

Original Research Article**Study of Spectrum of Infections on Cervicovaginal Smears in a Rural Setting****Neelambara Bidwai¹, S.K. Nema², Sanjeev Narang³, Priyanka Sachdev⁴, Shahar Bano Khan⁵, Awani Jain⁶**^{1,5,6}Junior Resident ²Professor & Head ³Professor ⁴Assistant Professor, Dept. of Pathology, Index Medical College Hospital & RC Indore, Madhya Pradesh 452001, India.**Abstract**

Background: Cervical infections are commonly encountered problems occurring in the women of the reproductive age group. Pap smear, a screening test for carcinoma cervix is a simple, quick test that can also be used for diagnosing cervico-vaginal infections. The present study was undertaken to study the utility of Pap smears in diagnosing cervico-vaginal infections and to study the spectrum of infections occurring in this region.

Objectives: To establish that cervical pap smear is the most simple, easy, quick and painless procedure employed for cervicovaginal infections and to estimate the proportional frequency of normal, inadequate, unsatisfactory, inflammatory and neoplastic smears.

Methods: A Cross sectional study was conducted on 250 patients. Cervicovaginal smears were collected from patients for various gynaecological problems. Study was mainly carried out in the department of Obstetrics and Gynaecology, Index Medical College Hospital and Research Centre, Indore to assess the utility of pap smear in diagnosing cervicovaginal infections during the period of January 2016 to April 2017.

Results: The overall frequency of normal, inadequate, unsatisfactory, inflammatory, infective and neoplastic smears were 31 (12.4%), 7(2.8%), 7 (2.8%), 111(44.4%), 87 (34.8%) and 25 (10%) respectively. In our study the age range was 20->40yrs. Majority (42.4%) of women belonged to >40 yr age group. The major presenting complaint was white discharge per vagina in 175 (70%) cases. Pelvic pain was the second most common complaint in 35 (14%) cases followed by DUB in 20(8%), prolapse in 12 (4.8%), dyspareunia in 5 (2%) and post-coital bleeding in 3 (1.2%). Among the 87 cases (34.8%) of infective smears, the infections that were observed were- Gardnerella 74 cases followed by Trichomonas-8 and Candida 5.

Conclusion: The cervical smear is the most simple and quick test which is beneficial in diagnosing cervical infections. However, other ancillary tests need to be employed for confirmatory diagnosis.

Keywords: Papanicolaou Smear; Cervico-Vaginal Infections; Bacterial Vaginosis (Gardnerella); Trichomonas Vaginalis; Fungal Infections.

Corresponding Author:

Priyanka Sachdev,
Assistant Professor,
Dept. of Pathology,
Index Medical College Hospital &
RC, Indore, Madhya Pradesh
452001, India.
E-mail:
dr.priya.1103@gamil.com

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Introduction

Cervical infections are one of the commonly encountered problems in women of reproductive age group. They usually present with white discharge, foul

smelling odor and pruritis. Vaginal discharge or leucorrhoea is the most common complaint seen in women, especially in Indian scenario due to poor genital hygiene. Normally Lactobacilli have a protective effect on vaginal microenvironment, but still many other

microorganisms can also be cultivated from vagina of healthy women. These organisms usually do not cause pathological state, but when one of them dominates, it results into vaginitis.

The most common vaginal infections include – bacterial vaginosis (BV), vulvovaginal candidiasis and trichomonal vaginitis. Most of these infections can be easily diagnosed on routine Pap smear examination. There is also huge evidence that Pap smears are very beneficial in detecting infections that are risk factors for cervical cancer, such as human papilloma virus (HPV) [6].

Aim and Objectives

1. AIM- To study the utility of pap smear in diagnosing cervicovaginal infections.
2. Objectives-
 - To establish that cervical pap smear is the most simple, easy, quick and painless procedure employed for cervicovaginal infections.
 - To estimate the proportional frequency of normal, inadequate, unsatisfactory, inflammatory and neoplastic smears.

Material and Methods

Study Design - A Cross sectional Study

Study Population: This study was conducted on 250 pateints.

Cervicovaginal smears were collected from patients for various gynaecological problems. Study was mainly carried out to assess the utility of pap smear in diagnosing cervicovaginal infections.

Place of Study: Department of Obstetrics and Gynaecology, Index Medical College Hospital and Research Centre, Indore.

Duration of Study: January 2016 to April 2017

Ethical Clearance: Institutional ethics committee.

Inclusion Criteria

Married women attending the gynaecology OPD in the age group of 18-70 yrs with complaints of vaginal discharge, backache, lower abdominal pain, dyspareunia and dysuria.

Exclusion Criteria

1. Unmarried women
2. Women below the age of 18 years
3. Already diagnosed cases
4. Women not willing to give voluntary consent

Methodology

Using the speculum a sample is obtained by turning the Ayer’s spatula through 360 degree thus obtaining cells from the entire squamocolumnar junction.

As a women ages usually starting at about 40 yrs the squamocolumnar junction tend to migrate up the endocervical canal making this area more difficult to sample.

Once the sample has been obtained it is placed on a glass slide marked with patients name and spread smoothly down the length of the slide using wooden spatula. After the cell sample is spread it must be fixed by aerosol spray fixative and also by 95% ethyl alcohol for minimum 15 minutes. The next procedure is the staining of these slides by using Rapid Pap (Pap stain Kit).

Results

1. Number of participants- 250
2. Age group- 20-60 yrs
3. Major Presenting Compalint- WDPV (white Discharge per vagina)
4. Highest incidence of Bacterial vaginosis.

Table 1: Chief Presenting Complaints of The Patients

S. No.	Chief Complaints	Number	Percentage (%)
1	WDPV	175	17
2	Pelvic Pain	35	14
3	DUB	20	8
4	Prolapse	12	4.2
5	Dyspareunia	5	2
6	Post-coital bleeding	3	1.2
7	TOTAL	250	100

Spectrum of Cervical Lesions Based on Cytological Study

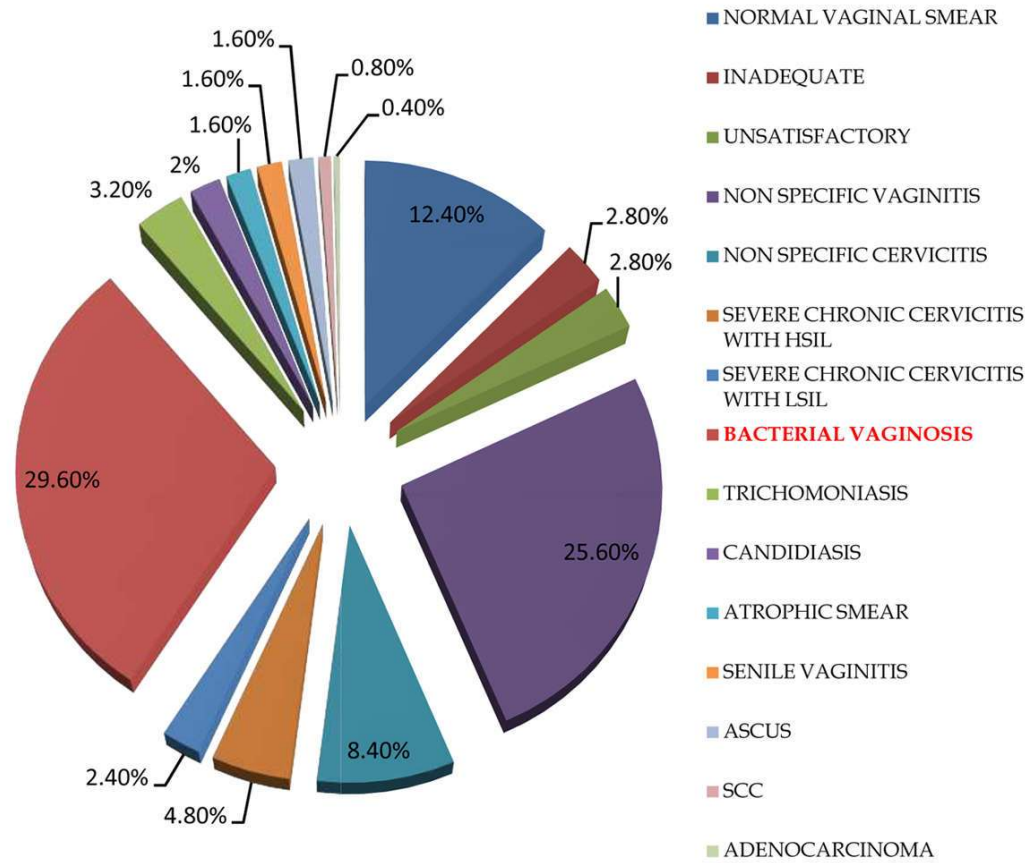


Fig. 1: Spectrum of cervical lesions based on cytological study

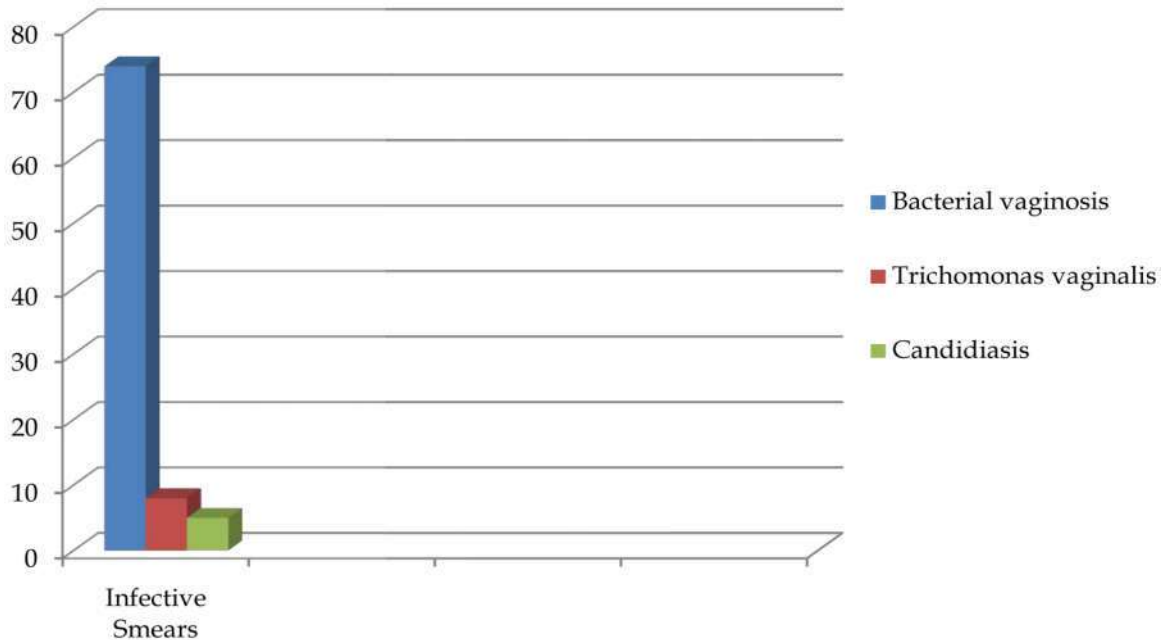


Fig. 2: Infective lesions with specific etiology

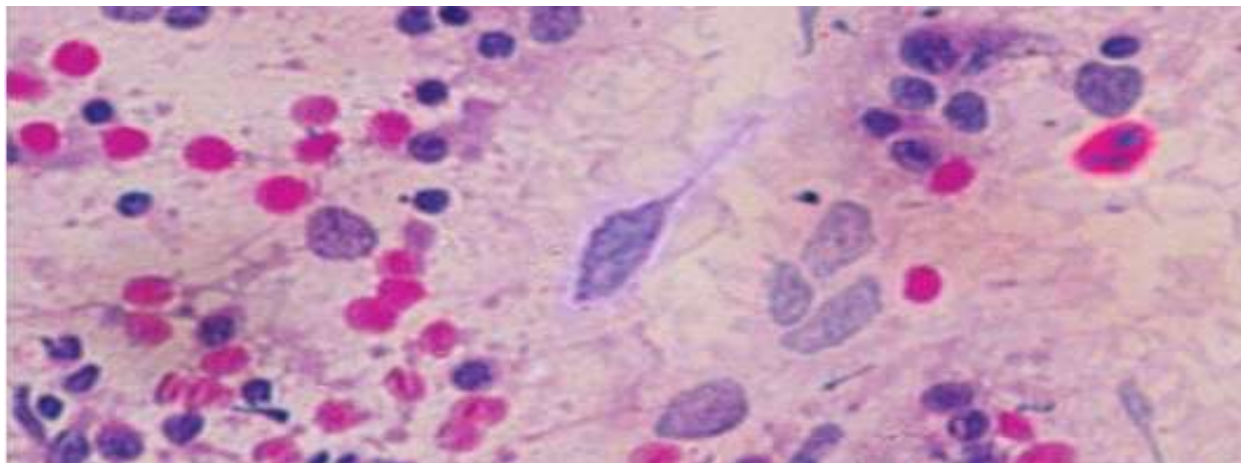


Fig. 3: Pear shaped structures with small eccentrically placed nucleus in a background of large number of inflammatory cells along with few squamous cells (Papanicolaou stain ×400)

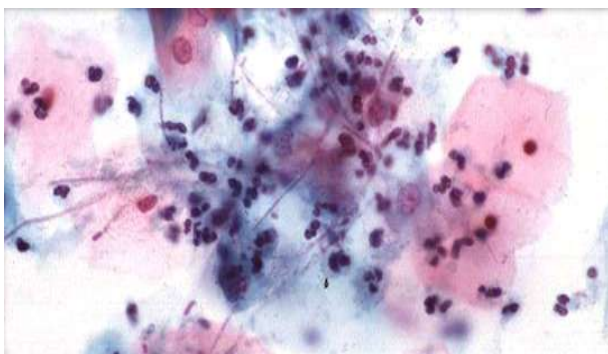


Fig. 4: Vaginal candidiasis-hyphae and yeast forms (Pap, X400)

Discussion

Worldwide infectious vaginitis is one of the most common problems faced by women. In developing countries reproductive tract infections including sexually transmitted diseases continue to be a major problem [1]. The Papanicolaou test was originally plotted to detect malignant cervical lesions, subsequently used to diagnose precancerous and other lower genital tract infections of the uterine cervix including Human papilloma virus (HPV) [1,6]. The lower genital infections of the uterine cervix are closely related with age, marital status, promiscuity, socio-economic status, malnutrition and genital hygiene. High incidence of infections, in general, are also attributed to lowered immunestatus of females due to varied physiological conditions of the body like menarche, pregnancy, lactation and pathological states like diabetes and AIDS.

Hygiene of lower genital tract is related to the infections and inflammations of the genital organs of females [2,3]. In developing countries where hygiene is poor, incidence of infections is high when compared to developed countries [1].

In our study the age group ranged from 20-75 years which was comparable with studies of Naina kumar et al.

[5] and Sangeetha et al. [4] which were 21-70 yrs and 18-78 yrs respectively. Bacterial vaginosis and candidiasis cases were observed most commonly in the females of the age group 25-45 yrs, whereas in the study by Naina kumar et al. [5] these cases were observed most commonly among 41-50 years females. The age group for trichomonas cases were similar in both the present study and the study by Naina Kumar et al. [5]- 31-40 yrs, whereas a similar study by Guducu et al reported that Trichomonas infection was more common in postmenopausal women and candida infection in reproductive age group females.

Comparison of Clinical Presentation with other Studies

White discharge per vagina was the most common presenting complaint (70%) among patients in the present study. The second most common complaint was pelvic pain in (14%) of the cases. Other complaints were DUB (8%), prolapse (4.8%), dyspareunia (2%) and postcoital bleeding (1.2%), which is comparable to the following studies as they have the same results.

Narsimha et al. [3] reported vaginal discharge (60.6%) as the most common presenting complaint followed by pelvic pain (7.78%) as the second most common.

Sangeetha et al. [4] also reported white discharge per vagina (88.1%) as the most common presenting complaint followed by pelvic pain (30.1%).

The overall incidence of infectious vaginitis in our study was 34.8% as compared to 50.07% reported by a similar study [narsimha et al.]. Whereas the Western literature reports an incidence of infections on Pap smear around 38.3%). Studies have shown that the 3 leading microbial agents that are responsible for 90% of infectious vaginitis are the organisms causing Bacterial Vaginosis (BV), Candida species, and Trichomonas vaginalis [3]. Our study showed similar pattern of infections with predominance of bacterial vaginosis. Comparisons of our study with other studies are shown above in table 2.

Table 2: Comparison of our findings with other studies

Infections	Bukhari et al(1)(2010)	Levi et al(2011)	Narasimha et al(2012)	Present Study (2016)
Bacterial Vaginosis	75.7%	13.9%	18.34%	85%
Candidiasis	6.5%	13.9%	11.16%	5.7%
Trichomonas Vaginalis	7.3%	0.7%	5.90%	9.1%

The most common bacteria causing bacterial vaginosis is *Gardnerella vaginalis*. The gold standard for diagnosing bacterial vaginosis (BV) was described by Amsel et al. [9]. These include - a milky homogeneous vaginal discharge; a vaginal pH of more than 4.5; a fishy amine odor in the whiff test; and clue cells on a saline wet mount. Our study showed about 85% of bacterial vaginosis which was comparable to Bukhari et al. [1] which reported (75.7%) of bacterial vaginosis. But other studies by Levi et al. [2] and Narasimha et al. [3] showed 13.9% and 18.34% respectively. In our study 74 cases presented with white discharge, fishy odour and presence of Clue cells was obvious on cytology examination. The reporting of BV is important as it predisposes to postoperative infections, pre-term delivery, chorioamnionitis, urinary tract infections, endometritis, and pelvic inflammatory disease [5]. BV also increases the risk of HIV acquisition [6]. Hence correct identification of these organism is essential for optimal treatment.

Vulvovaginal candidiasis causes curdy white discharge as seen in our study population, which comprised 5.7% of cases in concordance with Bukhari et al. [1] (6.5%). Most of the times they are symptom-less and treatment is not indicated. They are thin walled blastospores 1.5-4 um in diameter or hyphae can be appreciated on Pap smears [6]. Seasonal variation of occurrence of Candidiasis was reported by Sodhani et al. [8] who observed a higher detection rate in rainy season which was also the case in our study.

The occurrence of Trichomoniasis in our study was 9.1%, similar to Bukhari et al. [1] (7.3%). The reporting of Trichomoniasis is important since they are associated with adverse pregnancy out-comes such as premature rupture of membranes, pre-term delivery and low birth weight [7], as well as in-creased risk of HIV transmission [6]. As per a study by Rietveld et al., trichomonas also showed seasonal variation with higher incidence in winter and lower incidence in summer [8]. But in our study we did not find any significant seasonal variation. Studies have shown that in trichomoniasis, the superficial and intermediate cells may show inflammatory atypia, nuclear hypertrophy, slight hyperchromasia, cytoplasmic vacuolization and a rare binucleation. These features could be confused for cervical carcinoma. Hence careful interpretation of smears with trichomoniasis is essential. *Leptothrix vaginalis* is a filamentous bacterium found in the vagina of young

females especially during pregnancy. The patients may present with vulvo-vaginal pruritis and irritation of the vaginal mucosa. Examination may reveal thick, yellowish vaginal discharge and often encountered in patients with poor personal hygiene. It usually occurs as a co-infection along with trichomonads. So finding leptothrix in Pap smears may give us clue of the co-existing trichomoniasis. In our study we found one case having both leptothrix and trichomonas vaginalis together.

Conclusion

Our study emphasizes the fact that the cervical smear is the most simple and a quick test which is beneficial in diagnosing cervical infections. Bacterial vaginosis was the commonest infection in our study population. Control of these infections is possible through regular screening and treatment. However, further studies need to be undertaken with inclusion of other ancillary tests for more confirmatory diagnosis.

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