ORIGINAL ARTICLE

Cytological Patterns of Cervical Papanicolaou Smears in Jammu Region: An Institution Based Observational Study

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Abstract

Background: Papanicolaou (Pap) smear is a commonly used cytological screening test in detecting the early epithelial abnormalities and malignancy. ***Purpose:*** To determine the prevalence of various cervical pathologies on Pap smear and to detect the premalignant and malignant lesions of cervix. ***Material and Methods:*** One hundred and two cervical smears received in the department of pathology for a period of two years were retrospectively analyzed. Data regarding clinical history and cytology reports was collected from data registers, findings recorded and cases were classified as per Bethesda nomenclature. ***Results:*** Inadequate smears were seen in 3.9 % cases. 88.2 % cases in our study were negative for Intraepithelial Lesion or Malignancy (NILM). Epithelial abnormalities were found in 7.9% smears. Among epithelial lesions, atypical squamous cells of undetermined significance (ASCUS) were seen in 1.0% smears, squamous intraepithelial lesion (SIL) in 5.9% smears including low grade squamous intraepithelial lesion (LSIL) in 3.9% and high grade squamous intraepithelial lesion (HSIL) in 2.0% smears. Squamous cell carcinoma of cervix was seen in 1.0% cases. Both cases of HSIL and solitary case of carcinoma were seen after 5th decade of life. ***Conclusion:*** Pap smear test is a cost effective and simple method to detect various neoplastic and non-neoplastic cervical lesions.

Key Words

Cervix; Cytology; Papanicolaou Smear; Carcinoma

Introduction

Cervical carcinoma is the leading cancer and major cause of death among women in the developing countries. Indian women have a cumulative lifetime risk and death risk due to carcinoma cervix of about 2.5% and 1.4% respectively (1). Estimated number of new cases in India is approximately 126000 per year (2). So early screening and diagnosis is imperative in the reduction of morbidity and mortality from carcinoma cervix. Though it is the most common cancer of women in developing countries, it is estimated that only about 5% of women are screened for the disease with Pap smear as compared to 40-50% in developed countries (3).

Papanicolaou (Pap) smear examination is an effective, easy, non-invasive screening procedure in diagnosis of cervical carcinoma. Pap test is performed by scraping the cells from the uterine cervix and was introduced in 1941, by George Papanicolaou (4). The Pap test is done by taking samples from the transformation zone, an area where physiologic transformation from columnar endocervical epithelium to squamous (ectocervical) epithelium occurs and where dysplasia and cancer arises.

Pap smear test is a rapid, cost effective outpatient department procedure which is capable of early detection of neoplastic and non-neoplastic cervical lesions and has led to a fall in incidence and mortality of cervical cancer

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(5). Although Pap smear examination is primarily aimed at diagnosing the premalignant conditions of cervix, various infective and non-infective benign lesions of cervix can also be diagnosed.

Material and Methods

This retrospective observational study was conducted in the cytology section of Department of Pathology in a tertiary care institute. The study was approved by Institutional ethics committee. One hundred and two cervical scrape smears collected using Ayer's spatula or endocervical brush from the squamo-columnar junction in the gynaecology department and received in the department of pathology were included in the study. Non-cooperative patients and recurrent lesions were excluded from the study.

The smears were fixed in absolute alcohol and stained by trained technologists using Papanicolaou's method. Specimen adequacy was assessed and the epithelial abnormalities were classified according to the Revised Bethesda System 2014 (6). Relevant history including age and clinical complaints were recorded. Findings of the Pap smear examination were recorded in detail and tabulated. Colposcopy and biopsy were advised in patients with abnormal Pap smears [atypical squamous cells of undetermined significance (ASCUS), low grade squamous intraepithelial lesion (LSIL), high grade squamous intraepithelial lesion (HSIL) and squamous cell carcinoma].

Results

Majority of the patients (42.2%) were seen in the 4th decade followed by 5th decade (27.5%) (*Table 1*). Most of the women had multiple symptoms. The commonest presenting complaint was vaginal discharge (70.6 %) followed by pain lower abdomen (56.9%) and inter-menstrual bleeding (41.2%). Post coital bleeding was seen in 21.6% cases while post-menopausal bleeding was seen in 7.8% cases (*Table 2*). Majority of cases were multiparous (90.2%).

Inadequate material was seen in 4 (3.9%) smears. 88.2 % slides were found to be Negative for Intraepithelial Lesion or Malignancy (NILM) and 7.9 % slides were labelled as positive for epithelial lesions. Among the smears NILM, reactive changes were seen in majority of smears (70.6% cases out of all smears examined) while atrophic smears were seen in 5.9 % cases. 4 cases of Bacterial Vaginosis (3.9%) and two cases of Trichomonas infection (1.9%) were also seen (*Table 3*).

Table 1: Distribution of Patients According to Age (n=102)

Age Group (Years)	Number of Patients	Percentage
21-30	12	11.8
31-40	43	42.2
41-50	28	27.5
51-60	17	16.7
>60	2	1.8

Table 2: Distribution of Patients According to Symptoms

Symptom	Number of Patients	Percentage
Vaginal Discharge	72	70.6
Lower Abdominal Pain	58	56.9
Intermenstrual Bleeding	42	41.2
Post Coital Bleeding	22	21.6
Post-Menopausal Bleeding	8	7.8

Table 3: Pap Smear Diagnosis (n=102)

Cytodiagnosis	No. of Patients	Percentage
1. NILM		
• Reactive	72	70.6
• Atrophic	6	5.9
• Bacterial Vaginosis	4	3.9
• Trichomonas	2	1.9
• Normal Smear	6	5.9
2. ASCUS	1	1.0
3. SIL		
• LSIL	4	3.9
• HSIL	2	1.9
4. Carcinoma Cervix	1	1.0
5. Inadequate Smears	4	3.9
Total	102	100

Majority of negative smears were seen in 4th decade of life.

Among smears positive for epithelial abnormalities, diagnosis of ASCUS was made in one case (1.0%), squamous intraepithelial lesion (SIL) in 6 (5.9%) cases and carcinoma cervix in 1 case (1.0%) (*Table 3*). Out of 6 cases of SIL, 4 (3.9%) had LSIL exhibiting classic koilocytic atypia and mild nuclear enlargement while two (2.0%) smears had HSIL showing atypical cells with enlarged nuclei, hyperchromasia and irregular nuclear outlines (*Figure 1*). Invasive cancer was seen in a single case (1.0 %) and smear showed evidence of squamous cell carcinoma (*Figure 2*). Majority of cases of LSIL

and HSIL were seen in 5th decade while invasive carcinoma was seen in 6th decade.

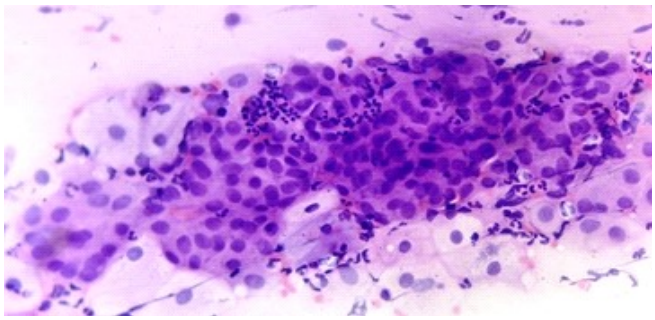

Figure 1: HSIL: *Pap smear showing atypical cells with enlarged nuclei, hyperchromasia and irregular nuclear outlines*

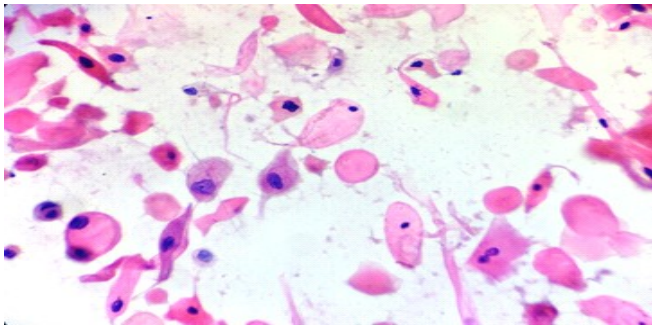

Figure 2. Squamous Cell Carcinoma: *Pap smear showing malignant keratinised squamous cells. A tadpole cell can also be seen.*

Discussion

Cervical carcinoma is an important cause of death due to cancer in women and has a long premalignant phase (7). Pap smear screening can easily identify premalignant cases and helps in their management before progressing to overt malignancy. Overall incidence of cervical carcinoma and associated mortality has significantly reduced in recent decades because of widespread Pap smear screening. Uterine cervix is an ideal organ for screening due to easy accessibility of cervix for inspection, palpation and exfoliative cytology (5).

In India, incidence of cervical carcinoma is very high predominantly in rural areas because of lack of education and personal hygiene. Though control of cervical carcinoma by early detection and treatment is a priority of the national cancer control programme in India, there is a visible lack of organized cytology screening programmes for the same and one of the possible reasons is the technical and financial constraints involved in organized cytology screening (4). Pap smear screening reduces cervical cancer rates by 60% to 90% within 3 years of implementation and these reductions in incidence are fairly consistent as documented in literature (8). Overall, the failures of previous cervical screening programmes in developing countries were attributable to failures in programme quality rather than to technological limitations of the screening test (8).

Majority of cases in our study were seen in 31-40 years age group. The results were similar to observations of Gandhi *et al.* (9) and Sinha *et al.* (10). Vaginal discharge was the commonest presenting symptom in our study followed by lower abdominal pain and inter-menstrual bleeding. Bal *et al.* (11) also observed vaginal discharge as the commonest presenting complaint in their study followed by pain abdomen. Sinha *et al*. (10) also observed vaginal discharge as the commonest symptom in their study.

7.8% patients in our study had epithelial abnormalities while smears NILM accounted for 88.2% cases. The results were similar to previous studies elsewhere in India (5,11). Majority of smears NILM were seen in 4th decade of life while majority of patients with LSIL and HSIL were seen in 5th decade of life. Invasive cervical carcinoma was seen in 6th decade of life. Similar results were also obtained by Bal *et al.* (11) and Elhakeem *et al.* (12) who recorded a progressive increase in development from LSIL to invasive carcinoma with increasing age. Afrakhteh *et al.* (13) found mean age of patients with LSIL, HSIL and invasive cancer to be 37.7, 41.7 and 54.5 years while Mishra *et al.* (14) found that 51.5% of SIL cases and 75.3% of carcinoma cases were detected in women above 40 years of age. In study by Sachan *et al*. (15), most of the abnormal cytology were detected in patients in the age group between 40 and 60 years.

Among the smears NILM, majority of cases (70.6%) had evidence of reactive changes followed by atrophic smears (5.9%). Bacterial Vaginosis was seen in 4 cases (3.9%) while two cases of Trichomonas infection (1.9%) were also seen. The results were similar to Bal *et al.* (11) who observed non-specific inflammation in 71.3% cases and Gardnerella infection in 2.7% cases. Atrophic smears were seen in 5.9 cases in our study, similar to Gandhi *et al.* (9) who observed atrophic smears in 5.6% cases in their study.

In the present study, epithelial abnormalities were seen in 7.9% of all cases. Among them, ASCUS was seen in 1.0% cases, LSIL in 3.9% cases and HSIL in 2.0% cases. Invasive cervical carcinoma was seen in 1.0% cases. The results were comparable to various previously published studies (11,16). Verma *et al.* (17) observed

ACUS, LSIL and HSIL in 1%, 5.5% and 2.5% in their study. Sachan *et al.* (15) observed SIL in 5.5% cases in their study, similar to results of our study. However, Gandhi *et al.* (9) observed ASCUS, LSIL, HSIL and invasive carcinoma in 1.36%, 0.94%, 0.78% and 0.26% cases respectively. This discrepancy may be explained by very large sample size in their study (1914 cases) as compared to our study (102 cases).

Results of our study justify the role of cervical screening at early age to determine premalignant conditions and take timely preventive action. The American Cancer Society recommends that cervical cancer screening should begin after 3 years of first sexual intercourse. Further it also recommends screening of women who have crossed the age of 30 years after every 1-2 years and women who have had three consecutive normal Pap smear results to be screened after interval of 2-3 years (18).

One of the limitations of the study was lack of HPV testing in all the cervical smears due to high cost involved and low socio-economic profile of the patients. Another limitation of the study was that the study targeted the women who had visited the hospital for clinical complaints and excludes the asymptomatic women in the community.

Conclusions

Pap smear is an easy, low cost, safe and effective screening tool in early detection of cervical carcinoma in high-risk group population. In the evaluation of carcinoma cervix, Pap smear examination should be established as routine screening procedure in asymptomatic women and as a diagnostic tool in symptomatic women. Pap smear also plays an important role in the diagnosis of inflammatory lesions and interpretation and reporting of Pap smears must be done using Bethesda System.

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Conflicts of Interest

There are no conflicts of interest.

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