

A Retrospective Study of Thousand PAP Smears at Tertiary Care Center

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ABSTRACT

Introduction: Cervical cancer is the most common cancer among women, after breast cancer in the world. But in India and other developing countries cervical cancer is the leading cause of mortality and morbidity. Prevention involves screening with PAP smear for precancerous lesions and treating them.

Material and methods: This is retrospective study done on consecutive PAP smears of 1000 women, who attended the Obstetrics and Gynecology department in a Tertiary Care Hospital from 1/10/2016 to 31/10/2017.

Results: Majority of PAP smears were normal (58.3%) Next commonest pattern was inflammatory (33.6%). Infections were noted in 69 smears constituting 6.9%. Epithelial cells abnormalities like ASCUS, LSIL, HSIL, SCC seen in 12 smears constituting 1.2%. Among them ASCUS noted in 6 cases (0.6%) low grade squamous intraepithelial lesions (LSIL) in 2 cases (0.2%), high grade squamous intraepithelial lesion (HSIL) in 3 cases (0.3%) invasive squamous cell carcinoma is reported in only one patient (0.1%)

Conclusion: PAP smear is the best possible available screening test for early detection of pre-cancerous lesions of cervix in the population of developing countries like India. Mass screening with PAP smear should reach out to women in rural areas with poor socioeconomic background. Although PAP smears are recommended to perform extensively to screen for cervical cancer, the preventive power of PAP smear lies in regular serial screening.

Keywords: Cervical Cancer, Pap Smear, Screening, ASCUS, LSIL, HSIL, SCC

INTRODUCTION

Cervical cancer is a global health problem and is a major burden on women's health worldwide.

It is the most common cancer among women, after breast cancer in the world. But in India and other developing countries cervical cancer is the leading cause of mortality and morbidity. Women in these countries usually present to the clinic only when they have symptoms such as pain, foul smelling white discharge per vaginum, and post coital bleeding or abnormal bleeding

Mortality due to cervical cancer is also an indicator of health inequities² as 86% of all deaths³ due to cervical cancer are in developing, low- and middle-income countries.⁴

Every year in India, 122,844 women are diagnosed with cervical cancer and 67,477 die from the disease⁵. India has a population of 432.2 million women aged 15 years and older who are at risk of developing cancer.⁵ It is the second most common cancer in women aged 15–44 years.⁵ India also has

the highest age standardized incidence of cervical cancer in South Asia at 22, compared to 19.2 in Bangladesh, 13 in Sri Lanka, and 2.8 in Iran⁵

Cervical carcinoma is preceded by a spectrum of intraepithelial neoplastic changes. Secondary prevention involves screening for precancerous lesions and treating them. The three screening modalities are cytology, visual inspection, and HPV test. In cytology, cells are scraped from the squamo-columnar junction of the cervix and fixed on a glass slide for reading by a trained cytologist.⁸

Visual screening was developed based on the principle that a higher concentration of intracellular proteins leads to a dense aceto-whitening effect. Its advantage is that it is an easy-to-learn, inexpensive method that requires minimum equipment.¹⁰ The sensitivity of VIA (VISUAL INSPECTION WITH ACETIC ACID) to detect CIN2 and 3 lesions and invasive cervical cancer varied from 49% to 96% and the specificity from 49% to 98%.⁹

Recently, visual inspection with Lugol's iodine (VILI) was evaluated in cross-sectional studies in India and Africa. The pooled sensitivity and specificity to detect high-grade CIN were 92% and 85%.^{5,6}

Pap smear Sensitivity is 51% for CIN1 or higher grade (Range of 37% to 84%). Specificity is 98% for CIN1 or higher grade (Range of 86% to 100%). In contrast to Pap testing, HPV testing has a sensitivity for CIN2, CIN3, or cancer of about 90 percent. And when Pap and HPV tests are combined, the sensitivity surpasses 95 percent and the negative predictive value approaches 100 percent.

The papanicolaou test is also known as pap test or pap smear. Greek doctor Georgios Papanikolaou invented this test and hence named after him. Types of pap test are Conventional pap smear and Liquid

based cytology. Most widely used system for describing PAP smear result is the Bethesda System (TBS).

Usually ACOG recommends Pap smear screening starting at 21 years of age until the age of 65 years and should be

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repeated at 3 years interval. In addition, human papilloma virus (HPV) test may be performed for abnormal pap smear tests or as dual testing, where both a pap smear and HPV test are done at the same time (also called pap co - testing). In case of abnormal Pap smear report, depending on the type of abnormality the test may need to be repeated in 6 to 12 months.

It is an effective tool for mass screening because of low cost, obtaining a permanent record of the test in the form of a slide, and having a high sensitivity.

HPV is necessary for the development of cervical cancer. Therefore, preventing HPV infection can prevent cervical cancer.¹ Primary prevention involves a risk reduction approach through intervention for sexual and health care-seeking behavior and also through mass immunization against high-risk HPV.¹²

The objective of cervical screening/secondary prevention is to prevent invasive cervical cancer from developing, by detecting and treating women with CIN2/3 lesions, and the effectiveness is determined by reduction in incidence and mortality of invasive cancer. The critical components of a screening program are an acceptable good-quality screening test, long lag interval, prompt diagnostic investigations, appropriate treatment, and post treatment follow-up.¹⁰ Ensuring high levels of participation, sufficient health care infrastructure and human resources are important for a screening program to succeed.¹³ It is also important for screening to be guided by equity considerations for those who are more vulnerable with lesser access to health care services because of social, economic, or demographic factors.¹¹

MATERIAL AND METHODS

This is a retrospective study done on consecutive pap smears of 1000 women, who attended the Obstetrics and Gynecology department in a tertiary Care Hospital from 1/10/2016 to 31/10/2017.

Age group	Number (n)	% percentage
20-29	45	4.5
30-39	171	17.1
40-49	316	31.6
50-59	310	31.0
60-69	133	13.3
>70	25	2.5
Total	1000	100

Table-1: Age distribution of patients.

Pap smear analysis report	Number of patients	%
Normal smear	583	58.3
Infection	69	6.9
ASCUS	6	0.6
LSIL	2	0.2
HSIL	3	0.3
SCC	1	0.1
Inflammatory	336	33.6
Total	1000	100

Table-2: Distribution pattern of different types of lesions in PAP smears

Specimen Collection for PAP smear:

For Pap test, both the scraping of the squamocolumnar junction and endocervical brushing should be spread onto the slide. Scrape the ectocervix circumferentially with a cervical spatula at the squamocolumnar junction and spread the material evenly onto one labelled slide. Gently insert an endocervical brush into the cervical os. Rotate, then remove the brush and spread material evenly on the other slide. Place the slides into a slide holder. Submit with an appropriately completed requisition, including pertinent patient history.

Avoid collection of samples during a patient's menstrual period.

Vaginal Sample: For patients who had hysterectomy, collect a sample from the vaginal apex.

The following conditions may render a Pap test unsatisfactory or interfere with cytological examination:

- Improper fixation or drying of a smear before fixation
- Failure to obtain adequate cellular sample
- Excessive use of lubricating jelly on the vaginal speculum
- Excessive mucus, blood, or purulent exudate

Exclusion criteria

- Women age less than 18 years
- Women who are pregnant
- Previous history of cervical cancer treatment

Inclusion criteria

- Women age more than 18 years
- Ability to give informed consent
- Sexually active women

RESULTS

The youngest was 23 years of age and the oldest 71 years. Most of the patients were in age group of 40-49 years (31.6%) followed by 50-59 years (31%) (table-1).

Majority of PAP smears were Normal (58.3%)

Next commonest pattern was inflammatory which includes neutrophilic infiltration and reactive cellular changes (33.6%).

Infections like candida, protozoa, yeast and bacterial vaginosis were noted in 69 smears constituting 6.9% (table-2).

Epithelial cells abnormalities like ASCUS, LSIL, HSIL, SCC seen in 12 smears constituting 1.2%. Among them ASCUS was noted in 6 women (0.6%) low grade squamous intraepithelial lesions (LSIL) in 2 women (0.2%), high grade squamous intraepithelial lesion (HSIL) in 3 women (0.3%) invasive squamous cell carcinoma is reported in only one patient (0.1%)

In age group of 20-29 years, majority i.e, 53.3% of PAP smears were normal. 33.7% pap smears are inflammatory. 8.8% of patients in this age group had infection (table-3).

In age group of 30-39 years, 46.7% of patients had normal Pap smear, and 45.6% showing inflammation, 5.8% had infection and 1.75% showed ASCUS.

In age group of 40- 49 years, majority i.e. 56.6% had normal smears and 34.8% had inflammation. The infection was seen in 7.9%. 0.31% showed ASCUS and 0.31% showed HSIL.

Age (yrs)	Normal	Infection	ASCUS	LSIL	HSIL	SCC	Inflammation
20-29	24(53.3%)	4(8.8%)					17(37.7%)
30-39	80(46.7)	10(5.8%)	3(1.75%)				78(45.6%)
40-49	179(56.64%)	25(7.9%)	1(0.31%)		1(0.31%)		110(34.8%)
50-59	191(61.6%)	20(6.45%)	2(0.64%)		1(0.32%)	1(0.32%)	95(30%)
60-69	92(69.17%)	8(6.0%)		1(0.75%)	1(0.75%)		31(23.3%)
>70	17(68%)	2(8%)		1(4%)			5(20%)
Total	583	69	6	2	3	1	336

Table-3: Age distribution pattern in different types of lesions.

In age group of 50 to 59 years, 61.6% had normal smear, 30% inflammatory smear and infection in 6.4%. 0.64% had ASCUS and HSIL in 0.32%. Invasive squamous cell carcinoma in 0.32%.

In age group of 60 to 69 years, 69.17% had normal smear, 23.3% inflammatory and 6% had infection. LSIL in 0.75%, HSIL seen in 0.75%.

In >70 years age group patients also had 68% normal smears, 20% inflammatory and 8% had infections. LSIL seen in 4%. Thus in each age group, normal smears and inflammatory were the most common findings.

DISCUSSION

Cervical screening helps in early detection of precancerous lesions and treating them prevents the progression into cancer. Identifying and serial screening of patients with abnormal pap smears increase the survival rate of patients.

In our study 1000 pap smears were analyzed using Bethesda system.

In this study predominance of normal smears was noticed 58.3% 336(33.6%) cases were diagnosed as inflammatory smears. Sabina Shrestha et al study reported inflammatory smears in 894(89.4%) cases out of 1000 cases. In another study by Sharma.S et al 302 (45.2%) cases of inflammatory smears noted out of 667.

In our study, there were 12 (1.2%) epithelial abnormalities were noted out of 1000 smears. 6 (0.6%) cases were diagnosed as ASCUS, (Atypical Squamous Cell of Undetermined Significance). 2 (0.2%) cases were found to be Low grade SIL,3 (0.3%) cases found to be High grade SIL,1 (0.1%) case reported as squamous cell carcinoma.

In Sabina Shrestha et al (2017) study, 27 cases (2.7%) were reported ASCUS, 43 (4.3%)cases LSIL, 29 (2.9%) cases HSIL, 7 (0.7%) cases SCC out of 1000 cases.

Epithelial abnormalities like ASCUS, LSIL, HSIL are less in our study probably because our study is done in a tertiary care center located in a metropolitan city. Majority of women in our study are educated and more health conscious with urban back ground which could be the reason for these observations.

In our study, in age group of 20-29 years, majority 53.3% of PAP smears were normal. 33.7% pap smears are inflammatory. only 8.8% of patients in this age group had infection.

In age group of 30-39 years 46.7% of patients had normal Pap smear and 45.6% showing inflammation, 5.8% had infection and 1.75% showed ASCUS.

In age group of 40- 49 years majority i.e. 56.6% had normal smear and 34.8% had inflammation. The infection was seen in 7.9%. 0.31% showed ASCUS and 0.31% showed HSIL.

In age group of 50 to 59 years 61.6% had normal smear, 30% inflammatory smear and infection in 6.4%. 0.64% had ASCUS and HSIL in 0.32%. Invasive squamous cell carcinoma in 0.32%.

In age group of 60 to 69 years 69,17% had normal smear, 23.3% inflammatory and 6% had infection. LSIL in 0.75%, HSIL seen in 0.75%.

In >70 years age group patients also had 68% normal smear, 20% inflammatory and 8% had infections. LSIL seen in 4%. Thus in each age group normal smears and inflammatory was most common findings.

In Sabina Shrestha et al study, in age group 21-30 years, 242 (24.2%) inflammatory smears,01 (0.1%) ASCUS,06(0.6%) LSIL,02 (0.2%) HSIL were noted.

In age group 31-40 years old 396(39.6%) inflammatory smears,07(0.7%) ASCUS,11(1.1%) LSIL,03(0.3%) HSIL were noted.

In age group 41-50 years old 179 (17.9%) inflammatory smears, 07(0.7%) ASCUS,15 (1.5%) LSIL, 09 (0.9%) HSIL, 01 (0.1%) SCC were noted.

In age group 51-60 years old 57 (5.7%) inflammatory smears, 09(0.9%) ASCUS,09 (0.9%) LSIL, 11 (1.1%) HSIL, 02 (0.2%) SCC.

In age group 61-70 years old 23 (2.3%) inflammatory smears, 03(0.9%) ASCUS,02 (0.2%) LSIL,04 (0.4%) HSIL,02 (0.4%) SCC.

On correlation of age with squamous cell carcinoma, age group for cervical cancer in our study i.e.,51-60 years is comparable to literature where cancer cervix is found maximum between 51-70 years of age.¹

All the patients who attended gynaec outpatient department are subjected to pap smear test irrespective of the symptoms in our study. The sensitivity of the pap smear test could have been improved if co-testing were done with HPV DNA and also with serial pap smears as per recommendations. All abnormal pap smears should be followed with colposcopy guided biopsies. Pap smear has certain limitations, such as false-negative rate of 20.9% (Renshaw et al), sensitivity rate of only 37-84% for CIN 1 or higher. It is also vulnerable to subjective interpretation, and has low predictive value, as one-third of women who progressed to cervical cancer had a normal Pap smear. The notification of results to women as well as the visits required for serial cytological screening also pose programmatic and logistic challenges. However

pap test has a specificity of 98% (range of 86-100%) Hence Pap smear is still the best possible available screening test for early detection of pre-cancerous lesions of cervix in the population of developing countries like India.

CONCLUSION

In developing countries carcinoma of cervix is the most common cancer in women and is the leading cause of morbidity and mortality.

PAP smear test is the most useful screening procedure for cervical cancer as it is reasonably affordable, easy to do and widely available for the patients.

Mass screening with PAP smear should reach out to women in rural areas with poor socioeconomic background. Although PAP smears are recommended to perform extensively to screen for cervical cancer, the preventive power of PAP smear lies in regular serial screening.

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