

A STUDY ON CYTOLOGICAL PATTERNS OF PAP SMEAR AND CERVICAL CANCER SCREENING USING PAP SMEAR TEST.

Oncology

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ABSTRACT

Introduction: Cervical cancer occurs when the cells of the cervix grow abnormally and invade other tissues and organs of the body. [1,2] Pap test detects early cervical epithelial cell abnormalities and mild-to-severe dysplasia to invasive cancer and facilitates early diagnosis[3-5]. Pap smear-positive women need adequate treatment and regular follow-up. **Study Design:** The study was conducted in 100 antenatal women from Gynae OPD, Muzaffarnagar Medical College, Muzaffarnagar, Uttar Pradesh, over a period of 6 months. **Results:** Multiparity (>3) is a significant risk factor for cervical carcinoma. Inflammatory smear reports were 39 %. The epithelial abnormalities ASCUS, LSIL, and HSIL were found in 2%, 3.33%, and 0.66% of the women **Conclusion:** The Pap test has been regarded as the gold standard of cervical screening programs. Every woman above the age of 30 years should undergo routine cervical cancer screening, even into the postmenopausal period.

KEYWORDS

WHO, HSIL, HPV, ECA, ASC, ASCUS, LSIL

INTRODUCTION

According to WHO (world health organisation), Cervical cancer is the second most common cancer in females and is a major cause of morbidity and mortality.^[6] Global report published by WHO in 2014, shows that around 2,66,000 women died from cancer of cervix in the year 2012. Therefore this cancer is taking a toll on the health of women worldwide.

Most women diagnosed with precancerous changes in the cervix are in their 20s and 30s, but the average age of women when they are diagnosed with cervical cancer is in their mid 50s.^[7] This difference in the age at which precancerous changes are most frequently diagnosed and the age at which cancer is diagnosed highlights the slow progression of this disease and the reason why it can be prevented if adequate steps are taken. The Pap test was introduced by George Papanicolaou as a cervical pathology screening test in 1941.²

Pap-smear test is a very simple, low cost, noninvasive, easy to use and acceptable to patients for initial cervical cancer screening and it has saved the millions of women's life worldwide.³

Many studies in the literature showed that there is a reduction in the incidence and mortality due to invasive cervical cancer worldwide because of early detection and screening; this is possible because the Pap test detects early cervical epithelial cell abnormalities and mild-to-severe dysplasia to invasive cancer and facilitates early diagnosis.^[4-6] The overall sensitivity of the Pap test in detecting a high-grade squamous intraepithelial lesion (HSIL) is 70.80%.^[7] A Pap screening done in association with an HPV DNA test increases the sensitivity for early detection of precancerous lesions.^[8]

There is a need to spread cervical cancer screening awareness programs, educate women regarding the symptoms of cancer, and motivate them to visit the hospital for a cancer screening. Women and all family members should be counselled about the need for cancer screening. Pap smear-positive women need adequate treatment and regular follow-up. Thus, we have to strengthen our health services and health-care system to include screening at primary health centres.

AIMS& OBJECTIVES:

The objective of this study was to detect pattern of cervical cytological changes of study population by using conventional Papanicolaou (Pap) smear for the screening of inflammatory, premalignant and malignant lesions of the cervix.

METHODS:

This study was a prospective study conducted in the department of Obstetrics and Gynaecology, Muzaffarnagar Medical College,

Muzaffarnagar, Uttar Pradesh, over a period of 6 months from Feb 2022 to August 2022.

Inclusion Criteria:

Age > 21 years
Women with vaginal discharge
Post coital bleeding
Inter-menstrual bleeding
Post-menopausal bleeding
Multiple sexual partners
Unhealthy looking cervix
lesion that bleeds on touch
smokers
women without any symptoms were screened.

Exclusion Criteria:

Women not willing to participate in the study
Known case of cancer cervix
Treated cases of cancer cervix
Women who were pregnant were excluded from study

Study Population:

The study population was selected on the basis of inclusion & exclusion criteria. Total 300 patients were enrolled in the study.

Study Period:

6 months from Feb 2022 to August 2022.

Study Procedure:

A detailed history was taken using a predetermined pro forma that included the chief complaint and the findings of per speculum and vaginal examinations.

Written informed consent was obtained from all women. Patients were placed in the lithotomy position, and a sterile bivalve speculum was inserted into the vagina. The posterior vaginal wall was retracted posteriorly and the anterior vaginal wall anteriorly to allow proper visualization of the cervix and vaginal wall. A sample was taken from the ectocervix by rotating a wooden Ayre spatula 360°. The sample was quickly smeared onto a labeled glass slide and fixed with 95% ethyl alcohol in a jar. The glass slides were sent to the Department of Pathology for cytopathological examination.

Laboratory results were reported according to the new Bethesda System for Reporting Cervical Cytology 2014. A sample was considered adequate if presence of endocervical cells were noted on the smear. The transformation zone was area of the screening, whose upper limit was squamo-columnar junction as more than 90 percent cervical cancer cases develop in the transformation zone, so, adequate sampling of this area was very important.

The system broadly divides lesions into those negative for intraepithelial neoplasia and epithelial cell abnormalities (ECA) that include squamous and glandular cells.

- Adequacy of sample
- Satisfactory
- Unsatisfactory
- Squamous cell abnormalities
- Atypical squamous cells (ASC)
- ASC of undetermined significance (ASC-US)
- ASC, cannot rule out high grade lesion (ASC-US)
- Low-grade squamous intraepithelial lesion (LSIL)
- High grade squamous intraepithelial lesion (HSIL)
- Squamous cell carcinoma
- Glandular cell abnormalities
- Atypical glandular cells, specify site of origin, if possible
- Atypical glandular cells, favour neoplasia
- Adenocarcinoma in situ
- Adenocarcinoma
- Other cancers (e.g., lymphoma, metastasis, sarcoma)

Women who had abnormal Pap test results, including atypical squamous cells of undetermined significance (ASCUS), low-grade squamous intraepithelial lesion (LSIL), and HSIL were sent for a colposcopic examination. A smear with no cellular abnormality was said to be negative and the smear unable to be evaluated in the Lab was said to be inadequate. It may be obscured by inflammatory cells or blood, poorly prepared at point of collection or may not have the right cells types. Unsatisfactory pap smear results were to be repeated.

Women who had an abnormal colposcopic finding, i.e., a Reid score 6 or above, underwent a colposcopy-guided biopsy. Treatment was provided according to the stage of the disease.

Data was presented in tabulated form and percentages were calculated for all variables like normal and abnormal pap smears were calculated using Microsoft Excel. Then number and percentages of cytological pattern of abnormal positive pap smears were also analyzed.

Follow Up

Pap smear was advisable after 21 years in women having sexual history. Can be repeated in every 3 to 5 years if results are normal.

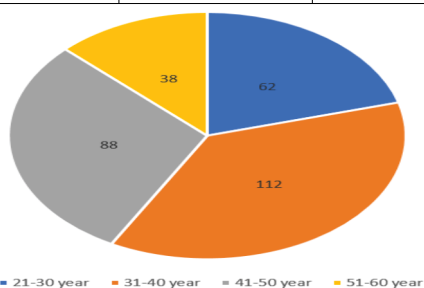
In case of abnormal results more frequent repetition of tests like in every 6 months to 1 year are needed. High risk group were subjected to human papilloma virus (HPV) DNA testing. Negative procedure value of one HPV DNA testing and two negative cytology tests was 100%. False negative tests can be <1% after three consecutive tests.

RESULTS

In our study we analysed 300 Pap smears taken from women presenting to gynecology OPD in Muzaffarnagar Medical College, Muzaffarnagar between 21 to 70 years presenting with different gynaecological complaints and as routine beyond the age of 45 years. In this study, most women (112) belonged to the 31-40 year-old age group(37.3), followed by 88 women who belonged to the 41-50 year-old age group(12.6).

Table 1 : Distribution of patients according to age.

AGE GROUP (year)	Number (n)	Percentage (%)
21-30	62	20.7
31-40	112	37.3
41-50	88	29.3
51-60	38	12.6
Total	300	100



Graph 1. : Distribution of patients according to age.

Table 2. : Distribution of patients according to Parity.

Most women (82) with abnormal smear had four or more children. This indicates that multiparity (>3) is a significant risk factor for cervical carcinoma.

Parity	No. of patients with abnormal smear (n=162)	Percentage(%)
0-2	62	20.3
3-4	102	34
≥5	136	45.3

Table 3: Main Symptom of women attending gynaecological outdoor

White vaginal discharge was the most common symptom found in 33.6%, abdominal pain in 22.6%, an irregular menstrual cycle in 11%, postcoital bleeding in 3.3%, and postmenopausal bleeding in 1.3% of the women [Table 3].

Symptoms	N = 300	Percent
Asymptomatic	57	19
White discharge per vaginum	101	33.6
Pain in abdomen	68	22.6
Post -coital bleeding	10	3.3
Irregular Cycle	33	11
Post- menopausal bleeding	4	1.3
Something coming out through vaginum	18	6
Frequency of micturition	9	3

Table 4: Per speculum examination findings of gynaecological cases

Table 3 shows that on per speculum examination white discharge was commonly found in 28% of the participants, cervical erosion was present in 21.3%, hypertrophy of the cervix was found in 10%, and cervical bleeding on touch was found in 3.6%. Cases with chronic cervicitis and cervical bleeding on touch had epithelial abnormalities.

Findings	N = 300	Percent
Healthy looking cervix	78	26
White discharge per vaginum	84	28
Hypertrophied cervix	30	10
Cervical erosion	64	21.3
Ectropion of cervix	12	4
Bleed on touch cervix	11	3.6
UV prolapse/cystocele	21	7
Total	300	100

Table 4: Common findings in all the Pap smears

The findings of pap smears were broadly classified into two groups such as unsatisfactory smears and satisfactory/adequate smears. There were 9 (3%) unsatisfactory smears and 291 (97%) adequate smears. The unsatisfactory or inadequate smears were due to either paucity of squamous cells, excess blood, or heavy inflammatory obscuring squamous cells.

Different cytological findings	Number	Percentage
Unsatisfactory smears	9	3
NILM	156	52
Abnormal smear	135	45
Total	300	100

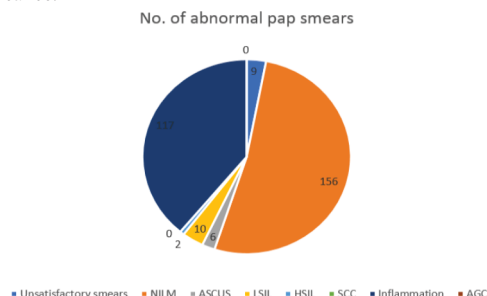
Table 4 shows that 52% of the participants were negative for malignancy and 135 subjects (45%) had abnormal smears.

Table 5 : Number and percentage of the specific findings in the abnormal Pap smears

	No of pap smear(n)	Percentage(%)
Unsatisfactory smears	9	3
NILM	156	52
ASCUS	6	2
LSIL	10	3.33
HSIL	2	0.66
SCC	0	0
Inflammation	117	39
AGC	0	0
Total	300	100

NILM: Negative for intraepithelial malignancy, AGC: Atypical glandular cell carcinoma, LSIL: Low squamous intraepithelial lesion, HSIL: High squamous intraepithelial lesion, SCC: Squamous cell

Carcinoma, ASCUS: Atypical squamous cells of undetermined significance.



Graph 2: Number and percentage of the specific findings in the abnormal Pap smears

The epithelial abnormalities ASCUS, LSIL, and HSIL were found in 2%, 3.33%, and 0.66% of the women, respectively. Atypical glandular cell and squamous cell carcinoma was found in none of the subject.

DISCUSSION

Cervical cancer is the most widely screened cancer in both high- and middle-income countries. Population based cervical cytology screening programmes offering Papanicolaou testing every 3–4 years have reduced cervical cancer incidence and mortality by up to 80% in developed countries in last 5 decades (12). Cervical cancer is on the declining trend in India according to the population-based registries; yet, it continues to be a major public health problem for women in India (13). In our study most of the women had Pap test for the first time in their life and none of the women knew that cervical cancer can be detected in precancerous state by Pap test. An effective population screening method in community settings has to be embraced extensively to increase the detection of cervical cancer in precancerous stage

In our study the maximum number of women were between 31–40 years of age group (37.3%) and number of women between 41 to 50 years age group (29.3%) and between 21 to 30 years number of women were studied about (20.7%). These findings are similar to findings with other studies. Some variations in data could be due to smaller database of our study.

Considering the fact that the common age to develop cervical cancer is between 40 and 50 years and its precursor lesion usually occurs 5–10 years earlier (14) and that mass screening should be started as early as possible.

From the above finding we conclude that screening by Pap smear should start at the age of 21 years and above; if we catch them early, we can prevent further development of cancer. This study determines 52% cases of negative for any intraepithelial lesion. P Vijaya et al (15), Chandni et al (16), Sunita et al (17), Ashok et al (14) revealed 04%, 86%, 88% and 56% cases of NILM respectively.

Most women with LSIL had four or more children. This indicates that multiparity (>3) is a significant risk factor for cervical carcinoma.

Inflammatory smear reports were 39 % in our study while Ashok et al (14), showed 32.5% , P.Vijaya Lakshmi et al showed 67% of cases, Mandakini et al (18) reported 57.48% of inflammatory cases.

Neoplastic lesions

The epithelial abnormalities ASCUS, LSIL, and HSIL were found in 2%, 3.33%, and 0.66% of the women, respectively. Atypical glandular cell and squamous cell carcinoma was found in none of the subject. In other studies also these cases varies between 0.3–7%

Limitation of the study is pap smear examination is only screening method. This screening method give basic idea about infective or inflammatory or dysplastic changes. None can give the confirmative diagnosis about stage of carcinoma nor the expansion. One should depend on colposcopic guide biopsy or punch biopsy. When the Pap test is combined with an HPV DNA test, the sensitivity for detection of cervical pathology is high but HPV DNA testing is expansive and not routinely used. By conducting health camps, increasing health awareness and performing Pap smear screening programmes the incidence of cervical carcinoma can be decreased.

CONCLUSION

Pap smear testing is a very useful, simple, economical, and safe tool for detecting precancerous cervical epithelial lesions. It should be established as a routine screening procedure to reduce the treatment burden, morbidity, and mortality.

The Pap test has been regarded as the gold standard of cervical screening programs. When the Pap test is combined with an HPV DNA test, the sensitivity for detection of cervical pathology is increased. The community should be educated about the Pap smear test, including its goal and the required frequency of application, by widespread educational and media programs. Most women who visited an outpatient clinic are not aware of cervical cancer screening. Thus, there is a need to spread cancer screening programs to help prevent mortality and morbidity due to cervical cancer.

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