A RETROSPECTIVE ANALYSIS OF ABNORMAL CERVICAL CYTOLOGY DETECTED BY PAP SMEAR

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ABSTRACT:

Objective: Pap smear test for screening programs as prevention and early diagnosis are major factors in reducing morbidity and mortality resulting from cervical neoplasia. This study is planned to analyse pap smear retrospectively which were stained at tertiary care teaching hospital. **Materials & Methods:** The present retrospective study was conducted in the department of Pathology after taking approval from institutional ethics committee. All the smears from 2007 to 2011 which were collected by the department of Obstetrics and Gynaecology and were stained by using Papanicolaou stain were studied. Cytohistopathologic correlation was done wherever available. Age, religion and presenting complaints were recorded with each smear studied from the patient record sheets. **Results:** A total of 1000 cases were retrospectively analyzed. The highest numbers of cases were found in the 4th decade i.e. 336 cases (33.6%). Mean age of the patients was 39.13 ± 4.63 years. 583 patients (58.3%) were Muslims while non-Muslim constituted 417 cases (41.7%). The most common presenting complaint was discharge per vaginum seen in 648 patients (64.8%). Inflammation was the most common finding seen in 878 smears (87.8%). Out of these 878 smears, 765 smears (76.5%) had nonspecific, 87 smears (8.7%) had atrophy and 26 smears (2.6%) had organism specified inflammatory smears. Mild, moderate and severe dysplasia were seen in 125 smears (12.5%), 36 smears (3.6%) and 25 (2.5%) smears respectively. Carcinoma in situ was seen in only one smear (0.1%). **Conclusion:** Though there are certain limitations of this test, it is the most effective, valuable, practical, easily administered and cost effective screening method for abnormal cervical cytology.

Key words: Pap smear, cervical cancer, dysplasia, screening method.

INTRODUCTION:

World-wide data shows that cervical cancer is the second most common cancer in women. It comprises approximately 12% of all cancers and is the most common cancer in the developing countries.**(1)** Globally 500,000 new cases are diagnosed annually and 280,000 women die of the disease.**(2)** Invasive cervical malignancy is preceded by premalignant cervical epithelial

lesions of different grades and most of the women with cervical cancer experience a long asymptomatic period before the clinical onset of disease. During this period, exfoliation of cervical cell is a continuous process; therefore early recognition of abnormal cytological changes through regular screening offers early detection and protection against progression from pre invasive to invasive stage of the disease.(3) The idea of screening for early detection of cancer was accepted in the 1920s, after the development of exfoliative cytological techniques, initiated through the work of Babes and Papanicolaou.(4) In1940, Dr. George N Papanicolaou demonstrated a test for the early detection of cervical cancer, contributing towards the creation of screening programs as prevention and early diagnosis are major factors in reducing morbidity and mortality resulting from neoplasia.(4) Currently cervical cancer is potentially curable and the survival rate from the disease in 5 years varies from 44 to 66%.

An important number of risk factors for cervical carcinoma have been identified and can therefore be controlled, avoiding the progress of associated pre-neoplastic lesions. These factors are early start to sexual activity, multiple partners, infection by oncogenic HPV, precarious genital hygiene, smoking, and vitamin A deficiency.

Cervical cancer develops from histologically well-characterised precursors. Schottlander and Kermauner were the first to propose the term carcinoma-in-situ (CIS) to describe these intraepithelial abnormalities.(5) Subsequently it was known that a significant proportion of women with CIS, who were untreated, develop cervical cancer. In the 1950s it became apparent that there was another large group of cervical lesions that had some of the characteristics of CIS but to a lesser degree. Reagan first introduced the term dysplasia to describe these lesions. (6) Dysplasia referred to abnormalities that included a cytological and histological spectrum of lesions intermediate between CIS and normal epithelium. The WHO adopted this terminology as mild, moderate, severe dysplasia and CIS for cytological and histopathological classification of cervical cancer precursors.

Mortality from cervical cancer has also decreased from 5.55 per 100,000 women in 1975 to 2.38 per 100,000 women in 2008. (7) Programs followed in certain Scandinavian countries and in Canada have reported that with continuous screening, mortality from cervical cancer can be reduced by almost 75%. Diagnostic cytological criteria are based on how cell samples are prepared. Methods of preparation, fixation, and staining may vary from laboratory to laboratory. Most methodologies, however, are similar in their basic concepts and goals: to reduce cellular artefacts and obtain an optimal diagnostic cell sample. So, this study was planned with the aim of retrospective analysis of pap smear at our institute.

MATERIALS & METHODS:

The present retrospective study was conducted in the department of Pathology at tertiary care teaching hospital of Uttar Pradesh. After taking the permission from institutional ethics committee; all the smears which were collected by the department of Obstetrics and Gynaecology from the both indoor as well as OPD patients and were stained in pathology department by using Papanicolaou stain from 2007 to 2011 were studied. Cytohistopathologic

correlation was done wherever available. Age, religion and presenting complaints were recorded with each smear studied from the patient record sheets. All data were recorded in percentage.

RESULTS:

A total of 1000 cases were retrospectively analyzed. In our study, the youngest patient was 19 year old while the eldest was 75 year old. The highest number of cases were found in the 4th decade i.e. 336 cases (33.6%) followed by 247 cases (24.7%) and 232 cases (23.2%) in the 3rd decade and 5th decades of life. Minimum cases were seen in the 8th decade i.e. 5 cases (0.5%). Mean age of the patients was 39.13 ± 4.63 years. (Table 1)

Table 1: Distribution of cases according to different age groups

Age (in years)	No. of cases (%) n=1000
11-20	15 (1.5%)
21-30	247 (24.7%)
31-40	336 (33.6%)
41-50	232 (23.2%)
51-60	107 (10.7%)
61-70	58 (5.8%)
71-80	05 (0.5%)

Most of the patients in our study were Muslim women i.e. 583 patients (58.3%) while non-Muslim women constituted 417 cases (41.7%). The most common presenting complaint was discharge per vaginum, seen in 648 patients (64.8%). Pelvic pain was the next common presenting complaint seen in 542 patients (54.2%), followed by irregular menses in 207 patients (20.7%) and postmenopausal bleeding in

69 patients (6.9%). Dyspareunia and pruritis vulvae were seen in 38 (3.8%) cases and 23 (2.3%) cases respectively. (Table 2)

Table 2: Common presenting features of women undergoing Pap screening

Presenting features	Number of cases (%) (n=1000)
Discharge per vaginum	648 (64.8%)
Pelvic pain	542 (54.2%)
Irregular menses	207 (20.7%)
Postmenopausal bleeding	69 (6.9%)
Post coital bleeding	58 (5.8%)
Dyspareunia	38 (3.8%)
Pruritis vulvae	23 (2.3%)

Table 3 shows the findings noted on Pap smear in our study. It is clear from the table that inflammation was the most common finding reported in our study seen in 878 smears (87.8%). Out of these 878 inflammatory smears, 765 smears (76.5%) had nonspecific inflammation, 87 smears (8.7%) had atrophy with inflammation and 26 smears (2.6%) had organism specified inflammatory smears. Organisms specified were Bacterial vaginosis in 9 (0.9%) smears, Candida in 8 (0.8%) smears, Trichomonas vaginalis in 5 (0.5%) smears and Herpes and Leptothrix in 2 (0.2%) smears respectively. HPV related changes were seen in 8 smears (0.8%). There were 52 smears (5.2%) within normal limits, while 19 smears (1.9%) were unsatisfactory for evaluation. In our study, 449 (44.9%) smears had no comments on either presence or absence of endocervical cells on screening, while 269 smears (26.9%) showed

presence and 282 smears (28.2%) showed absence of endocervical cells. Other findings seen were squamous metaplasia in 98 smears (9.8%) and cervical erosion in 59 (5.9%) smears. Epithelial cells showing reactive changes were seen in 172 (17.2%) of smears. Radiation therapy related changes were present in 13 smears (1.3%). Mild, moderate and severe dysplasia were seen in 125 smears (12.5%), 36 smears (3.6%) and 25 (2.5%) smears respectively. There were 9 (0.9%) smears which were suspicious of carcinoma. Carcinoma in situ was seen in only one smear (0.1%). Invasive squamous cell carcinoma was seen in 26 smears (2.6%). Adenocarcinoma was noted in 4 smears (0.4%) and adenosquamous carcinoma was seen in a single smear (0.1%) while undifferentiated carcinoma of cervix was seen in 4 (0.4%) smears. In one smear (0.1%) of a reproductive age female, endometrial cells were noted.

DISCUSSION:

Cancer of the cervix can be prevented by intercepting it at the pre invasive stage. The role of the Pap smear cytology as a cancer screening tool for the cervix has been substantiated by several studies in the last 50 years **(8,9)** and the method has resulted in decrease in the incidence and mortality rates of cervical cancer in the developed world.**(10,11)**

Mean age of the patients in our study was 39.1 ± 4.6 years with a range from 19 to 75 years. The highest number of cases were found in the 4th decade (33.6%) followed by 24.7% and 23.2% in the 3rd and 5th decades of life respectively. These findings are in accordance with the study done by Ranabhat SK et al in Nepal, a developing nation like India.**(12)**

Table 3: Findings on the Pap smear examination

Cytological findings		Number of cases (%) n=1000
Smear within normal limits		52 (5.2%)
Inflammatory (nonspecific)		765 (76.5%)
Atrophic with inflammation		87 (8.7%)
Unsatisfactory		19 (1.9%)
Squamous metaplasia		98 (9.8%)
Reactive epithelial cells		172 (17.2%)
Radiation changes		13 (1.3%)
Cervical erosion		59 (5.9%)
Inflammatory (organism specified)	Trichomonas	05 (0.5%)
	Candida	08 (0.8%)
	Bacterial vaginosis	09 (0.9%)
	Herpes	02 (0.2%)
	Leptothrix	02 (0.2%)
Mild dysplasia		122 (12.2%)
Moderate dysplasia		36 (3.6%)
Severe dysplasia		25 (2.5%)
Suspicious of carcinoma		09 (0.9%)
Carcinoma- in- situ		01 (0.1%)
Squamous cell carcinoma		26 (2.6%)
Adenocarcinoma		04 (0.4%)
Adenosquamous carcinoma		01 (0.1%)
Undifferentiated carcinoma cervix		04 (0.4%)
HPV related changes		08 (0.8%)
Endocervical cells	Present	269 (26.9%)
	Absent	282 (28.2%)
	No comment	449 (44.9%)
Endometrial cells		01 (0.1%

The age of their patients ranged from 20 to 81 years with the average age of 37 years with most of the patients being in the age-group of 30-39 years. Similar results were also reported by Bal MS et al., who observed that maximum number of patients (45.3%) were in the age group of 31-40 years.**(13)** Our findings are discordant with the study done by Sherwani RK et al; who in their study reported 77 (48.1%) cases in fourth decade of life followed by 50 (31.2%) cases in the third decade. In their study the minimum age of patient screened was 21 years and maximum was 63 years. **(14)** In the study of Khan MS et al, out of 546 patients, 78 were in the age group of 21-30 years of age, 188 in the age group of 31-40 years and 280 patients were above 40 years of age. **(15)**

In our study most of the patients were Muslim women (58.3%) while non- Muslim women were 41.7%. But Dhruva et al in their study reported 317 (79.2%) Non- Muslim women and 83 (20.8%) Muslim women. **(16)** This difference could be due to the fact that our study place was a Muslim predominant area. Also Dutta Gupta C et al have reported 478 women (45.6%) as Muslims and 566 women (54.4%) being Non-Muslims in their study on 1044 patients.**(17)** Most of the women in our study had complaint of abnormal vaginal discharge (64.8%). Pelvic pain was the next common complaint in 54.2% followed by irregular menses in 20.7% and postmenopausal bleeding in 6.9% cases. Dyspareunia and pruritis vulvae were seen in 3.8% and 23% respectively. Dhruva et al in their study at Rajkot analyzed a total of 400 smears. They noted the most common complaints as abnormal vaginal discharge in 186 cases (46.5%), menstrual abnormalities in 82 cases

(20.5%) followed by lower abdominal pain in 38 cases (9.5%), backache in 23 cases (5.8%), post coital bleeding in 21 cases (5.3%) and postmenopausal bleeding in 7 cases (1.8%). The presenting complaints noted by Dhruva et al was similar to our study but in lesser proportion which may be due to smaller sample size of their study.**(16)** Sherwani RK et al also reported most common presenting complaint as discharge per vaginum in 68 (42.5%) cases followed by pain lower abdomen in 44 (27.5%) cases and menstrual irregularity in 38 cases (23.8%). Postmenopausal bleeding was the presenting complaint in 50% cases of invasive carcinoma in their study.**(14)** Similar results were also reported by Verma I et al study.**(3)** In our study inflammation was the most common finding in 87.8% cases. Out of these inflammatory smears, 76.5% had nonspecific inflammation, 8.7% had atrophy with inflammation and 2.6% had organism specified inflammatory smears. Organisms specified were Bacterial vaginosis, Candida, Trichomonas vaginalis, Herpes, and Leptothrix in 9 (0.9%), 8 (0.8%), 5 (0.5%), 2 (0.2%) and 2 (0.2%) smears respectively. HPV related changes were seen in 0.8% smears. There were 5.2% smears within normal limits, while 1.9% smears were unsatisfactory for evaluation. In our study 44.9% had no comment on either presence or absence of endocervical cells, while 26.9% showed presence and 28.2% showed absence of endocervical cells. Squamous metaplasia was seen in 9.8% and cervical erosion in 5.9%. Epithelial cells with reactive changes were seen in 17.2%. Radiation therapy related changes were present in 1.3%. Mild, moderate and severe dysplasia was noted in 12.5%, 3.6%, and 2.5% respectively. There were 0.9% cases which were suspicious of carcinoma. Carcinoma

in situ was seen in 0.1% only. Invasive squamous cell carcinoma was seen in 2.6%. Adenocarcinoma was noted in 0.4% while 0.1% showed adenosquamous carcinoma. Undifferentiated carcinoma cervix was seen in 0.4% cases.

CONCLUSION:

Pap smear examination is a very valuable and effective screening method for detection of the premalignant and the malignant cervical epithelial lesions. Though there are certain limitations of this test, it is the most effective, practical, easily administered and cost effective investigation.

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