregnant is 18% and laboratory test efficacy in detecting candidal infection was 6% in hanging drop, 75% in KOH smear and 100% in culture and 28% in pap smear and stated that clotrimazole in pregnant women and fluconazole in non-pregnant women are effective therapeutic tools in the treatment of vulvo-vaginal candidiasis. Mary et al., (1998) studied epidemiology and outcomes associated with moderate to heavy candida colonization during pregnancy and found that moderate to heavy candida colonization at midgestation was 10% (Candida colonization was positively associated with trichomonas vaginalis) and results suggest that candida colonization is not associated with low birth weight or preterm delivery. Wise et al., (1999) studied the fungal infections of the genitourinary system, showed that, there is an increasing pool of immune compromised patients who are ate an increased risk to fungal infections, which now cause 8% of nosocomial infections. Premature infants and elderly and HIV patients are prime candidates for invasive fungal infections. The genitourinary system can be a source or target of disseminated fungal infection. Although cnadidal species are the most frequent pathogen. Blankhart et al., (1999) conducted study of sexually transmitted infections inyoung pregnant women. The results are 46.6% candidiasis, 3.1% gonorrhoea, 9.9% T.vaginalis 12.2% HIV-I. Fonck et al., (2000) studied the validity of the vaginal discharge algorithm among pregnant and non-pregnant women. In pregnant women the overall prevalence rates were 50% candidiasis, 23% trichomoniais, 9% bacterial vaginosis, 7% gonorrhea, 9% Chlamydia, 7% sypillis and 22% HIV. Benson et al., (1987) studied the mycotic cultures of 33 couples, in which the women had a diagnosis of chronic recurrent vulvovaginitis, were prepared from the oral cavity, the rectum, the vagina and the male ejaculate. Reservoirs of infection were found in the oral cavity of 36% of the couples, the rectum in 33% and the ejacular in 15% prostatic instances, the same organisms were
found. Betsy (1990) studied the effects of personal hygiene, sexual history, diet and stress on the risk of vulvovaginal candidiasis and found that frequent sexual intercourse was a strongest risk factor (7 times or more for week). Frequent orogenital contact appears to increase the risk of vulvovaginal candidiasis. Jack (1987) suggest that women using the sponge are protected (partially) against the two most common sexually transmitted pathogens, but they may have an increase likelihood of a vaginal infection with candida.

**MATERIALS AND METHODS**

In the present study, the specimen comprises 100 vaginal swabs collected from pregnant women attending the antenatal out-patient. Department of Government General Hospital, Gulbarga, Sangameshwar Teaching & General Hospital, Gulbarga and Basaveshwar Teaching and General Hospital, Gulbarga.

**Inclusion Criteria**

All the pregnant women who complaints of white discharge, pruritis vulvae, dysuria and dyspareunia.

**Exclusion Criteria**

All the pregnant women not complaining of white discharge, pruritis vulvae, dysuria, and dyspareunia.

All the non pregnant women complaining of white discharge, pruritis vulvae, dysuria, and dyspareunia.

The name, age and relevant clinical history of each pregnant women under investigation were carefully recorded and analyzed in detail to determine the prevalence of vaginal candidiasis.

**Specimen Collection**

The patients were placed in a lithotomy position, the introitus was cleaned with sterile water and a sterile sims speculum was inserted into the vagina, and retract the posterior vaginal wall. Retract the anterior vaginal wall with anterior vaginal wall retractor. After retracting the anterior and posterior vaginal wall, the discharge was collected from the upper 3rd of the posterior vagina, with the help of two sterile cotton swabs for each patient. The swabs were transported immediately to the laboratory and processed further.

**Direct Examination**

One swab was used to study the wet mount preparation and KOH smear examination.

**Wet Mount**

On a clear glass slide one or two drops of normal saline was placed, the swan was emulsified in the normal saline. A cover slip was placed over the emulsion and was examined under the microscope immediately for the presence of trichomonas vaginalis, candida budding celis.

**KOH Smear**

The same swab was used for preparing a smear on a clean glass slide and adds one or two drops of 10% KOH solution. A cover slip was placed over the smear and was examined under the microscope for the presence of branching hypha with budding cells or only budding cells.

Note: KOH dissolves the cellular debris.

**Culture**

The 2nd swab of each specimen was incubated on a sabouraud’s medium. The plate was incubated at 37°C for 24-48 hours. Growth of candida was identified by their smooth, creamy coloured colonies.

The Investigations which are made are Hb%, Blood grouping / Rh typing, VDRL / RBS, HIV / HbsAg, Urine, Albumin, Sugar, Microscopy, C/S, USG Abdomen.

**RESULTS AND DISCUSSION**

Symptomatic pregnant women are screened for vulvovaginal candidiasis and the prevalence of vulvovaginal candidiasis is found to be 22%.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amitava <em>et al.</em>, (1993)</td>
<td>19.2%</td>
</tr>
<tr>
<td>Ameet <em>et al.</em>, (1995)</td>
<td>46.0%</td>
</tr>
<tr>
<td>Present Study</td>
<td>22.0%</td>
</tr>
</tbody>
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The prevalence of vulvovaginal Candidiasis varies widely. This wide variation in the prevalence of candida infection may be due to random selection of cases, poor hygiene and social class of the patients. The prevalence rate of vulvovaginal candidiasis during pregnancy (in Symptomatic) was found to be 19.2% in a study conducted by Amitava et al., while in the present study the prevalence is 22% which is evident from the table 1.

Table 2: Comparative study of symptomatology of vulvovaginal candidiasis

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Leucorrhoea</td>
<td>100.00%</td>
<td>100.00%</td>
<td>78.0%</td>
<td></td>
</tr>
<tr>
<td>Pruritis Vulvae</td>
<td>72.70%</td>
<td>91.30%</td>
<td>31.0%</td>
<td></td>
</tr>
<tr>
<td>Dysuria</td>
<td>36.36%</td>
<td>39.50%</td>
<td>20.0%</td>
<td></td>
</tr>
<tr>
<td>Vulval Erythema</td>
<td>13.63%</td>
<td>28.20%</td>
<td>28.0%</td>
<td></td>
</tr>
<tr>
<td>Dyspareunia</td>
<td>--</td>
<td>--</td>
<td>4.0%</td>
<td></td>
</tr>
</tbody>
</table>

Symptomatic analysis reveals leucorrhoea is 100% in the present study and in the study by Ameet et al., while it was 78% in a study by Amonkar (1961). The pruritis vulvae were reported in 72.7% in the present study. While it was 91.3% in Ameet et al., study and 31% in the study conducted by Amonkar. Complaints of dysuria was 36.36% of pregnant women in present study, while it was 69.5%, in study conducted by Ammet et al., and 20% in the study by Amonkar (1961), as shown in table 2. Vulval erythema was found to be 13.63% in the present study, while it was 28.2% and 28% in study conducted by Ameet et al., and Amonkar respectively. Dyspareunia was 0% in present study and in Ameel et al., but it is 4% in study by Amonkar. Higher prevalence of the Vulvo-vaginal candidiasis seen in the low-social class with 33.33%, it may due to poor hygienic habits and anemia. Uncleaness and unhygienic habits count a major role in candida infection. A definite correction has also established between age and the incidence of vaginal candidiasis. In the present study maximum affected age group was 20-30 years with 23.33%.

During the reproductive age group the candida infection is more common because of high glycogen content of vaginal cells due to oestrogen. The letter has the effect of building up a good vaginal epithelium and also to maintain the acid PH there by rendering the vagina more prone to resist infection by other organisms but not with candida. Which on the other hand grows well in acid media. Vaginal candidiasis during pregnancy also revealed a direct relationship to parity and period of gestation. The highest candida infection in the present study was found in multiparous women 23.45%. In the present study, the candida infection was highest in the 3rd trimester 32.0%, 1st trimester (25.0%) and 2nd trimester 10.86%. This may be explained by the fact that the peak of acid PH is attained during the last trimester as a result of maximum glycogen concentration.

Table 3: Comparative study of predisposing factors in vulvaginal candidiasis

<table>
<thead>
<tr>
<th>Predisposing factors</th>
<th>Percentage</th>
<th>Present Study</th>
<th>Ameet et al.,</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad Spectrum Antibiotic therapy</td>
<td>40.09</td>
<td>13.04</td>
<td></td>
</tr>
<tr>
<td>Obesity</td>
<td>--</td>
<td>26.08</td>
<td></td>
</tr>
<tr>
<td>Family history of diabetes</td>
<td>4.54</td>
<td>06.52</td>
<td></td>
</tr>
<tr>
<td>Gestational diabetes</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>HIV HbsAg positive cases</td>
<td>--</td>
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<td></td>
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</tbody>
</table>

Among the predisposing factors the broad spectrum antibiotic therapy were highest in the present study, while in the study conducted by Ameet et al., was 13.04% as shown in table 3.
In the present study obesity is not found as a predisposing factor, while it was 26.08% in the study conducted by Ameet et al.,

Family history of diabetes are 4.5% in the present study, while it was 6.52% in the study of Ameet et al.,

Table 4: Comparative study of associated pathology in vulvovaginal Candidasis

<table>
<thead>
<tr>
<th>Associated Pathology</th>
<th>Percentage</th>
<th>Present Study</th>
<th>Ameet et al.,</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erosion</td>
<td></td>
<td>63.60</td>
<td>69.50</td>
</tr>
<tr>
<td>Trichomoniassis</td>
<td></td>
<td>--</td>
<td>26.08</td>
</tr>
<tr>
<td>Anemia (Hb&lt;8.05 gm/dL)</td>
<td></td>
<td>54.54</td>
<td>08.60</td>
</tr>
</tbody>
</table>

In the present study the Anemia is the commonest associated pathology as compared to 8.6% in the study conducted by Ameet et al., which is presented in table 4.

Trichomoniassis is nil in the study while it was 26.08% in Ameet et al., Cervical erosion was found to be 63.6% in the present study, while it was 69.5% in the study conducted by Ameet et al.,

Table 5: Comparative efficacy of laboratory test in various Studies

<table>
<thead>
<tr>
<th>Test</th>
<th>Percentage</th>
<th>Present Study</th>
<th>Ameet et al.,</th>
<th>Amitava et al.,</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet mount</td>
<td></td>
<td>13.63</td>
<td>6.20</td>
<td>--</td>
</tr>
<tr>
<td>KOH Smear</td>
<td></td>
<td>72.70</td>
<td>75.0</td>
<td>59.0</td>
</tr>
<tr>
<td>Culture</td>
<td></td>
<td>100.0</td>
<td>100.0</td>
<td>78.0</td>
</tr>
</tbody>
</table>

In the present candida is diagnosed by KOH smear in 72.7% of cases, wet mount in 13.63% of cases and culture is final diagnosis for candida infection (100%) some workers suggests that the diagnosis might be missed if culture technique was not used in associated with microscopy. In the present study wet mount (13.63%) and KOH smear (72.7%) as compared to culture and this is low. The present study is comparable with Ammet et al., (1995) and Amitava et al., (1993), as presented in table 5.

The following concluding are drawn from the present study-
1. The prevalence of vulvovaginal candidiasis in pregnancy was 22%.
2. A Pruritis vulve (except leucorrhoea) is the cardinal symptom suggestive of candida infection.
3. Previous drug therapy with broad-spectrum antibiotic predisposes to its occurrence.
4. Cervical erosion and Anemia were common associated factors observed.
5. Vulvovaginal candidiasis was common in reproductive age (20-30 years) and low social class.
6. During pregnancy vaginal candidiasis was found to be more prevalent in multiparous women and during 3rd trimester.
7. A KOH smear provides a satisfactory screening test for candidiasis, however, mycological culture on sabourauds media is the final test for establishing the diagnosis.

REFERENCES


