

Analysis of Cervical Cytology Using PAP Smear in Women Residing in Bangalore Rural, India

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ABSTRACT

BACKGROUND

Cervical cancer is one of the most deadly and common forms of cancer among women, worldwide. This disease could be preventable, by detecting it using Pap screening test. The objective of this study was to determine the pattern of various cervical smear abnormalities and to study the prevalence of epithelial cell abnormalities in our study population.

METHODS

A total of 200 married women between 21-70 years of age were enrolled in the study. Pap smear was done by the conventional method and reporting was done based on the Bethesda system 2014. Emphasis was put on epithelial cell abnormalities and the findings of abnormal epithelial lesions were correlated with histopathology.

RESULTS

Vaginal discharge was the most common complaint, occurring in 38% of the women. Lower abdominal pain was the complaint of 14% patients and irregular menstrual cycle of 13% of women, while 20% were asymptomatic. 41% had inflammatory changes. Atypical squamous cells of undetermined significance (ASCUS), low-grade squamous intraepithelial lesion (LSIL), and high-grade squamous intraepithelial lesion (HSIL) were detected in 4%, 3.5%, and 1%, respectively.

CONCLUSIONS

Pap smear is a cost-effective simple test mainly to detect precancerous lesions of cervix which can be treated and followed up to down stage the disease.

KEYWORDS

Pap Smear Screening, ASCUS, LSIL, HSIL, Squamous Cell Carcinoma

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BACKGROUND

Cancer of the cervix uteri is the second most common cancer among women worldwide, with more than half a million new cases each year and causing mortality in 50 percent of cases. About 86% of the cases occur in under developed areas of the world. In Africa the age-standardized incidence rate is 25 per 100,000 per year; the rate in India is 27, as against USA & Finland which is only 5.7 and 3.7 respectively.¹

While a part of this variation may be attributed to general variations in living conditions and the spread of the Human Papillomavirus, HPV, in the population the major part is attributed to the success of screening using the Papanicolaou test (PAP-test). If detected early, cervical cancer is curable and the 5-year survival rate is as high as 92%.² The idea behind the PAP-test is that cellular changes that may develop into cancer are detected at such an early stage that they can be removed through a simple procedure thus curtailing the cancer. It is well known that pap test was being used globally as screening procedure.

Cervical cancer is a preventable disease as it has long lag period before it turns malignant. By using pap smear as screening method, early changes like cervical intra epithelial neoplasia and cancerous changes can be detected. Early detection and appropriate treatment are possible if robust screening is implemented.³ Due to widespread screening programs, there has been a significant reduction in mortality from cervical cancer in developed countries. In Sweden, for example, the overall incidence of cervical cancer declined by 67% over a 40-year period, from 20 cases per 100 000 in 1965 to 6.6 cases per 100 000 women in 2005. Detailed studies of the cancer statistics confirm this.^{3,4}

The original PAP-smear is produced in a very simple and straightforward way; a brush or spatula is used to gently scrape cellular material from the squamocolumnar junction in the cervix and this is smeared onto a glass slide. The cells are stained, fixed, and then examined under a microscope. The test was first suggested by Papanicolaou in 1928 but it took almost 15 years before it was generally accepted by the medical community.^{5,6} There is considerable reduction in incidence of cervical cancer after following the pap smear screening procedure as described in monograph.⁷

The overall sensitivity of the Pap test in detecting a high-grade squamous intraepithelial lesion (HSIL) is 70.80%.^{5,8} A Pap screening done in association with an HPV DNA test increases the sensitivity for early detection of precancerous lesions.⁹

Poor living conditions, lack of hygiene, early age of first intercourse, multiple sexual partners, and human papillomavirus (HPV) infections are major etiological factors for the development of cervical carcinoma.¹⁰ Epidemiological studies suggest that HPV is associated with a 10-fold or greater risk of cervical neoplasia than controls.¹¹ It is now known that certain strains of HPV are present in most cervical cancers, several newer strains as etiological factor are under investigation.¹² Papanicolaou (Pap)-stained cervical cytology smears also detect the presence of various genital infections such as *Trichomonas*

vaginalis, *Candida* species, *actinomycetes*, bacterial vaginosis, *Neisseria gonorrhoeae*, *herpes simplex virus* (HSV), and HPV. Pap smear is the screening test and if any abnormalities are detected in Pap smear; a biopsy diagnosis is advised for correlation and confirmation. Attention to be paid towards women health by campaigning and imparting knowledge about course of cancer cervix which can be easily tackled by simple pap test screening procedure. 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.

We wanted to determine the prevalence of intraepithelial lesions and cancerous changes in population residing in Bangalore Rural.

METHODS

200 married women between 21-70 years age among who visited the outpatient Gynaecology clinic of the Department of Obstetrics and Gynaecology at AIMS &RC, Bangalore (rural), India, from January to July 2019 for different clinical problems were recruited after taking their consent for the study. Ethical committee clearance to conduct the study was taken. A clinical history, per speculum examination and a bimanual examination were performed for all women. Pap smear was taken for all women to screen for cervical cancer and abnormalities were interpreted by using the 2014 Bethesda system.

RESULTS

Among the 200 patients, 52% represents at the age of between 31 to 40 years. An illiterate woman represents 42% and tubectomised women were 75.5%. The other socio demographic details were given (Table-1). In this study, most women (64.5%) with LSIL belonged to the 41-50-year-old age group, followed by 65 women who belonged to the 51-60-year-old age group. HSIL was most common among women more than 41 years (Table 1). This indicates that multiparity (>3) is a significant risk factor for cervical carcinoma. In our study group 38% had vaginal discharge, 20% women were asymptomatic and 14 and 13 percent were complained of lower abdominal pain, irregular cycles respectively. Postmenopausal women were 11%. Women 2% each for Post coital bleeding and mass per vagina were reported (Table-2). Table 3 shows that on per speculum examination, healthy cervix was found in 28.5% women, white discharge was commonly found in 34% of the participants, cervical erosion was present in 18.5%, hypertrophy of the cervix was found in 10%, and cervical bleeding on touch was found in 4.84%, cervical ectropion in 5%, and cervical bleeding on touch in 4%.

Table 4 shows that 2% patients were reported unsatisfactory. 47% of the participants were negative for

malignancy and 42% were found to be inflamed. The epithelial abnormalities, atypical squamous cells of undetermined significance (ASCUS), Low grade squamous intraepithelial lesion (LSIL), and High grade squamous intraepithelial lesion (HSIL), SCC were found in 4%, 3.5%, 1% and 0.5% respectively, of the women. Total number of patients examined for each variable was 200. Total number of patients screened was 200.

Age Group	Number of Patients	Percentage
21-30	31	15.5
31-40	104	52
41-50	42	21
51-60	15	7.5
61-70	08	4
Parity		
<1	06	3
1-2	129	64.5
3 and above	65	32.5
Education		
Illiterate	84	42
1 to 5 th standard	56	28
6 to 10 th standard	38	19
PUC	18	09
Graduate	04	02
Contraception		
None	29	14.5
Tubectomy	151	75.5
IUCD	20	10

Table 1. Sociodemographic Data

Symptoms	Number of Patients	Percentage
Vaginal discharge	76	38
A symptomatic	40	20
Pain lower abdomen	28	14
Irregular cycles	26	13
Post-menopausal bleeding	22	11
Mass per vagina	04	02
Post coital bleeding	04	02

Table 2. Presenting Symptoms

Finding	Number of Patients	Percentage
Healthy cervix	57	28.5
Vaginal discharge	68	34
Cervical erosion	37	18.5
Hypertrophied Cervix	20	10
Cervical ectropion	10	05
Bleeding on touch	08	04

Table 3. Per Speculum Findings

Abnormality	Number of Patients	Percentage
Unsatisfactory	4	02
NILM	94	47
Inflammatory	84	42
ASCUS	08	04
LSIL	7	3.5
HSIL	2	01
SCC	1	0.5

Table 4. Analysis of Pap Smear Report

DISCUSSION

The study was conducted to evaluate the pattern of cervical cytology and its correlation with clinical and histopathological findings. Pap smear is well known screening test for early detection of cervical cancer. In this study we explained the importance of Pap smears screening

for early detection of premalignant and malignant lesions of cervix. In our study, maximum number of the patients 52% was in the age group of 31-40 years and 4% were in the age group of 61-70 years. Similar observations were made by other studies where maximum numbers of cases were in age group of 31-40 years.^{13,14}

Our study showed 80% symptomatic and 20% asymptomatic cases. A study done by Kaveri and Khandelwal¹⁴ revealed similar observations with cervical erosion (38.3%) being the most common finding. Whitish discharge per vaginum (38%) (Table-2) was the most common symptom as was also reported in other similar studies.^{15,16} Other symptoms were lower abdominal pain, irregular and post-menopausal and postcoital bleeding, in descending order. In our study, clinical signs of the patients were analysed using speculum to visualize gross appearance of the cervix. Various parameters included were erosion, bleeding on touch, and hypertrophy of the cervix.

There were 2% cases of unsatisfactory smear in the present 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. This is similar to the study done in Pakistan 1.8% by Bukhari et al.¹⁷

In our study, Pap smears reported as NILM was most common finding with 47% of all smears examined. This was in accordance with other studies in literature.^{18,19} Bamanikar et al²⁰ observed that among 3337 cases reported as NILM, 2111 cases were found normal. Among infectious category, nonspecific inflammation was most common finding (877 cases, 26.28% of all NILM cases). Atrophic vaginitis was noted in 1.08% cases of all NILM categories. Out of specific inflammation category, bacterial vaginosis was reported in 195 (5.87% of NILM) cases, and HSV (0.63%) was least common finding. There were 7 cases reported as LSIL on cytology with 3.5% and HSIL was reported in 2 cases (01%) of all cases.

LSIL and HSIL were most commonly seen in reproductive age group (18-50 years) and perimenopausal (46-55 years) age group respectively which correlates well with the studies done by Pudasaini et al and Hirachand et al.^{21,22} Other studies conducted by Yeasmin et al and Tailor et al²³ revealed that epithelial cell abnormalities were seen in an age group 40 years and above. Pap smear screening should begin at age 21 and repeated every 3 years until age 65. Implementation of pap smear screening program in all parts of developing countries is necessary for early detection of cervical premalignant lesions, which helps in early diagnosis, prompt treatment and reduction in mortality related to cervical cancer.

CONCLUSIONS

Pap smear is simple, noninvasive, cost-effective, and easy to perform for detection of precancerous lesions in gynaecological patients in low resource setting. Women with an abnormal Pap test should undergo a colposcopy, and

those with abnormal colposcopy findings should be advised to undergo a biopsy. HPV vaccination should be included in National Vaccination Schedule for girls and boys, in the age group of 9-14 years.

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