Evaluation of organisms causing vaginitis in high risk group with special reference to *Trichomonas vaginalis*

Vani Majji and G. Sasikala

*Department of Microbiology, Osmania General Hospital, Telangana, India*

**ABSTRACT**

The present study aims at determining the etiological agents of abnormal vaginal discharge in high risk women. A total of 200 women aged 18-50 years with vaginal discharge were studied. Women attending the TI, FSW, NGO camps (34 cases) and STD lab, Osmania General Hospital (126 cases) were included in the high risk category. Women attending gynecology OPD (40 cases) were also studied. Vaginal secretions were collected from the posterior fornix with a sterile polyethylene pipette and were subjected to the following tests - pH, whiff test, wet mount, KOH mount, Gram stain, Giemsa stain, Papanicolaou stain and culture on SDA and Kupferberg medium.

The most common vaginal infection was Bacterial vaginosis. It was observed in 43% of the high risk cases and 50% of gynecology OPD cases. Vaginal Candidiasis was the second most common infection. It was observed in 28% of the high risk cases and 20% of gynecology OPD cases. Trichomonas vaginalis was seen in 12.5% of the high risk cases and 5% of the gynecology OPD cases. Vaginal Candidiasis, Trichomoniasis and mixed infections were found to be significantly higher in high risk category. The prevalence of vaginal infections was found to be high in the age group of 25-29 and low in > 44 age group. Out of 200 cases, 22 were positive for Trichomoniasis, showing a prevalence of 11%. There was no single case of Trichomoniasis in women >40 years of age.

**Key words:** Bacterial vaginosis, Candidiasis, Trichomoniasis.

**INTRODUCTION**

Vaginitis is a commonly encountered complaint among women of reproductive age group. Vaginal discharge constitute a considerable problem for many women causing discomfort, anxiety affecting women’s quality of life and consuming considerable resources. Some vaginal discharges are normal and can vary with age, use of contraceptives, menstrual cycle and with the oestrogen level. There are four causes of vaginal discharges which cover almost 95% of cases. These are Bacterial vaginosis, Candidal vulvovaginitis, Trichomoniasis and normal physiological discharge. [1]

Bacterial vaginosis is reported to be one of the most common causes of abnormal vaginal discharge or vaginal symptoms in women of reproductive age. The importance of bacterial vaginosis is emphasized by its association with pelvic inflammatory diseases, adverse outcome of pregnancy in the postpartum period, endometritis and cuff cellulitis. Bacterial vaginosis has also been associated with infections after hysterectomy, as well as with low birth weight infants and pre-term births in affected women. The complications arising out of bacterial vaginosis necessitate early diagnosis to institute prompt treatment of this polymicrobial syndrome.

Bacterial vaginosis is conventionally diagnosed using Amsel criteria. The presence of any three of the following four criteria is considered to be consistent with the presence of bacterial vaginosis: 1) characteristic thin, homogenous vaginal discharge, 2) vaginal pH greater than 4.5, 3) release of a fishy amine odor on addition of 10% KOH (whiff test), and 4) demonstration of clue cells in more than 20% of the total cell population.
In 1991, Nugent et al. suggested a modification of Spiegel’s method of scoring Gram-stained vaginal smears for the diagnosis of bacterial vaginosis. The score, calculated by assessing the presence of large Gram-positive rods (Lactobacillus morphotypes), small Gram-negative/gram-variable rods (G. vaginalis morphotypes), and curved gram-variable rods (Mobiluncus spp. morphotypes) can range from 0 to 10 with a score of 7 to 10 being consistent with bacterial vaginosis. [2]

The protozoon T. vaginalis causes the sexually transmitted disease trichomoniasis, with an annual incidence of more than 170 million cases (World Health Organization, 1995). Women infected with T. vaginalis are more likely to acquire human immunodeficiency virus (HIV) and herpes simplex virus type 2. T. vaginalis infection also doubles the risk of persistent human papillomavirus infection in women. In both women and men with HIV, co-infection with T. vaginalis increases HIV shedding. Because T. vaginalis is highly prevalent and is associated with adverse outcomes, improved detection of T. vaginalis is needed.

Wet mount is the most widely used method for the detection of T. vaginalis, with a sensitivity of 51 to 66% and a specificity of 100%. According to the 2006 guidelines for the treatment of sexually transmitted diseases (STDs) published by the Centers for Disease Control and Prevention (CDC), a T. vaginalis culture is recommended when T. vaginalis is suspected but not seen on a wet mount. Culture has a higher sensitivity (75 to 85%) than the wet mount and a specificity of 100%. [3]

Vulvovaginal candidiasis is associated with antibiotic therapy, pregnancy, use of oral contraceptives containing high levels of estrogen, estrogen therapy and uncontrolled diabetes. Candida albicans is responsible for infection in 80 to 90% of cases, although the incidence of vulvovaginal candidiasis (VVC) due to non-C. albicans species such as C. glabrata has increased steadily over the past few decades. The accurate diagnosis of VVC currently depends on direct microscopic examination and/or culture. [4]

The management of vaginal discharge is largely syndromic and empirical, it is usually based on naked eye examination of vaginal discharge and that is unsatisfactory because the diagnostic accuracy is lost without microscopic examination. The modern management of vaginal discharge demands a specific diagnosis which is a combination of naked eye examination plus laboratory work up. [1]

The annual incidence of sexually transmitted diseases (STDs) in India is estimated as 5 per cent or approximately 40 million new infections occur every year. Prevalence of vaginal discharge in India is 30% and in Delhi it is 29.9%. [5]

MATERIALS AND METHODS

A prospective study was done over a period of six months in a tertiary care hospital (Osmania General Hospital), Hyderabad and TI (Targeted Intervention) FSW (Female Sex Workers) NGO’s (Non-Government Organisation), Hyderabad affiliated to STI lab, Osmania General Hospital.

Study population:
A total of 200 samples of vaginal secretions were obtained from reproductive age group women with the signs and/or symptoms of vaginitis, vaginal discharge, dysuria, dyspareunia, and lower abdominal pain.

Women attending the TI, FSW, NGO’s (34 cases) and STI lab, OGH (126 cases) were included in the high risk group.

Women attending the gynecology OPD (40 cases) with similar complaints were also studied.

Inclusion criteria:
• Sexually active women 18-50yrs of age presenting to the STD lab with signs and symptoms of vaginitis and high risk behaviour.
• High risk behaviour was defined as 2/more sexual partners reporting within the last 30 days.

Exclusion criteria: women were excluded from the study if they
1. had received systemic antibiotic therapy or local vaginal antimicrobial therapy within the preceding month;
2. were pregnant, postmenopausal, premenarcheal;
3. currently menstruating;
4. < 18 and > 50 years of age.
Specimen collection:
Specimen collection was done in a separate well-lit room. Patients were asked to lie on the examination table in lithotomy position. Using a sterile, disposable, unlubricated Casco’s vaginal speculum, the posterior fornix of the vagina was visualized. For each patient, vaginal discharge was carefully collected from the posterior vaginal fornix with a sterile graduated polyethylene transfer pipette in duplicates. [6]

This discharge was then subjected to following tests:
1) pH and whiff test,
2) wet mount,
3) Smear preparation,
4) Inoculation of kupferberg medium and Sabouraud’s Dextrose Agar.

Testing of specimen: [7]

Direct tests from the specimen
a) Vaginal pH test:
   1) pH paper strips with a range of 3.8-6 are taken.
   2) The pH paper is made to touch the tip of the vaginal speculum after removing it from the vagina and the pH is noted.

b) Amine test/whiff test:
   1) A drop of vaginal fluid is taken on a clean grease free slide.
   2) One drop of 10% KOH is added to the vaginal fluid
   3) The slide is brought close to the nose to smell the amine odor. On the addition of KOH, amine becomes volatile producing fishy odor. An intense putrid fishy odor indicates a positive reaction.

Amine test is positive for bacterial vaginosis.

Microscopy
A. Wet mount:
   1) A clean grease free glass slide is taken
   2) A drop of vaginal fluid is placed on it. This is mixed with one drop of normal saline and a cover slip is placed over it. The slide is then examined under 10x and 40x magnification within 10 min.

   Fig 1: Trichomonas [wet mount]

Presence of any motile trichomonads, clue cells, budding yeast cells and pseudohyphae is noted.
T. vaginalis can be identified on the basis of its characteristic jerky movements. They have a pyriform shape with an anterior tuft of flagella and a lateral undulating membrane. Size is about 10-20µ.

B. Gram stain
Presence of epithelial cells, polymorphs, budding yeast cells with pseudohyphae and organisms (Lactobacilli, Gardnerella, Bacteroides, and Mobiluncus morphotypes) is noted.

Data from the wet mount and Gram stained smear were recorded as follows- WBC’s were categorized as moderate if the sample contained 10 WBC’s per field (at 40x). Clue cells were considered to be present if 20% of epithelial cells in a field were classified as clue cells. Yeast was recorded as present if either buds or pseudohyphae were seen at any magnification. [7] Nugent scoring is done based on Gram stain appearance.
Table 1: Nugent’s scoring system for Gram-stained vaginal smears

<table>
<thead>
<tr>
<th>Score</th>
<th>Lactobacillus morphotype</th>
<th>Gardnerella and Bacteroides spp. Morphotype</th>
<th>Curved Gram variable rods</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4+</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>3+</td>
<td>1+</td>
<td>1+ or 2+</td>
</tr>
<tr>
<td>2</td>
<td>2+</td>
<td>2+</td>
<td>3+ or 4+</td>
</tr>
<tr>
<td>3</td>
<td>1+</td>
<td>3+</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>4+</td>
<td></td>
</tr>
</tbody>
</table>

a: morphotypes are scored as the average number seen per oil immersion field. Less weight is given to curved Gram variable rods. Total score = lactobacilli + G. vaginalis and Bacteroides spp. + Gram variable rods.
b: 0 = no morphotypes present; 1 = <1 morphotype present; 2 = 1 to 4 morphotypes present; 3 = 5 to 30 morphotype present; 4 = >30 morphotypes present.

Amsel’s clinical criteria
The presence of any three of the following four criteria is considered to be consistent with the presence of bacterial vaginosis:
- characteristic thin, homogenous vaginal discharge,
- vaginal pH greater than 4.5,
- release of a fishy amine odor on addition of 10% KOH (whiff test),
- Demonstration of clue cells in more than 20% of the total cell population.

C. Giemsa stain
Giemsa staining is done according to the standard protocol.

T. vaginalis is identified based on its pyriform shape and size (10-20µ).

D. Papanicolaou stain:
A drop of vaginal discharge is smeared on a glass slide and fixed immediately in equal parts of alcohol and ether for 10 minutes. Staining is carried out in coplin jars according to the standard protocol.
T. vaginalis is identified based on the pyriform shape and size (10-20µ).

Culture
Kupferberg medium:

Vaginal fluid is inoculated in kupferberg medium and incubated at 37°C for 7 days.

From the second day onwards a wet mount from the culture is prepared and observed under microscope for motile trichomonads. Culture is declared negative if no growth is seen even on the 7th day.

Fig 4: kupferberg medium

I. Sabouraud’s dextrose agar:
Vaginal fluid is inoculated on Sabouraud’s dextrose agar slope and incubated at 37°C. A pasty cream coloured colony growing in 24-48 hours indicates yeast growth. Wet mount is prepared from the growth to confirm the diagnosis.

RESULTS

The present study aims at determining the etiological agents of abnormal vaginal discharge in high risk women. A total of 200 women aged 18-50 years with vaginal discharge were studied. Women attending the TI, FSW, NGO’s (34 cases) and STI lab, Osmania General Hospital (126 cases) were included in the high risk category (160 cases). Women attending gynecology OPD (40 cases) were also studied.

In this study, to assess the sensitivity and specificity of Amsel criteria, a positive Nugent’s score (7-10) is considered the gold standard for diagnosing bacterial vaginosis and to assess the sensitivity and specificity of wet mount, Giemsa and Pap stain, culture was considered the gold standard for diagnosing trichomoniasis.

Table 2: POSSIBLE ETIOLOGIES OF VAGINAL DISCHARGE IN THE STUDY GROUP

<table>
<thead>
<tr>
<th>Total no of cases (200)</th>
<th>No. of positives</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal vaginal flora</td>
<td>59</td>
<td>29.5</td>
</tr>
<tr>
<td>Bacterial vaginosis</td>
<td>89</td>
<td>44.5</td>
</tr>
<tr>
<td>Candidiasis</td>
<td>53</td>
<td>26.5</td>
</tr>
<tr>
<td>Trichomoniasis</td>
<td>22</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 2 shows that among the possible etiologies of vaginal discharge bacterial vaginosis accounts for the highest no. of cases (44.5%).

Table 3: PREVALENCE OF INFECTIONS IN THE HIGH RISK CASES AND GYNECOLOGY OPD CASES

<table>
<thead>
<tr>
<th></th>
<th>High risk cases (n=160)</th>
<th>GYNECOLOGY OPD (n=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Normal vaginal flora</td>
<td>47</td>
<td>12</td>
</tr>
<tr>
<td>Bacterial vaginosis</td>
<td>50</td>
<td>18</td>
</tr>
<tr>
<td>Candidiasis</td>
<td>28</td>
<td>5</td>
</tr>
<tr>
<td>Trichomoniasis</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>Mixed infections</td>
<td>20</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 3 shows that the prevalence of bacterial vaginosis is 31%, candidiasis 17.5% and trichomoniasis 9.37% in the high risk group. The commonest vaginal infection observed is bacterial vaginosis, followed by candidiasis. Mixed infections are seen in 12.5% of the cases.
In women attending gynecology OPD, bacterial vaginosis is observed in 45%, candidiasis in 12.5% and trichomoniasis in 5% of the cases.

Table 4: AGE WISE DISTRIBUTION OF THE VAGINAL INFECTIONS

<table>
<thead>
<tr>
<th>AGE GROUP</th>
<th>BACTERIAL VAGINOSIS</th>
<th>CANDIDIASIS</th>
<th>TRICHOMONIASIS</th>
<th>MIXED INFECTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>&lt;20</td>
<td>2</td>
<td>2.94%</td>
<td>1</td>
<td>3.03%</td>
</tr>
<tr>
<td>20-24</td>
<td>8</td>
<td>11.76%</td>
<td>8</td>
<td>24.24%</td>
</tr>
<tr>
<td>25-29</td>
<td>18</td>
<td>26.47%</td>
<td>9</td>
<td>27.27%</td>
</tr>
<tr>
<td>30-34</td>
<td>19</td>
<td>27.94%</td>
<td>2</td>
<td>6.06%</td>
</tr>
<tr>
<td>35-39</td>
<td>8</td>
<td>11.76%</td>
<td>3</td>
<td>9.09%</td>
</tr>
<tr>
<td>40-44</td>
<td>6</td>
<td>8.8%</td>
<td>3</td>
<td>9.09%</td>
</tr>
<tr>
<td>&gt;44</td>
<td>4</td>
<td>5.88%</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

Table 4 shows that the highest prevalence of vaginal infections occurs in the age group of 25-29 with the exception of bacterial vaginosis which shows a peak in the age group of 30-34. 26.47% of bacterial vaginosis, 27.27% of candidiasis and 41% of trichomoniasis are seen in the age group of 25-29. Mixed are also high in this age group. The lowest prevalence of infections is seen in the age group of >44. Trichomoniasis is found to be common in the age group of 25-39. No single case of trichomoniasis is seen in women >40 years of age.

Table 5: PREVALENCE RATE OF BACTERIAL VAGINOSIS BY AMSEL CRITERIA AND NUGENTS SCORE

<table>
<thead>
<tr>
<th>Amsel criteria +ve</th>
<th>Amsel criteria -ve</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nugent score (7-10)</td>
<td>68</td>
<td>21</td>
</tr>
<tr>
<td>Nugent score &lt;7</td>
<td>10</td>
<td>101</td>
</tr>
<tr>
<td>Total</td>
<td>78 (39%)</td>
<td>122 (61%)</td>
</tr>
</tbody>
</table>

Of the 200 vaginal samples taken, 89 gave a Nugent’s score of 7-10, providing a prevalence rate of 44.5% for bacterial vaginosis in patients who complained of abnormal vaginal discharge. In contrast, Amsel criteria diagnosed 39% as suffering from bacterial vaginosis.

Table 6: DIAGNOSTIC VALUE OF THE AMSEL CRITERIA AND EACH INDIVIDUAL CRITERION

<table>
<thead>
<tr>
<th>Amsel criteria as a whole</th>
<th>Total no. of positives</th>
<th>Nugent’s score (7-10)</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thin homogenous discharge</td>
<td>58</td>
<td>28</td>
<td>31.5%</td>
<td>72.9%</td>
</tr>
<tr>
<td>pH&gt;4.5</td>
<td>82</td>
<td>57</td>
<td>64%</td>
<td>77.5%</td>
</tr>
<tr>
<td>Clue cells</td>
<td>106</td>
<td>89</td>
<td>100%</td>
<td>73%</td>
</tr>
<tr>
<td>Positive Whiff test</td>
<td>40</td>
<td>40</td>
<td>44.9%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 6 shows that out of all the four Amsel criteria clue cells correlated best with a diagnosis of bacterial vaginosis by Nugent’s score, followed by pH>4.5. Thin homogenous discharge is least correlated. The whiff test was the most specific of all the criteria (specificity = 100%) but less sensitive (44.9%).

Table 7: TRICHOMONAS VAGINALIS IN HIGH RISK CASES AS COMPARED TO GYNECOLOGY OPD CASES

<table>
<thead>
<tr>
<th>Total TV (22)</th>
<th>No.</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High risk cases</td>
<td>20</td>
<td>90.9%</td>
</tr>
<tr>
<td>Gynecology OPD</td>
<td>2</td>
<td>9.09%</td>
</tr>
</tbody>
</table>

Table 7 shows that T. vaginalis is more prevalent in the high risk cases than in women attending gynecology OPD.

Table 8: DETECTION OF TRICHOMONAS VAGINALIS: SENSITIVITY OF THREE LAB TECHNIQUES

<table>
<thead>
<tr>
<th>No. of positives</th>
<th>Cases confirmed by culture</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet mount</td>
<td>19</td>
<td>19</td>
<td>86.4%</td>
</tr>
<tr>
<td>Giemsa stain</td>
<td>25</td>
<td>10</td>
<td>45.5%</td>
</tr>
<tr>
<td>Pap stain</td>
<td>30</td>
<td>12</td>
<td>54.5%</td>
</tr>
</tbody>
</table>

Taking culture as the gold standard for the diagnosis of vaginal trichomoniasis, the sensitivity and specificity of wet mount, Giemsa and Pap stain were calculated. Table 8 shows that wet mount was 86.5% sensitive and 100% specific, whereas Giemsa and Pap stains were 45.5% and 54.5% sensitive.
DISCUSSION

A microbiological evaluation of vaginitis was carried out on 160 women aged 18-50 years attending TI, FSW, NGO’s and STI lab, Osmania General Hospital with complaints of vaginitis and 40 women with similar complaints attending gynecology OPD. Pregnant, menstruating women and women on antimicrobial therapy were excluded from the study.

The following observations are made:

AGE DISTRIBUTION:
Vaginitis was found to be most prevalent in the age group of 21-34 years (67.85%) and least in >44 age group (3%). J.W.Mahadani (1998) showed similar incidence (66.45%) in the age group 21-40 years while Cristiano et al (1989) did not find any statistical significance of age with incidence of vaginitis. [8, 9]

BACTERIAL VAGINOSIS:

In this study, the sensitivity and specificity of Amsel criteria were determined taking a positive Nugent’s score to be the definition of bacterial vaginosis. Amsel criteria diagnosed 39% as suffering from bacterial vaginosis. Therefore the sensitivity and specificity of Amsel criteria were 76.4% and 90.9% respectively. Among the four Amsel criteria, clue cells in Gram stain had the highest sensitivity of 85.4% and a positive whiff test had 100% specificity. Clue cells were absent in 14.6% of the bacterial vaginosis cases. While J W Mahadani (1998) found clue cells to be 100% sensitive and 95.25% specific, Modak et al (2011) found it to be 100% sensitive and 76% specific. [8, 2] Cristiano et al (1989) showed its absence in 11% of the cases with bacterial vaginosis. [9] Brijinder K. Gupta (1998) noted clue cells in only 61% of the cases symptomatic for bacterial vaginosis. [18]

Presence of clue cells correlated best with a positive diagnosis by Nugent’s score while thin homogenous discharge had the lowest correlation. This is similar to the findings of Modak et al (2011). [2] Sarika Duggal et al (1992) found pH to be most consistent with a diagnosis of bacterial vaginosis followed by clue cells and whiff test. [19]

CANDIDIASIS:
Out of 200 cases Candida was isolated in 26.5% of the patients by Gram stain and culture on SDA. Similar rates of isolation were reported by Smith et al (1977) 23%. [20] Lower rates of isolation were reported by Brown et al (2001) 18% and Mohanty et al (2007) 18.5%. [21, 22] A very low prevalence was reported by Shazia A Khan (2009) 12%. [1]

TRICHOMONAS VAGINALIS:

Out of the 160 cases from high risk group (HRG) and 40 from gynecology OPD, Trichomonas vaginalis was isolated in 12.5% of the HRG and 5% of gynecology cases. In 9.4% of the cases it was the sole pathogen while in the rest it was associated with bacterial vaginosis and candidiasis.

The methods used for diagnosis were wet mount, Giemsa stain, Pap stain and culture on Kupferberg medium.

Wet mount:
The time honored approach for the diagnosis of trichomoniasis has been microscopic examination of the wet mount. In our study microscopy detected only 19 cases out of 22, that is 86.5% sensitivity which is similar to that reported by Thomasen et al (1988) 86%. Stary et al (2002) 92.8% and Huppert et al (2004) 71.4%. [35, 31, 36] A very low
sensitivity has been reported by Watt et al (1986) 36.9% and Madico et al (1998) 36%.[34, 29] Of the three cases which were missed by wet mount, 2 were found to be positive by Pap stain.

Culture:
Culture methodology possessing the ability to amplify the number of trichomonads in the vaginal specimen has a high degree of sensitivity. Considering culture as the gold standard, the prevalence of T. vaginalis infection was found to be 11%. Watt et al (1986) reported a sensitivity of 100% using broth culture.[34] Barenfanger et al reported a sensitivity of 100% using In Pouch TV Method.[26] Lower sensitivity of 76.9% has been reported by Patullo et al.[3]

Giemsa stain:
In the present study, giemsa stain could identify only 10 out of 22 cases. That is, it is 45.5% sensitive. This is similar to the observations of Radonjic et al (2006) 52.38% and Thomasen et al (1988) 34%. [37, 35] Fifteen cases, for which Giemsa stain was positive, were neither culture positive nor wet mount positive and were deemed to be false positives. One advantage of the stained preparation is that permanent record can be kept and reviewed later.

Papanicolaou stain:
Pap smears are often performed in gynecologic screenings and have a reported sensitivity of approximately 60 to 70%. However, an error rate of about 48% due to false negative and false positive results has been observed when pap smears are used as the only diagnostic method. In the present study, Pap staining could detect only 12 out of 22 positive cases showing a sensitivity of 54.5%. This is in accordance with observations made by Audisio et al (2001) 51% and Lobo et al (2003) 60.7%. [38, 39] Further Lobo et al have suggested that irregularly shaped parasites without clearly defined nuclei and flagella and bacteria-induced focal cytolysis limit the ability of the Papanicolaou test to detect T. vaginalis. In this study, 18 cases were found to be false positive.

CONCLUSION
Vaginitis is extremely common in women aged 21-40 years. The highest prevalence of vaginal infections occurs in the age group of 25-29. The most common presenting feature is abnormal vaginal discharge. The most common vaginal infection is Bacterial vaginosis. It was observed in 42.5% of the high risk cases and 52.5% of gynecology OPD cases. Vaginal Candidiasis is the second most common infection. It was observed in 28% of the high risk cases and 20% of gynecology OPD cases. Trichomonas vaginalis was seen in 12.5% of the high risk cases and 5% of the gynecology OPD cases. Mixed infections were also seen in a significant number of women - 12.5 percent of high risk cases and 7.5% of the gynecology OPD cases. Among the mixed infections, the commonest association is that of bacterial vaginosis and candidiasis. Vaginal candidiasis, trichomoniasis and mixed infections were found to be more prevalent in the high risk cases. The prevalence rate of bacterial vaginosis was 44.5% by Nugent’s score and 39% by Amsel criteria. Out of all the four Amsel criteria clue cells correlated best with a diagnosis of bacterial vaginosis by Nugent’s score, followed by pH>4.5. The whiff test was the most specific of all the criteria (specificity = 100%) but less sensitive (44.9%). Taking culture as the gold standard for the diagnosis of vaginal trichomoniasis, the sensitivity and specificity of wet mount, Giemsa and Pap stains were calculated. Wet mount was found to be 86.5% sensitive and 100% specific, whereas Giemsa and Pap stains were 45.5% and 54.5% sensitive.

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