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**Original research article**

# Vaginal and cervical cytology as a tool for surveillance of sexually transmitted diseases in cases attending, GRMC OPD

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**Abstract**

**Background:** STD's are infections caused by a wide range of bacterial, viral, protozoal, fungal agents and ectoparasites. Bacterial agents include Neisseria gonorrhoeae,Chlamydia trachomatis, Treponema pallidum, Haemophillus ducreyi, Mycoplasma hominis, Ureaplasma urealyticum, Shiegella, Campylobacter, Group B Streptococcus, Bacterial Vaginosis associated organisms. No of viruses and protozoa are also involved in causing STD'S. All available data, however, indicates a very high prevalence of STD from 1% - 14% in the vulnerable population group.

**Aims and Objectives**: To study efficacy of cervical and vaginal cytology smears in detecting STD in symptomatic patient and to establish a correlation between symptomatic and causative agent as detected by Pap's smear.

**Materials and Methods:** It is a randomised present study was undertaken on 1200 women in child bearing age and menopause with complaints of vaginal discharge, pruritus, dysuria, lower abdominal pain, dysmenorrhoea, attending outpatient department of Obstetrics and Gynaecology at Madhav Dispensary, J A Group of Hospital, Gwalior.

**Results:** Out of 325 cases various symptoms and sign in patients carrying Haemophilus, Candida and Trichomonas. Malodour had incidence of 31.3%, 1.2% and 1.8% respectively. Pruritus was more common in patients carrying Candida that is 13.5% and 5.6% in Hemophilus, Dysuria presented with maximum incidence of 31% in patients with Haemophilus and lower abdominal pain had incidence of 41.2% in same.

**Discussion:** The most common causes of vaginal discharge we detected in present study were Bacterial Vaginosis (BV) 60%, Trichomonas Vaginalis 13.2% and Candidiasis 14.4%. In our study the incidence of pruritus vulvae was (97%) and profuse vaginal discharge (93%), dysuria 5%, lower abdominal pain 33%, dysmenorrhoea in 34%of cases. Similar incidence was found in study of Sobel J D *et al*., (1995).

**Conclusion:** Our study concluded that women with complaint of vaginal discharge should undergo cytological examination, along with drug effective treatment so that the prevalence of STD and complications of pelvic inflammatory disease, infertility, ectopic pregnancy and neoplasia can be reduced.

**Key words:** PAP's smear, STD

## Introduction

STD's are infections, acquired predominantly during heterosexual/homosexual intercourse with an infected partner and caused by a wide range of bacterial, viral, protozoal, fungal agents and ectoparasites too. Bacterial agents includes Neisseria gonorrhoeae, chlamydia trachomatis, Treponema pallidum, Haemophillus ducreyi, Mycoplasma hominis, Ureaplasma urealyticum, Shiegella, Campylobacter, Group B Streptococcus, Bacterial Vaginosis associated oraginism. Viral agents includes Human (alpha) herpes virus1 and 2(Herpes simplex virus), Human (beta) herpes virus 5 (cytomegalovirus), hepatitis B virus,Human Papilloma Virus, Molluscum contagiosum, Human Immuno deficiency virus. Protozoal agents include Entamoeba histolytica, Giardia lamblia, Trichomonas vaginalis, Candida albicans is a fungal agent and ectoparasites include phthirus pubis and sarcoptis scabiei. Thus there is a wide spectrum of venereal infections due to bacterias, viruses, fungi and parasites.

Common syndromes and sequelae for which screening is important eg. Male urethritis, epididymitis/orchitis, cervicitis, urethritis, genital ulceration, salpingitis, infertility, ectopic, postnatal and perinantal morbidity, hepatitis / hepatic carcinoma, genital carcinoma, AIDS.

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With their increasing prevalence amongst those with increased promiscuity, and multiple sex partners. Some of these cause infertility through blocked fallopian tubes, ectopic gestation, vulval and cervical cancer, instantily and death. WHO estimates that at least 333 million new cases of STD other than HIV occurred in 1995. Minimal estimates of yearly incidence of 4 major bacterial STD are e.g. Gonorrhoea-62 million, genitial chlamydia- 89 million, syphilis – 12 millions, chancroid – 7 million.
Surveillance has a wider application, relatively inexpensive and requires little physican time. In the OPD patients who come with complication of discharge white or watery, thick or thin, associated with pruritus, pain, foul smell, bleeding p/v, fever, itching in private parts were dealt with great attention, authority and suspicion. Smear is made of the vaginal and cervical secretion. It has a high sensitivity, specificity and the predictive value. It seems desirable therefore to critically analyze the cytogical changes in cervical and vaginal epithelium in the presence of STD. In the present work the cervical smear examination is the main technique to evaluate the cytological changes in exfoliated cells of cervico vaginal epithelium in the patients suffering from STD and also to study possible relationship to cellular atypia in relation to neoplasia.

**Aims and Objectives**
To study efficacy of cervical and vaginal cytology smears in detecting STD in symptomatic patient and to study the effect of various causative agents on cervical and vaginal epithelium.

**Materials and Methods**
It is a randomised study undertaken on 1200 women in child bearing age and menopause with complaints of vaginal discharge, pruritus, dysuria, lower abdominal pain, dysmenorrhoea, attending outpatient department of Obstetrics and Gynaecology at Madhav Dispensary, J A Group of Hospital, Gwalior. The patient presented with either symptoms of STD's. Detailed information was obtained regarding age/race, socioeconomic status, employed/unemployed, marital status, duration of married life, H/O past pelvic infection, STD contact, obstetrical history, stages of menstrual cycle, type and duration of contraception used, antibiotic or steroid intake during past 4 weeks and H/O diabetes. Specific attention was paid to urogenital symptoms including amount and colour of vaginal discharge, abnormal vaginal odour, vaginal/vulval itching, urinary frequency or urgency and dysuria, lower abdominal pain, fever, dysmenorrhoea and dyspareunia. General physical examination of the patient done. Systemic examination was done and any abnormalities recoded. Per speculum examination was done and condition of cervix like –cervicitis, hypertrophy of the cervix and presence of Nabothian's follicles were noted. The vaginal discharge with special emphasis on its colour, quantity and, smell was noted. Per-vaginal examination done to note, position and size of the uterus, tenderness in the fornices, thickening of the adnexa and other abnormality noted.

**Observations**
Out of 1200 women, 325 (27%) women were found to be carrying some or other STD's causing microorganism on vaginal and cervical cytology. Maximum number of our cases in this study belonged to age group 21-40 years. Majority of the women were housewives. In our study one third of women were illiterate.
History of past pelvic infection was found in14% of cases. Presence of STD contact was seen in 41%of women. Out of 325 women 121 (37%) of women were using one or another method of contraception. In all the patients' complaint of vaginal discharge was associated with one or the other symptoms. In more of the women complaint of vaginal discharge alone was present. Apart from it presenting complaint were pruritus, lower abdominal pain, dysuria, dysmenorrhea, malodour, dyspareunia, fever, polymenorrhoea etc. either singly or in combination.
The most common symptom with vaginal discharge was vulvovaginal pruritus 253(78%).Of 325 cases of STD, the vaginal discharge was profuse in 78(24%) cases, moderate in 168(61%) and scanty in 49(15%) cases.
Type of vaginal discharge present varied from to thin homogenous 58% having milk like consistency to curdy 24%, floccular 10% and thick homogenous 8% cases.

**Table1:** Presenting complaints in women carrying STD

| Type of vaginal discharge | No. of patients | Percentage |
|---|---|---|
| Thin homogenous | 188 | 58% |
| Curdy | 78 | 24% |
| Flocculent | 32 | 10% |
| Thin | 27 | 8% |

Prevalence of microorganism: Haemophilus is showing maximum incidence of 60%, candida second most

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common 14.4%, trichomonas 13.2% being the third most common. HPV was found in 4.3%, HSV in 2.7%, Leptothrix in 1.23%, TB in 0.92% and mix infections were found in 2.76%.

**Table 2:** Prevalence of microorganism in women with vaginal discharge

| Micoorganism | No. of patients | Percentage |
|---|---|---|
| Haemophilus | 196 | 60% |
| Candida | 47 | 14.4% |
| Trichomonas | 43 | 13.2% |
| HPV | 14 | 4.3% |
| HSV | 9 | 2.7% |
| Leptothrix | 4 | 1.23% |
| T.B. | 3 | 0.92% |
| Mixed | 9 | 2.76% |

Patient carrying Hemophilus infection the maximum number was found in between 21-30 years and 31-40 years that is 20.6% and 19.6% respectively. Candidiasis affected the same age group with the incidence of 4.91% and 4.32%. Trichomoniasis affected maximum patients between 21-30 years with the incidence of 6.1% in which 11.07% were Hindus and unemployed. According to Modified P.Kumar's classification of socio economic status Haemophilus was the most common in grade 2,candida in grade 3and trichomonas in grade 2.Their incidence was highest in illiterates that is 20%, 5.2% and 5.2% respectively. 3.6% candida, 24%in Haemophilus and 9.5% in Trichomonas had history of past pelvic infection.
Out of 325 cases various symptoms and sign in patients carrying Haemophilus, Candida and Trichomonas. Malodour had incidence of 31.3%, 1.2% and 1.8% respectively. Pruritus was more common in patients carrying Candida that is 13.5% and 5.6% in Hemophilus, Dysuria presented with maximum incidence of 31% in patients with Haemophilus and lower abdominal pain had incidence of 41.2% in same.

**Table 3:** Association of various clinical manifestations in different isolation rates

| Clinical manifestations | Candida n=47 | | Haemophilus n=196 | | Trichomonas n=43 | |
|---|---|---|---|---|---|---|
| Symptoms | No | % | No | % | No | % |
| Malodour | 4 | 1.2 | 102 | 31.3 | 6 | 1.8 |
| Pruritus | 44 | 13.5 | 182 | 5.6 | 21 | 6.4 |
| Dysuria | 2 | 0.61 | 101 | 31 | 9 | 2.7 |
| Lower abdominal pain | 12 | 3.6 | 134 | 41.2 | 28 | 8.6 |
| Fever | 5 | 1.5 | 40 | 12.3 | 12 | 3.6 |
| Dysmenorrhoea | 13 | 4 | 87 | 26.7 | 27 | 8.3 |
| Intermenstrual bleeding | 2 | 0.6 | 9 | 2.7 | 3 | 0.9 |
| Menorrhagia | 1 | 0.3 | 47 | 14.4 | 9 | 2.7 |
| Polymenorrhoea | 6 | 1.8 | 24 | 7.3 | 12 | 3.6 |
| Post coital bleeding | 2 | 0.6 | 8 | 2.46 | 7 | 2.1 |
| Dyspareunia | 8 | 2.4 | 72 | 22.1 | 34 | 10.46 |

On observation of vaginal discharge purulent was more common in patients with Hemophilus and Trichomonas with incidence of 41.2% and 10.4% respectively and white discharge was more commonly seen in patients with Candidiasis i.e.12%.Curdy discharge was more common among patients with candidiasis i.e. 8.9% whereas a thin homogenous discharge was more common with incidence of 54.7% and 9.2% in patients with Bacterial Vaginosis and Trichomoniasis.

**Table 4:** Cytological profile of different microorganism in PAP's classification

| Microorganism | I. | | II. | III. | | IV. | | V. | | VI. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bacterial vaginosis | 0 | 0 | 188 | 95.9 | 2 | 1.02 | 4 | 2.04 | 2 | 1.02 | 0 | |
| Candidisis | 0 | 0 | 43 | 91.4 | 2 | 4.2 | 2 | 4.2 | 0 | 0 | 0 | 0 |
| Trichomas | 0 | 0 | 39 | 90.6 | 2 | 4.6 | 2 | 4.6 | 0 | 0 | 0 | 0 |
| HPV | 0 | 0 | 6 | 42.8 | 4 | 28.5 | 2 | 14.2 | 2 | 14.2 | 0 | 0 |
| HSV | 0 | 0 | 3 | 33.3 | 3 | 33 | 2 | 22 | 1 | 11 | 0 | 0 |

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| | | | | | | .3 | | .2 | | .1 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Leptothrix | 0 | 0 | 4 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TB | 0 | 0 | 3 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Others | 0 | 0 | 5 | 55.5 | 2 | 22 .2 | 2 | 22 .2 | 0 | 0 | 0 | 0 |

**Discussion**

In our study out of 1200 women, 325 that is 27% were having some or other microorganism causing STD. Rest of the 875 patients who came with similar complaints of white discharge, pruritus, malodour, dysuria etc. Were not carrying any microorganism in their Pap's smear examination and they were having non specific cervicitis, erosive cervicitis etc. This is supported by study carried out by Osbome Newton (1982) 23%, when they screened sexually active women genital symptoms suggestion of vulvovaginitis.

The most common causes of vaginal discharge we detected in present study were Bacterial Vaginosis (BV) 60% diagnosed on the basis of Amsel's clinical criteria. Trichomonas Vaginalis 13.2% and Candidiasis 14.4%.The prevalence of BV was similar to that described by Hill L H *et al*., (1993) in patients attending he special urology (STD)clinic at the Victoria General Hospital(52%). BV was clinically diagnosed in 57.2% by Lefevre *et al*., (1988) in Toulouse Purpan Hospital, France Chopra *et al*., (1993) when studied 100 women attending STD clinic with vaginal discharge found higher percentage of BV that is 48%.

The incidence was highest among the age group of 20-30 and 30-40 yrs that is 33% in each. It is similar to study carried out by Agarwal *et al*., (1994) at MAMC Delhi 37% and 29% in each group. STD was more prevalent among illiterates (33%) and upto primary educated women (22%) which is supported by same study by Agarwal *et al*., (1994) found that 36% if illiterate and 17% of primary studied women were carrying STD.

History of past pelvic infection found in 14% of cases which was diagnosed by clinical symptoms of PID and signs of cervicitis and vaginitis. At least 10-20% of infected women with untreated cervicitis due to Trichomonas, Gonorrhoea and Chlamydia trachomatis develop PID with its complications. A major drawback in the control of STD is the symptomatic nature of infection, illiteracy, low socio-economic status, sexual promiscuity which may be seen in up to 90% if infected women Duncan M E *et al*., (1991).

In our study of diagnosis of G. vaginalis both Amsel's clinical criteria and Spiegal's *et al*., (1993) were applied and 100% sensitivity and specificity was found if 4 of these 5 criteria i.e. non lactobacilli morphologic types greater than lactobacilli morphologic type in addition to the four Amsel's criteria of Vaginal pH,clue cells,a thin homogenous vaginal discharge with milk like consistency and the release of fishy odour were met.

Bacterial Vaginosis was associated with sexually activity, IUCD users, low socioeconomic with varying degrees of certainty. Bhatta *et al*., also found same epidemiological factors showing positive correlation. In our study BV showed significant positive association with pruritus vulvae, thin homogenous discharge, pH>4.5 and presence of clue cells.

Our study revealed high rate of vaginal candidiasis 14.4% as cause of STD. Few Indian studies conducted by Kulkarni *et al*., (1984),Thakur(1986), Iyer Sheela V *et al*., (1991), Chopara *et al*., (1994), Agarwal (1994) showed prevalence of candiasis in women attending STD clinics as 28.3%, 3.4%,20%,26% and 36% respectively.

Another study by Osborne Newton (1982) yield yeast in 39.9% cases. In few studies the detection rate is slightly high as compared to present study.

In our study vaginal candidiasis showed independent association with pruritus, thick curdy white discharge, O.C.users, diabetes, pus cell<1/epithelial cell and Neugent scoring<7.These signs and symptoms are characteristic of candidial infection and permit its clinical recognition. Study shows that candidiasis does not apparently alter the vaginal flora which is consistent with the findings of Robinson and Mirchandani (1965).

In our study the incidence of pruritus vulvae was (97%) and profuse vaginal discharge (93%), dysuria 5%, lower abdominal pain 33%, dysmenorrhoea in 34%of cases. Similar incidence was found in study of Sobel J D *et al*., (1995). In present study Trichomoniasis was present in13.2% case of vaginal discharge.

T. vaginalis was found in 15.8%of cases in a study by Iyer S V *et al*., (1991), 13% by Chopra *et al*., (1993), 11% by Thakur *et al*., (1986), 53.3% by Kulkarni *et al*., and 18%of patients were found to be infected by T vaginalis in a study by Agarwal *et al*., (1994). Out of 14 cases of Koilocytes with HPV, 10 patients had moderate to severe dysplasia amounting to 28.2%. Out of 9, 3 patients of HSV had severe dysplasia. These two are indicating and supporting the causative association with neoplasia.

**Conclusion**

With the present study it has been concluded that women in sexually active age group with complaint of

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vaginal discharge should undergo cytological examination, along with drug effective treatment so that the prevalence of STD can be reduced and simultaneously reducing the complications of pelvic inflammatory disease, infertility, ectopic pregnancy and neoplasia. In the end we would like to emphasize that treatment of patient's partner, health education and counselling is equally important.

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