

Clinico-pathological Analysis of Cervical Pap Smear in Patients Attending Gynecology OPD of a Medical College

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ABSTRACT

Background: Cervical cancer ranks the most common cancer among Nepalese women. Cervical and vaginal infections constitute the most common gynecological problems. Through Pap smear screening, early diagnosis, follow up and treatment, morbidity and mortality can be reduced by 70% and 80% respectively.

Methods: This retrospective study was conducted to know the incidence of abnormal cervical epithelial lesions and cervico-vaginal infections. It was carried out in the Outpatient Department of Gynecology at Chitwan Medical College from April 2018 to March 2019. The data were collected and standard statistical analysis done using Microsoft Excel 2007.

Results: The most prevalent cervical epithelial cell abnormality was atypical squamous cells of undetermined significance (3.43%) whereas the least common was low grade squamous intraepithelial lesion (0.21%). The most prevalent cervical vaginal infection was Bacterial vaginosis (12.30%) whereas the least prevalent was Trichomoniasis (0.29%). The majority of the women with epithelial cell abnormality were in the age group of 31-40 years whereas the lowest number in the age group less than 20 years. The highest prevalence of cervical vaginal infection was in the reproductive age group (31-50 years) and the lowest in the age above 51 years. Most of the patients had multiple symptoms like vaginal discharge, genital itching, whereas only (20.17%) visited for routine screening.

Conclusion: Atypical squamous cells of undetermined significance and Bacterial vaginosis were the most common findings in Pap smear test representing abnormal cytology of cervix and cervicovaginal infection respectively.

Keywords: ASCUS; Bacterial vaginosis; Candidiasis; Cervico-vaginal infection; LSIL; HSIL; Trichomoniasis

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INTRODUCTION

Worldwide, cervical cancer is the fourth leading cause of morbidity and mortality in patients. Seventy percent of it occurs in developing countries.^{1,2} Cervical cancer ranks as the most common cancer among Nepalese women between 15 to 44 years of age.^{3,4} Cervical cancer is also the leading cause of death in Nepalese women.^{5,6} Fortunately, through periodic screening, early diagnosis, follow up and treatment, morbidity and mortality can be reduced by 70% and 80% respectively.⁷

Cervical cancer is preventable and curable cancer as precancerous cells are found at an early stage.⁸ According to WHO, main strategy for reducing the incidence of cervical cancer is through increasing awareness of women about cervical Pap smear screening.⁹ Screening techniques such as conventional Pap smear and or Liquid based Pap smear cytology, VIA, VILI, and HC2 are being used to screen and detect cervical cancer in precancerous stage.¹⁰ According to Alliance of cervical cancer prevention, the Pap smear test is very specific but moderately sensitive¹¹ and has become a standard screening test. Bethesda System is used for reporting the result. Apart from abnormal cervical epithelial lesions, cervical-vaginal infections can also be diagnosed by cervical Pap smear.

Gardnerella vaginalis, Candidiasis and Trichomoniasis are responsible for 90% of cases of cervical-vaginal infections.¹² In general, cervical and vaginal infections are significantly associated with morbidity, complications and high cost of treatment.¹³ The aim of our study was to determine the prevalence of abnormal cervical epithelial lesions and cervical-vaginal infections in cervical Pap smear specimens.

This retrospective study was done to know the incidence of abnormal cervical lesions in cervical Pap smear specimens, as well as to find out the most prevalent pathogens in the vagina and cervix in women who attended the Outpatient Department of Obstetrics and Gynecology in Chitwan Medical College.

MATERIALS AND METHODS

Samples were collected from all the patients who had Pap smear screening from April 2018 to March 2019. All the women who were sexually active were included and women who had Per vaginum bleeding were excluded from the study.

The Pap smear samples were collected after proper

counselling and informed consent was taken from the patient attending OPD with and without problems. Ethical approval from CMC-IRC was taken in July 2020. Cervical Pap smear reporting was done according to Bethesda System by the pathologists. Data were analyzed by using Microsoft Excel 2007.

RESULTS

The out patient department (OPD) register of CMC Hospital from 14 April 2018 to 13 March 2019 showed that a total of 25,729 patients received services.

In this one-year period, 1388 Pap smear samples were taken which accounted for 5.39% of patients. Forty-seven samples were reported inadequate or unsatisfactory (3.38%). So, a total of 1341 samples were analysed.

A total of 1280 samples were reported normal whereas 61 samples (4.54%) had some form of intraepithelial abnormalities. Among those 61 abnormal smears, most (75.41%) had atypical squamous cells of undetermined significance (ASCUS), 12 had (19.67%) high grade intraepithelial lesion (HSIL), whereas only 3 had (4.92%) low grade intraepithelial lesion (LSIL). These account for 4.39% of total Pap smear samples (Table 1).

Table 1: Abnormal Pap smear result

| Diagnosis | Total number (%) |
|-----------|------------------|
| ASCUS | 46 (3.43) |
| LSIL | 3 (0.21) |
| HSIL | 12 (0.89) |
| SCC | 0 |

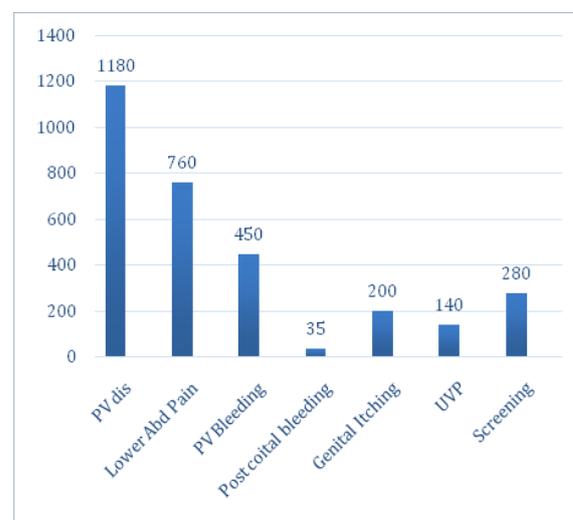


Figure 1: Distribution of Symptoms

Table 2: Age distribution

| Age | Number of patients |
|-------------|--------------------|
| < 20 years | 20 (1.44%) |
| 21-30 years | 245 (17.58%) |
| 31-40 years | 537 (38.69%) |
| 41-50 years | 386 (27.80%) |
| 51-60 years | 139 (10.01%) |
| >60 years | 62 (4.47%) |

These samples were further sent for cervical biopsies and histological evaluations.

The highest number of patients 1062 (76.51%) having abnormal epithelial abnormalities was in the age-group of 31 to 60 years with mean of 43.34 years (Table 3).

Table 3: Distribution of specific vaginal organisms

| Age | BV | CA | TV |
|-------------|----|----|----|
| < 20 years | 3 | 0 | 0 |
| 21-30 years | 32 | 4 | 1 |
| 31-40 years | 62 | 13 | 2 |
| 41-50 years | 52 | 8 | 0 |
| 51-60 years | 12 | 0 | 0 |
| >60 years | 4 | 0 | 0 |

*Bacterial vaginosis ** Candida albicans

*** Trichomonas vaginalis

Inflammation was the next common Pap smear findings. Among 227 inflammatory smears, 193 patients had (14.39%) specific cervical-vaginal infection: Bacterial vaginosis 165 cases (12.30%), Candidiasis 25 cases (1.78%) and Trichomoniasis 3 cases (0.29%). Most common cervical vaginal infection was due to Bacterial vaginosis (12.30%) (Table 4). The highest prevalence of cervical vaginal infection was also seen in the reproductive age group (31-50 years) and the lowest was in the age above 51 years (Table 3).

Regarding the clinical presentation, 1180 patients had PV discharge (85.01%), 760 patients had lower abdomen pain (54.75%), 200 patients had genital itching (14.40%), 450 patients had abnormal or irregular PV bleeding (32.42%), 35 patients had post coital bleeding (2.52%) and 140 patients had uterovaginal prolapse (UVP) (10.10%). Most of the patients had multiple symptoms whereas only 280 (20.17%) had routine screening without any genital symptoms (Figure 1).

DISCUSSION

Cervical cancer, though is the second most common malignancy in gynecology patients, is preventable as it undergoes a long pre-invasive stage.^{13,14} Cervical Pap smear cytology has become

the standard cancer screening tool for detection of cervical pathology.¹⁵ It is well known that on average it takes approximately 10 years for CIN II, III lesion to progress to an invasive cancer.¹⁶

During a period of one year, 1388 smears were studied. Among which 47 samples were unsatisfactory (3.38%). This was almost equal to the studies done by Bamanikar et al, Ranabhat et al, Sarma et al, Alta et al, Laxmi et al, Vaghela et al and Ramu et al,^{8,17-22} in which unsatisfactory smears were (5.7%, 3.12%, 6.6%, 6.31%, 4.36%, 4.8% and 2.01%) respectively. However, this number is much less than the study done by Patel et al (8.9%)²³, so the total 1341 samples were studied.

In this study, the prevalence of abnormal epithelial lesion was found to be 4.54% which includes atypical squamous cells of undetermined significance (ASCUS), low grade intraepithelial lesion (LSIL) and high-grade intraepithelial lesion (HSIL). Studies had shown that the prevalence of epithelial cell abnormalities were different in different studies done by Ranabhat et al, Laxmi et al, Ramu et al Tailor et al, Saha et al, Renuka et al, Nair et al, Selhi et al and Verma et al respectively (1.7%, 4.45%, 1.4%, 1.89%, 10.3%, 1.8%, 5.6%, 2.0% and 13.6%).^{17,20,22, 25-29} The percentage of epithelial cell abnormalities was 2.3% to 6.6% in United States, 1.87% to 5.9% in India and 1.6% to 7.9% in Middle East.³⁰ This may be due to lack of awareness and education of Pap smear. As these days, women are more educated and come for screening or consultation and treatment with or without any symptoms. But this awareness is only limited in the urban areas.

Our study determines 1280 cases (97.41%) of negative for intraepithelial lesion or malignancy (NILM) with normal Pap smears, non-specific inflammation and infections like Bacterial vaginosis, Candida albicans and Trichomonas vaginalis. This result almost corresponds to the study done by Ranabhat et al.¹⁷ Laxmi et al.²⁰ and Tailor et al.²⁴ where it was found to be 98.29%, 95.53% and 98.10% respectively. Whereas the studies done by Vaghela et al, Ramu et al and Saha et al, NILM were 47%, 35.88% and 50.6% respectively, which is lower than our study.^{21,22,25}

Our study revealed ASCUS (3.43%) to be the most common epithelial cell abnormality. This is similar to many other studies where the most common epithelial cell abnormality was ASCUS.³¹ This result may be due to the screening at the earliest period, as ASCUS is the very initial stage. It progresses to LSIL, HSIL and Squamous cell carcinoma (SCC). The

precursor lesions occur 5-10 years to progress to an invasive cancer. However, the study done by Tailor et al, the incidence of ASCUS was 40.74%, which was quite high in comparison to other studies.²⁴ Severe form of disease process like HSIL was found to be (0.89%). Squamous cell carcinoma was not noted in our study.

The age range was 23-60 years and the mean age was 43.34 years with the epithelial cell abnormality, similar findings were detected by other studies.^{17,20,24} In our study LSIL and HSIL were 0.22% and 0.89% respectively but it was very high (17% and 12%) in the study done by Joshi et al.³²

In our study, the mean age of the study population was 41.11 years. Maximum numbers of cases 530 (38.18%) were in between the age group of 31-40 years which was similar to the other studies.^{20,23,33-35} This could be due to early marriage and higher sexual activity in married women. Although cases ranged from 14 to 80 years of age, those women who were more than 65 years old had a history of abnormal uterine bleeding and uterovaginal prolapse.

Patients who underwent pap smear had or did not have symptoms like lower abdomen pain, PV discharge, genital itching, PV bleeding, post coital bleeding and uterovaginal prolapse. Among those with positive epithelial abnormality, 85% had vaginal discharge, 55% had lower abdomen pain, 15% had genital itching and 20% had come for screening. These similar findings were also noted in the studies done by Bamanikar et al and Laxmi et al.^{8,20}

In our study, 14.39% of patients had cervical-vaginal infection with one of the microorganisms such as Bacterial vaginosis, Candida vaginalis and Trichomonas vaginalis. The highest rate of cervical-vaginal infection was due to Bacterial vaginosis. The prevalence of cervical-vaginal infections was mostly found in the age group 21-50 years and lowest rate was noted in the age group above 50 years.

In the study done by Adad et al, the frequency of Candida, Gardnerella and Trichomonas was (22.5%, 15.9%, 3.4%) respectively.¹¹ Possibly, the frequency of different infections is related to living standard, hygiene habits and awareness of the population. In the 21st century there has been a decrease in the frequency of cervical-vaginal infection by Trichomonas vaginalis and an increase in the frequency of Candida species.

In our study, Bacterial vaginosis (12.30%) was the

most common cervical-vaginal infection. Other studies by Ranabhat et al., Vaghela et al., Ramu et al., Saha et al., Renuka et al., and Verma et al. revealed 7.6%, 1.6%, 0.72%, 7.1%, 5.4% and 8.8% cases of Bacterial vaginosis respectively.^{17, 21, 22, 25, 26, 29}

The prevalence of Candida Albicans was 1.86%. Studies had shown that the prevalence of Candida were different in different studies done by Ranabhat et al., Ramu et al., and Tailor et al., respectively (1%, 3.71% and 0.45%).^{17, 22, 24}

Trichomonas vaginalis was detected in 0.22% cases, which is in contrast to other studies where there were 0.36%, 0.77%, 3.2% and 0.6% cases respectively.^{22,24,25,28} In general, all the infections were most frequent in the age group 21-50 years. Therefore, Pap smear screening should be done immediately after the females are sexually active irrespective of age and marriage. It should be kept under routine examination. Pap smear should be made available at the basic health care centre.

Our study focuses on the importance of Pap smear screening for the detection of not only abnormal cervical epithelial lesions but also the cervical-vaginal pathogens Gardnerella vaginalis, Candidiasis and Trichomoniasis infections. In our study the prevalence of abnormal epithelial lesions is equal to the prevalence found in other South Asian nations.

The prevalence of cervical-vaginal infections was more than the prevalence found in other South Asian nations. Bacterial vaginosis was found to be the most common cervical-vaginal infection.

CONCLUSION

Atypical squamous cells of undetermined significance is the most commonly reported cytologic abnormality which may be related with certain types of HPV and yeast infection, inflammation, low hormonal level or benign growth. Hence, more testing like HPV test or another Pap test may be needed.

In addition, the pap smear test may be used in screening of Bacterial vaginosis eliminating the need for further vaginal sampling collection.

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