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PAPS Smear As A Screening Test In Postmenopausal Women

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Introduction

Cancer of the cervix is an increasing health problem and an important cause of mortality in women worldwide. The incidence of cervical cancer arises worldwide. More than one-fifth of all cervical cancer deaths occur in India.[1]Every year, 123,907 women in India are diagnosed with cervical cancer, and 77,348 women die from the disease.[2]

Cervical cancer can be prevented in the vast majority of women. According to the World Cancer statistics, >80% of all the cervical cancer cases are found in developing and low-resource countries, because of a lack of awareness and difficulty in running cytology-based screening programs.[3]

It is the commonest cancer causing death among women in developing countries.[4]In view of the well-defined natural history and long detectable preclinical phase, the cancer of cervix getspriority in terms of control program through mass screening [5].In India the peak age of cervicalcancer incidence is 55-59 years .However ,older and poor women who are at the highest risk of developing cancer are least likely to undergo screening. Significantly, as women age, their rate of death from cervical cancer steadily increases. And elderly women are more likely to be diagnosed at a late stage.[6] The reason being that elderly women don't go for a pap smear at all, or go for it very infrequently. Older women may not understand the important relationship between pap smear and cervical cancer. The aim of the present study was to evaluate women for precancerous lesions using the Pap smear test and investigate clinical correlation.

First described by Papanicolaou and Traut in 1943, this screening test is often referred to as the 'Pap test' or a surface biopsy or exfoliative cytology .Cytology is a Greek word, meaning studyof cells. It forms a part of the routine gynaecological examination in women. All

women older than 21 years should undergo an annual check-up with three yearly Pap test. Aside from premalignant and malignant changes, other local conditions can often be recognized by the cytologist. The Pap smear is only a screening test. Positive test (abnormal cells) requires further investigations such as colposcopy ,cervical biopsy and fractional curettage. Unfortunately, thePap test can detect only about 60%-70% of precancer and cancer· of the cervix and less than 70% of endometrial cancer. Reliability of the report depends on the slide preparation and the skill of the cytologist. Although a single test yields as much as 10%-15% false-negative reading, it is reduced to only 1% with repeated tests. A false-positive finding is reported in the presence of infection. A yearly negative pap smear for 3 years is assuring, and thereafter 5- yearly test is adequate.

Papanicolaou Classification:

Grade l Normal cells

Grade II Slightly abnormal cells, suggestive of inflammatory changes; repeat smear after treating the infection.

Grade III A more serious type of abnormality, usually indicative of the need for biopsy. Grade IV Distinctly abnormal, possibly malignant and definitely requiring biopsy.

Grade V Malignant cells seen.

Bethesda Classification

Sample-adequate, unsatisfactory Squamous cell abnormalities Atypical squamous cells (ASC)

- Atypical squamous cells of undetermined significance ASCUS
- ASC-cannot exclude high grade lesion ASC-H
- Low-grade squamous intraepithelial lesion (LSIL)
- High grade squamous intraepithelial lesion (HSIL) Squamous cell carcinoma

Adenocarcinoma

Comparison of Different Classification System for Pre-invasive lesion

Pap smear	Dysplasia	CIN	Bethesda
I			
II			
III	Mild	I	LSIL
IV	Moderate	II	HSIL
V	Severe	III	HSIL

A newer classification describes the cytology smears as follows:

1. Normal Cytology
2. Inflammatory Smear
3. Cervical intraepithelial neoplasia (CIN I) or mild dysplasia
4. ClN II, III and carcinoma in situ nuclear abnormalities
5. Malignant cells and tadpole cells with nuclear abnormalities.

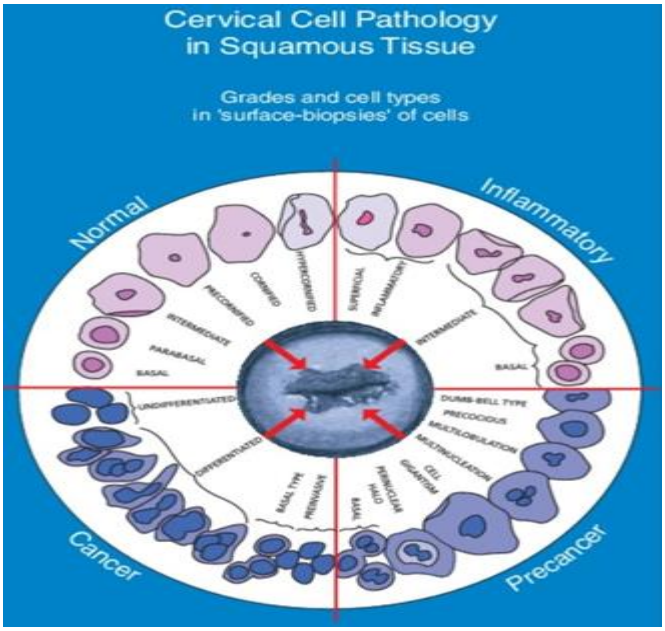


Figure 1. Illustration of pathological grades of epidermoid cells in the squamocolumnar junction of the cervix. Cells arising in this location were produced by a uniform cell-scraping technique. Classification of cell types is based upon thorough study, evaluation of cell characteristics and pathological features and is finally correlated with corresponding histological studies of the tissue. No attempt is made to classify cells exfoliated from other tissue areas, such as the endometrium. The squamocolumnar junction is a vital zone to the female, because this is the focal point where cancer arises. Grading of cells depends upon knowledge of origin of cell sample, on securing a rich concentration of cells, and of greatest importance, correct correlation with histological findings.

Materials and Methods

In the present study, postmenopausal women, attending the Out-Patient Department of Obstetrics and Gynaecology, SHKBM Hospital, Jhalawar were selected for cervical cytology screening. A detailed clinical history was taken which included age, presenting complaints, age at onset, duration, type of menopause and obstetric history, including parity. History of hysterectomy along with the indication was also noted. Their clinical examination was done which included per abdominal examination, per speculum examination and per vaginal examination. All these findings were noted down in a pre-decided proforma. Pap smear of these women was collected using an Ayer's spatula and endocervical brush, smeared on two separateslides, fixed and sent to the Department of Pathology, for staining and microscopic examination.

Study Design: Retrospective Observational Study

Venue: Department of Obstetrics and Gynaecology in Jhalawar medical college and attached hospital from February 2022 to July 2022.

Statistics: Incidences of epithelial abnormalities were calculated and correlated with age, parity and presenting complaints/ symptoms.

Results

All the 165 cases had attained menopause for at least one year except those who had surgically induced menopause. Their ages ranged from 40 to 90 years, with a mean age of 65 years. Thesmears were reported as per the guidelines specified in The Bethesda System (2001). Accordingly, satisfactory cervical smears for evaluation were obtained in 149 cases (90.30%). In 10 cases (6.06%), smears were satisfactory for evaluation but lacked the endocervical cell/ transformation zone component. The remaining 6 cases (3.63%) were unsatisfactory for evaluation due to low squamous cellularity and presence of obscuring blood, mucinous material or inflammation. (Table 1) The unsatisfactory smears were excluded from the study. The age distribution of cases is presented in (Table 2). The majority of women were in the 50- 54 years age group comprising of 45 cases (28.30%). There were 150 cases (94.33%) with natural menopause and 9 cases (5.6%) with surgical menopause. Women with surgical menopause had been operated for various Gynaecological complaints like fibroid uterus, carcinoma of the cervix, ovarian cancer, etc. As shown in (Table 3), 57 cases (35.84%) had a parity of 3, forming the largest group, followed by 49 cases (30.80%) with parity of 2, forming the second largest group and 5 cases (3.35%) were nulliparous. Out of 159 cases, 147 cases (92.45%) were symptomatic and 12 (7.54%) were asymptomatic. Amongst the symptomatic cases, something coming out per vaginum and postmenopausal bleeding were the most common presenting complaints, comprising of (59.74%) and (13.20%) respectively shown in table no. 4

Table 1: Distribution of cases according to adequacy of specimen

Adequacy of the specimen	No. of cases	%
Satisfactory for evaluation	149	90.30%
Satisfactory for evaluation but transformation zoneabsent	10	6.06%
Unsatisfactory Smears	6	3.63%
Total	165	100

Table 2: Distribution of cases within various age groups

Age (in years)	No. of cases	Percentage
40-44	5	3.144%
45-49	16	10.06%
50-54	45	28.30%
55-59	22	13.83%
60-64	30	18.86%
65-69	20	12.57%
70-74	10	6.28%
75-79	9	5.66%
80	2	1.25%
Total	159	100

Table 3: Distribution of cases according to parity

Parity	No. of cases	Percentage
0	5	3.35%
1	12	7.54%
2	49	30.80%
3	57	35.84%
4	23	14.4%
5	16	10.6%
6	7	4.40%
Total	159	100%

Table 4: Distribution of cases according to presenting complains

Complains	No. of cases	Percentage
Something coming out ofvagina	95	59.74%
Postmenopausal bleeding	21	13.20%
White discharge and pain abdomen	19	11.94%
Burning micturition	5	3.14%
Foul smelling discharge	2	1.25%
Hypertrophied cervix	5	3.14%
Asymptomatic	12	7.54%
Total	159	100%

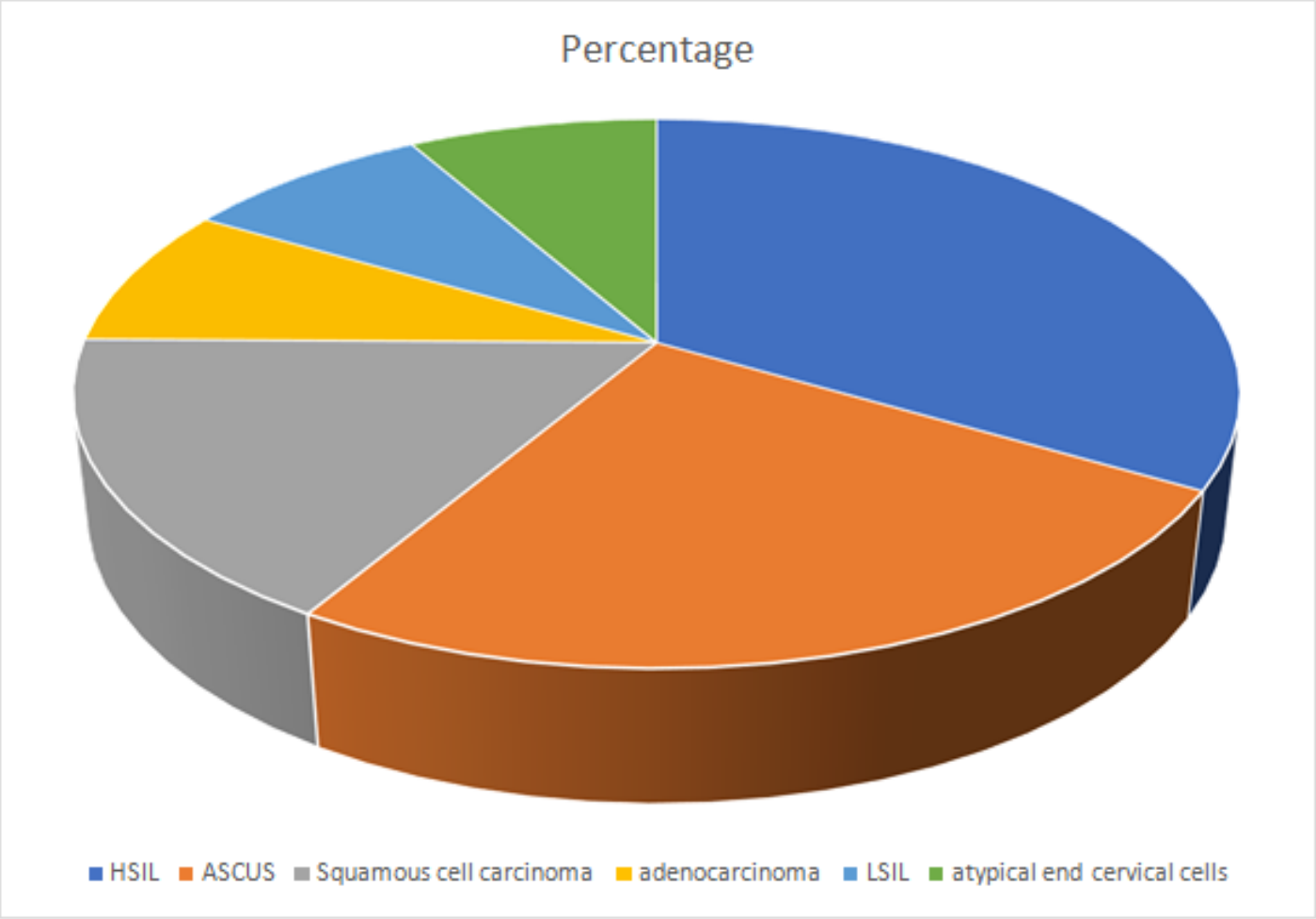
(Table 5) shows the spectrum of lesions observed on clinical examination of the cases. There were 138 cases (86.79%) which showed some form of lesions, whereas in 36 cases (22.64%), no significant abnormality could be detected.

Table 5: Distribution of cases according to lesions on per speculum examination.

P/S findings	No. of cases	Percentage
Uterine prolapse	90	56.6%
Hypertrophied cervix	5	3.14%
Vault prolapse	5	3.14%
Cervical erosion	4	2.51%
Bacterial Vaginosis	3	1.88%
Candidiasis	2	1.25%
Senile vaginitis	6	3.66%
Cervix vagina atrophic	7	4.40%
Vault indurated bleeds on touch	2	1.25%
No abnormality detected	36	22.64%

There were 145 cases (91.19%) out of 159, which showed no significant epithelial abnormalities. Epithelial abnormalities like ASCUS, ASC-H, Atypical glandular cells: NOS, Atypical endocervical cells: NOS, Atypical endometrial cells: NOS, LSIL, HSIL, Squamous cell carcinoma and Adenocarcinoma found in 12 cases (7.54%) were (Table 6) shows the incidence of various epithelial abnormalities. HSIL was the most common abnormality noted (2.51%), followed by ASCUS (1.88%) . The incidence of LSIL was (.62%). Amongst the glandular lesions, Atypical endocervical cells: NOS was the most common abnormality (.62%). The incidence of adenocarcinoma and squamous cell carcinomawere found to be (.62%) and (1.25%).

Graph 1: Distribution of cases according to epithelial abnormalities



Grand total 12 /159

Table 6: Relation between epithelial abnormalities and age

Agegroup	No. of cases	ASCUS	Atypical endocervical cells -NOS	HSIL	LSIL	Adenocarcinoma	Squamous cell carcinoma	Overall incidence rate
40-44	5	-	-	-	-	-	-	0%
45-49	16	-	-	-	-	-	-	0%
50-54	45	-	-	3(6.66)				6.66%
55-59	22	1(4.54%)						4.54%
60-64	30	1(3.33%)	1(3.33%)	1(3.33%)	1(3.33%)	1(3.33%)	2(6.66%)	23.33%
65-69	20	1(5%)						5%
70-74	10							0%
75-79	9							0%
80and Above	2							0%
Total:	159	3	1	4	1	1	2	

Table 7:Relation between epithelial abnormalities and presenting complains:

Complains	No. of cases	ASCUS	Atypical endocervical cells-NOS	HSIL	LSIL	Adenocarcinoma	Squamous cell carcinoma	Overall incidence rate
Something coming out of vagina	95			1(1.05%)	1(1.05%)			2.105 %
Postmenopausal bleeding	21	2(9.52 %)		1(4.76%)		1(4.76)	1(4.76)	23.80 %
White discharge and pain abdomen	19			2(10.52 %)				10.52 %
Burning micturition and difficulty in micturition	5	1(20%)	1(20%)					40%
Foul smelling discharge	2						1(50%)	50%
Hypertrophied cervix	5							-
Grand total	159	3	1	4	1	1	2	

As shown in Table 6, the age group of 60-64 years showed the highest incidence of various epithelial abnormalities (7.09%). The highest incidence of malignancies was also noted in 60-64 years age group i.e., 1.93%.

Table 7 shows the incidence of various epithelial abnormalities in relation to symptoms. Cases with malignancies presented most commonly with postmenopausal bleeding, lower abdominal pain or a whitish discharge per vaginum.

Discussion

Preventable but not prevented'. This is the reality of cervical cancer today, at least indeveloping countries like India, 80% of all the cases of cervical cancer occur in thesedeveloping countries. In India, cervical cancer is the leading cause of cancer-related deaths in women. The goal of cervical cancer screening is to detect pervasive lesions, which results in a reduction in incidence and mortality from invasive cervical cancer. This concept has been highly successful over last 50 years.[7] In our study, the age of women ranged from 40 to 80 years. Satisfactory smears for evaluation were obtained in 159 cases (96.36%) with 6 cases (3.63%) being unsatisfactory for evaluation. The majority of women were in the 50-54 years age group comprising of 45 cases (28.30%), and 57 cases (35.84%) had a parity of 3, forming the largest group. Out of 159 cases, 147 cases (92.45%) were symptomatic and 12 (7.54%) were asymptomatic. Something coming out per vaginum and the postmenopausal bleeding were the two most common presenting complaints, comprising 59.74 % and 13.20 % respectively. Epithelial abnormalities were found in 12 cases (7.54%) out of 159. HSIL was the most common epithelial abnormality noted (2.51%). The incidence of adenocarcinoma andsquamous cell carcinoma was found to be % .62% and 1.24% respectively. The age group of 60-64 years showed the highest incidence of various epithelial abnormalities (4.40%). The highest incidence of cervical dysplasia/ cancer was found in women with a parity of 2 to 4.

Comparison with Other Studies

The percentage of smears reported as unsatisfactory for evaluation in various studies was 0.73% in Mulay et al,[8] 0.5% in Reddy et al[9] and 18.94% in Gupta et al[10] our study, the percentage of unsatisfactory smears was (3.63%), which is comparable to the study done by Mulay et al [12]. In contrast to our study which focussed only on postmenopausal women, all the other studies also included women in the reproductive age group. A review by Mossa et al[11] cervical intraepithelial neoplasia in

postmenopausal women states that cervical smears taken from postmenopausal women are more likely to be inadequate and unsuitable for reliable assessment. Estrogen deficiency causes atrophy of tissue and a retraction of vagina There is a greater incidence of unsatisfactory smear reports and squamocolumnar junction and unsatisfactory colposcopy. It is generally preferable to repeat smear after giving oral, transdermal or vaginal estradiol for a period of 7 to 10 days.[12] The age range in the present study varied from 40 to 90 years with a mean age of 65 years. The age group of 60-64 years showed the highest incidence (23.33%) . Another recent study carried out in the United States by Rositch et al [14]noted a similar rise in the incidence of cervical cancer in women over the age of 60 to 65 years. This shift in the age distribution of cervical cancer towards older women, at a time when the efficacy of cervical cancer screening techniques has been well established the world over, suggests a need in refining the screening program to include older women of various epithelial abnormalities .In India the peak age for cervical cancer incidence is 55–59 years, according to a study by Aswathy et al.[2]Ko et al [13]that perimenopausal and postmenopausal women remain at increased risk for cervical cancer given that there is a secondary peak in prevalence of high-risk HPV subtypes in this older population, and that certain high risk HPV subtypes persist to a greater extent in this population. Unfortunately, many of these older women have not had regular access to gynaecological clinics. Gupta et al [10] noted the highest incidence of cervical dysplasia/cancer in parity above 3, whereas Reddy et al[9] noted the same in parity of 2 or more. We noted the same in parity ranging from 2 to 4. The incidence of cervical dysplasia and cervical cancer in women with presenting complaints of post-menopausal bleeding and discharge per vaginum and lower abdominal pain was 23.80% and 10.52% respectively. Studies by Bukhari et al[6] and Reddy et al[9] state that epithelial abnormalities are more likely to be found in patients with abnormal bleeding per vaginum and vaginal discharge. Reddy et al[9], also stated that epithelial abnormalities are more likely to be found in patients with abnormal bleeding per vaginum and vaginal discharge. We noted epithelial abnormalities in 7.54% cases, which is comparable to the same found by Mulay et al[8] (1.39%), Gupta et al[10](3.2%) and Nikumbh et al[7] (5.8%). Theincidence of epithelial abnormalities in India varies from 1.87 to 5.9%, as stated in a study by Mulay et al. In our study HSIL was the most common abnormality noted with an incidence of2.51% . The high incidence was noted in studies by Ranabhat et al[18](0.68%) and Nikumbh et al[7](1.98%). The recognition that HSIL is likely to progress to invasive cancer, whereas most low-grade lesions regress spontaneously, raises awareness that eradicating HSIL is critical for cancer prevention and there is the need to put greater efforts in detecting HSIL at an early stage, before it progresses to invasive cancer .In dry atrophic smears, the cytoplasm frequently becomes eosinophilic and nuclear pyknosis and karyorrhexis can assume significant proportions; this appearance, together with senile inflammatory changes, can lead to substantial difficulty in recognizing dyskaryotic cells in atrophic postmenopausal smears.[11] A study conducted by Abati et al[16] states that nuclear enlargement alone is not sufficient for diagnosing ASCUS or SIL in postmenopausal cervicovaginal smears. Nuclear enlargement in squamous cells is an expected normal reactive change that resolves with the application of local estrogen. Nuclear hyperchromasia and irregular nuclear contours remain the most reliable cellular characteristics for diagnosing SIL in atrophic cervicovaginal smears. The combined incidence of invasive cancers (1.87%) was also high in the present

study, similar to the findings of Ranabhat et al[18] (0.23%) and Nikumbh et al[7](1.60%). Squamous cell carcinoma and adenocarcinoma of the cervix were noted with an incidence of 1.25% and .62%.

Strength and limitations of our study: Few previous studies have focussed on epithelial abnormalities on pap smear solely in postmenopausal women, who refrain from routine screening due to various reasons. The findings of our study stress the importance of continued screening even after menopause and will help guide the clinicians in including as many postmenopausal women in screening as possible. The greatest problem that we faced was a lack of follow-up of patients diagnosed with epithelial abnormalities.

Conclusion

In today's era when the incidence and mortality rates of cervical cancer in countries with well-organized screening programs have decreased significantly since the introduction of screening, we belong to a developing world where the scenario is far from ideal. The 7.54% incidence of epithelial abnormalities noted in our study indicate the need to increase awareness regarding the risk of cervical cancer in older women along with a challenge to cover those populations who have never been screened during their lifetimes.

The proportion of invasive cervical cancer in the oldest patients is high and these cancers are more evolved and have a more pejorative prognosis. The prevalent infection with high-risk HPV virus remains important in elderly patients: if the HPV infection does not appear to be more risky in the elderly, HPV-induced lesions appear to be more evolving. Unfortunately, pap smear coverage rates are low in the most advanced age groups. Detection of epithelial lesions by routine screening can facilitate timely management and thereby reduce the morbidity associated with the development of invasive cancer.

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