

Pap smear abnormalities in patients with abnormal vaginal discharge

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ABSTRACT

Introduction: Cervical cancer is a major cause of morbidity and mortality in gynecology clients. It is the leading cancer among women in developing countries. Evaluation of screening performance for effective, feasible, and affordable early detection and management methods is a public health priority.

Objective: To determine the frequency of Pap smear abnormalities in patients presenting with abnormal vaginal discharge and bleeding at a tertiary care hospital.

Materials & Methods: This cross sectional study was conducted in the Department of Gynecology & Obstetrics, MTI-Khyber Teaching Hospital, Peshawar, from September 2021 to April 2022 on 287 patients presenting with various gynecologic indications for performing a Pap smear. Pap smear was performed with the Ayers spatula by the standard method of rotating it at an angle of 360° in the cervix so that cells can be properly picked up from the squamocolumnar junction. Data were entered and analyzed by SPSS 20 for descriptive statistics.

Results: As per Pap smear abnormalities, 59 (20.6%) patients had dense inflammatory infiltrate and blood, 82 (28.6%) patients had inadequate sample, 62 (21.6%) patients had low squamous neoplasia, 64 (22.3%) patients were negative for intraepithelial abnormalities or malignancy, and 20 (7.0%) patients had epithelial cell abnormality (CINI, CINII, CINIII).

Conclusion: Papanicolaou smear is an effective screening test for detection of abnormalities such as the absence of endocervical or transformation zone and malignancy.

Keywords: Cervix Uteri; Uterine Cervical Neoplasms; Uterine Cervical Dysplasia; Papanicolaou Test; Cytology.

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INTRODUCTION

Cervical cancer is a major cause of morbidity and mortality in gynecology clients. It is the leading cancer among women in developing countries. Evaluation of screening performance for effective, feasible and affordable early detection and management methods is a public health priority. It has been found that there is a marked reduction in the risk of cervical cancer among women who gave a history of ever having undergone even a single Pap smear, and a 50% reduction in HPV prevalence among woman who had undergone two or more smears.¹

A Pap test is a screening test that can also be a diagnostic test. Its primary purpose is to identify patients who have cellular changes that place them at risk for the development of cervical cancer. The Pap test is a highly complex laboratory test requiring careful patient preparation, skill in clinical collection, highly skilled and controlled laboratory processing, and professional interpretation. Even though the Pap smear test alone does not have a high sensitivity and specificity, it is the most commonly used test in most screening programs.²

The Papanicolaou test also known as Pap smear is a screening method used to detect potentially precancerous and cancerous processes in the cervix. Greek doctor Georgios Papanikolaou invented this test, and it was named after him.^{3,4}

Considering the efficacy of Pap smear cytology in preventing cervical cancer it is advocated that it should be initiated in all women at the age of 21 years.⁵ In a study conducted on cervical Pap smear cytology, ages 18-80 years were included and the predominant population in the study were between 18-50 years (89%). In contrast to this study, another study concluded that the number of cases of Pap smear aged below 20 years was quite high (11.7%) in Pakistan.⁶ There were 2.01% cases of unsatisfactory smear in the study and the most common cause for unsatisfactory smear was obscuring dense inflammation and blood, absence of endo-cervical or transformation zone component and low squamous cellularity.

A cervical cancer screening study was done in Pakistan which showed 24.88% abnormal Pap smears such as dysplasia/ malignant.⁷

This clinical audit was done to find out the frequency of abnormal Pap smear results and the contributing factors for it. The purpose of the present study is to evaluate and interpret the pattern of cervical Pap smear cytology in a tertiary hospital KTH. To date there is limited research to determine Pap smear abnormalities. This study will provide an idea about the overall picture of the abnormality in the Pap smear cytology of a developing country.

MATERIALS & METHODS

This Cross Sectional Study was conducted in the Department of Gynecology & Obstetrics, MTI Khyber Teaching Hospital, Peshawar, Khyber Pakhtunkhwa, Pakistan, from September 2021-April 2022. Sample size for this study was based on the previously reported frequency of abnormal Pap smear in 24.88% of patients. Using open-Epi calculator, taking 95% confidence interval and 5% margin of error, the calculated sample size was 287 patients. The inclusion criteria were patients having ages of 18 to 70 years, scheduled for Pap smear, and having complaints of persistent per vaginal discharge, and/or intermenstrual and post-coital bleeding. Patients who were immunocompromised or taking immunosuppressive drugs, patients who had Pap smears within the previous 10 months, pregnant or menstruating, and those with suspicious looking cervix, CIN, Carcinoma of the cervix, endometrium, or ovary, were excluded from this study.

Ethical approval was obtained from the institutional review board. Patients fulfilling the study criteria were recruited for the study. Informed Consent was taken from all the included patients. All cervical Pap smears received in the Department of Pathology during the study period were included. These patients were further assessed through definite history, including individual particulars, name, age, address, manifestations, clinical assessment, and radiological findings. Pap smear was performed with the Ayers spatula by the standard method of rotating it at an angle of 360° in the cervix so that cells could be properly picked up from the squamocolumnar junction. Two slides of Pap smear were prepared and transferred to a Coplin jar containing 95% ethyl alcohol as the fixative. Furthermore, bimanual examination was done, and the slides were sent to Pathology department for cytological examination. After receiving, the slides were processed further and stained with Papanicolaou stain by cytology technicians. Slides were then mounted, and examined by pathologists. Data obtained included the demographic and clinical information of patients, and the reports of Pap smear examination by Pathology department. Data were entered and analyzed by SPSS 20 for descriptive statistics.

RESULTS

The mean age of patients was 43.20±10 years, of whom 140 (48.8%) patients were recorded in ≤50 years age group while 147 (51.2%) patients were recorded in >50 years age group. Ninety nine (34.5%) patients had diabetes mellitus, and 79 (27.5%) patients had hypertension. As per Pap smear abnormalities, 59 (20.6%) patients had dense inflammatory and blood, 82 (28.6%) patients had inadequate sample, 62 (21.6%) patients had low squamous cell neoplasia, 64 (22.3%) patients had negative for intraepithelial abnormality or malignancy, and 20 (7.0%) patients had epithelial cell abnormality (Table 1).

Table 1: Distribution of Pap smear Abnormalities (n=287).

PAP Smear Abnormalities	Frequency	Percentage
Dense Inflammatory Infiltrate and Blood	59	20.6
Inadequate sample	82	28.6
Low Squamous Cell Neoplasia	62	21.6
Negative for Intraepithelial Abnormality or Malignancy	64	22.3
Epithelial Cell Abnormality	20	7.0
Total	287	100

When age groups of ≤50 years and >50 years were analyzed for inadequate samples on Pap smear, there was no significant difference (p=0.794) between these two age groups (Table 2).

Table 2: Pap smear Abnormalities with Age Groups (n=287).

Absence of endocervical or transformation zone component (inadequate sample)	Age Groups		P value
	≤ 50 Years	> 50 Years	
Yes (n=82, 28.6%)	39	43	0.794
	27.9%	29.3%	
No (n=205, 71.4%)	101	104	
	72.1%	70.7%	
Total	140	147	
	100.0%	100.0%	

DISCUSSION

In a study done in India, Pap smears were taken from 200 patients, and 134 of the smears included inflammatory cells. After radiotherapy for cervix cancer, 2 smears revealed squamous cell carcinoma and 15 patients had low grade squamous intraepithelial lesions, 13 had mild to severe dysplasia, 12 had high grade lesions, and 8 patients tested negative for cancer.¹

Cytological analysis of the smears in a study carried out in Nepal revealed 944 (68.95%) inflammatory smears, 301 (21.99%) normal smears, 101 (7.38%) atrophic smears, 7 (0.51%) ASCUS, 2 (0.15%) LSIL, 4 (0.29%) HSIL, and 2 (0.15%) squamous cell carcinoma; 3(0.22%) cases involved radiation changes, and 5 (0.36%) of the total number of smears examined were insufficient.²

In a study done in Bangladesh, 465 patients (93%) revealed inflammatory lesions, 15 (3%), atrophy, 8 (1.6%), metaplasia, and additional signs such ASCUS, AGUS, LSIL, HSIL, and SCC. In the age range of 40 years and more, 80% of all epithelial abnormalities were detected. For all epithelial abnormalities combined, the average patient age was 49 years.³ While in our study, as per Pap smear abnormalities, 59 (20.6%) patients had dense inflammatory infiltrate and blood, 82 (28.6%) patients had absence of endocervical or transformation zone component, 62 (21.6%) patients had low squamous cellularity, 64 (22.3%) patients were negative for intraepithelial abnormality or malignancy, and 20 (7.0%) patients had epithelial cell abnormality.

A total of 1425 patients were tested in an Indian study; of these, 1034 (72.56%) had abnormal Pap smears, compared to 354 (24.84%) normal cases and 37 (2.59%) unsatisfactory or inadequate samples. A total of 27 (1.89%) instances displayed aberrant epithelial cell growth. Out of 27 cases of epithelial cell abnormalities, ASCUS was the most frequently discovered (40.74%).⁵

In another study carried out in Nepal, low grade squamous intraepithelial lesions (0.21%) were the least frequent cervical epithelial cell abnormalities, while atypical squamous cells of unclear significance were the most common (3.43%). Bacterial vaginosis was the most common cervical vaginal infections (12.30%), whereas trichomoniasis was the least common (0.29%). The age range of 31-40 years saw the highest percentage of women with aberrant epithelial cells, whereas the age range of less than 20 years had the lowest percentage. The reproductive age range (31-50 years) had the highest prevalence of cervical vaginal infection, whereas the oldest age groups (>51 years) had the lowest frequency. Only 20.17% of the patients attended for a regular screening; the majority of them reported various symptoms including vaginal discharge and genital irritation.⁶ However, in our study, mean and SDs for age was 43.20±15.10, 140 patients (48.8%) were in ≤50 years age group while 147(51.2%) patients were recorded in >50 years age group. There were 2.01% cases of unsatisfactory smear in the study and the most common cause for unsatisfactory smear was obscuring dense inflammation and blood, absence of endocervical or transformation zone component and low squamous cellularity which as compared to our study, 59 (20.6%) patients had dense inflammatory and blood, 82 (28.6%) patients had absence of endocervical or transformation zone component, 62 (21.6%) patients had low squamous cellularity, 64 (22.3%) patients were negative for intraepithelial abnormality or malignancy, and 20 (7.0%) patients had epithelial cell abnormality.

A cervical cancer screening study was done in Pakistan⁷ which showed 24.88% abnormal Pap smear such as dysplasia/malignant compared to the findings of current study where 20 (7.0%) patients had epithelial cell abnormality.

According to a survey,⁸ 36.96% of the women reported having vaginal discharge as their main complaint, 15.15% had no symptoms, 12.78% complained of irregular menstruation and 25.63% of abdominal pain; 93.57% of the women had a sufficient sample for their Pap smear, compared to 6.42% of the people who had an insufficient sample. 42.66% of those tested exhibited infection or inflammation, whereas 48.84% tested negative for malignancy. Undetermined significance / atypical squamous cells were found in 2.90%, along with low-grade and high-grade squamous intraepithelial lesions in 5.09% and 0.48%, respectively.⁸ The findings are comparable with those of the present study.

Out of 357 gynecology patients in a Pakistani study,⁹ 120 had Pap smears. 43% of patients were between the ages of 40-50 years. Cytology revealed that 55% of patients had normal smears, 37% had inflammation, and 5% had cervical intraepithelial neoplasia (CIN). Squamous cell carcinoma was discovered in 1 patient, and 2 samples were reported to be insufficient.

Another study done in Pakistan¹⁰ found that 4.67% (10/214) of patients with vaginal discharge had abnormal Pap screening results. Infection was found in 8/10 patients, and 2 individuals had dysplasia. Patients with vaginal discharge were shown to have a low prevalence of abnormal Pap smears, while vaginal discharge was a relatively common symptom. The findings agree with those of the present study.

In a different Pakistani study,¹¹ 89 (42.4%) women reported vaginal discharge, 12 (5.7%) reported post coital bleeding, and 21 (10%) reported intermenstrual bleeding; 33 (15.7%) of the women had dyspareunia, while 60 (28.6%) had pelvic pain. In total, 17 patients (8.1%) were found to have premalignant cervical cancer. Atypical squamous cells of uncertain significance were found in 5 (2.4%) women, low-grade squamous intraepithelial lesions in 8 (3.8%) patients, and high-grade squamous intraepithelial lesions in 4 (1.9%) cervical cancer patients.

In a case control study carried out in Pakistan,¹² 68.8% of the controls were predicted to be at risk for carcinoma cervix due to the factors of family history, knowledge of Pap smear screening, having ever received counselling for a Pap smear, having ever undergone a Pap smear test, or not having ever undergone a PAP smear test at all because of the expense.

A Pap smear test was undertaken from the transition zone on females between the ages of 20-65 years in another study carried out in Pakistan.¹³ A total of 68.75% of females had abnormal Pap smears; 60% of these patients had inflammatory changes, while the remaining 8.75% had cytology for malignant or premalignant alterations. Patients with pre-malignant and malignant alterations included 42.85% of CIN I patients, 28.57% of CIN II patients, 21.42% of CIN III patients, and 7.14% of patients with invasive cancer.

The frequency of benign, premalignant, and malignant lesions was found to be 94% and 3.4%, respectively, in another study carried out in Pakistan.¹⁴ The number of neoplastic lesions recorded was 6, with low-grade squamous cell intraepithelial lesions making up 23% of these, atypical squamous cells of unknown significance making up 50% of these, and high-grade squamous cell intraepithelial lesions making up 16% of these¹⁴. While in the current study, 62 (21.6%) patients had low squamous cellularity, and 20 (7.0%) patients had epithelial cell abnormality.

In another study carried out in Iraq,¹⁵ 510 Pap smears were examined; 464/510 (91%) were found to be negative for intraepithelial lesions or malignancy, and 46/510 (9%) were found to have abnormal epithelial cells. This study also examined the significance of vaginal discharge and postmenopausal bleeding and their relationship to premalignant changes in the cervix. The Pap test had 94% sensitivity, 60% specificity, and 74% accuracy rate.

In a different study carried out in Pakistan,¹⁶ out of 121 lab reports 57% were normal, 34.7% showed inflammation without atypia, 1.7% showed inflammation with atypia, 2.5% showed ASCUS, 1.7% showed LSIL, 1.7% showed HSIL, and 0.8% showed cervical cancer; 8.4% of reports contained aberrant cervical cytology overall, including 0.8% of cases of invasive cervical

cancer. Also, 7.6% of cases had a chance of being preinvasive (atypia, ASCUS, LSIL, HSIL); 66% of these were above 40 years old.

LIMITATIONS

Inadequate samples were reported in the majority of cases followed by inflammatory cells. Moreover, being a single center study, the results cannot be generalized to the population.

CONCLUSION

Papanicolaou smear is an effective screening test for the detection of Pap smear abnormalities, despite the finding of a sizeable

number of smears with absence of endo-cervical or transformation zone component, thereby making them inadequate for microscopic examination and reporting.

RECOMMENDATIONS

Pap smears should be considered if patients complain of persistent vaginal discharge, and/or intermenstrual and post coital bleeding. If Pap smear reports are found inadequate or negative for any type of pathology, liquid based cytology and endometrial sampling should be considered. Larger multicenter studies should be carried out in order to generalize the results.

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