PAP SMEAR FOR SCREENING OF CARCINOMA CERVIX

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ABSTRACT

BACKGROUND

A cross sectional study to measure the prevalence of carcinoma cervix and to correlate these abnormalities with clinical features in women attending gynaecology clinic at District Hospital Samba, Jammu (Hospital based study). All women (114) who attended gynaecology clinic with signs and symptoms of diseases of cervix were included in the study.

MATERIALS AND METHODS

Pap smears were made with wooden spatula and immediately fixed in fixative and evaluated by conventional cytology. Pap smear diagnosis was correlated with presenting symptoms of patients.

RESULTS

Age of patients ranged from 18-77 years and mean age was 31.41 years. Most of the patients were para 1 or para 2. Discharge per vaginum was the most common symptom (39.13%) followed by pain lower abdomen (37.68%), menstrual abnormalities (15.94%) and bleeding per vaginum (7.25%). Pap smear diagnoses were: Normal Cervical Smears: 9 (8.33%), Inflammatory Cervical Smear: 85 (75%), Infection 6 (5.27 %), Atrophic Smear: 1 (0.44 %), LSIL: 7 (6.14 %), Inadequate for Evaluation: 6 (4.82 %).

CONCLUSION

This study establishes the importance of cervical cancer screening by conventional Pap smears in diagnosing precancerous lesions of cervix and can be supplemented by HPV testing.

KEY WORDS

Carcinoma Cervix, Pap Smear, LSIL/HSIL and HPV.

BACKGROUND

Cervical cancer is common worldwide and ranks third among all malignancies for women. Eighty percent of cancer cervix cases are seen in developing countries, where it is commonest cancer in women.[1] In 2008, an estimated 5, 30, 000 new cases were identified globally and 2, 75, 000 deaths were recorded. India had an age standardized incidence rate of 30.7/100, 000 women in 2002, one –year prevalence of 101, 583 and 5-year prevalence of 370, 243 and 72, 600 deaths in 2002.[2,3]

Human papilloma virus infection is a well-known prerequisite for the development of cervical cancer. The risk factors for cervical cancer are related to both host and viral characteristics such as HPV exposure, viral oncogenicity, inefficiency of immune response and presence of co-carcinogens.[4] The predisposing factors for carcinoma cervix include- early age at marriage, coitus before 18 year of age, delivery of the first baby before the age of 20 year, multiple sex partners, history of genital warts, high parity, use of oral

contraceptives, race and religion; cancer cervix is rare in Muslims and Jews; circumcision may be a factor. Low socioeconomic status and poor personal hygiene may be contributory factors.[5] Persistent infection with high risk oncogenic HPVs (HPV 16 and HPV 18) is currently considered to be the single most important factor in cervical oncogenesis.[6] Moreover, the integration of high-risk HPV is a key step in cervical neoplastic progression.[7] Tobacco specific carcinogens and polycyclic aromatase hydrocarbons can bind to and damage cellular DNA and may cooperate with HPV to produce malignant transformation. Prenatal exposure to the diethylstilboestrol and development of the clear cell adenocarcinoma of the cervix is also observed.[8] Association of herpes simplex virus 2 and Chlamydia trachomatis with cancer cervix is being investigated.[9] Epidemiological studies showed that diet deficient in fruits and vegetables and a low intake of β-carotene are associated with increased risk of cervical dysplasia.[10]

Nearly all the invasive cervical carcinomas are preceded by a stage in which abnormal cells are confined to the epithelium. These intraepithelial lesions share many of the cytologic features of the invasive carcinoma, mainly manifested by enlargement, irregularities and hyperchromasia of the nuclei; increase in mitotic activity and alteration of maturation pattern. A continuous range of the morphological abnormalities exist among these lesions, which provide a rough indication of the likelihood with which they will evolve into invasive carcinoma if left untreated.[11,12] According to the Bethesda System, these are pre-invasive lesions are classified into two groups: Low grade squamous

intraepithelial lesions (LSIL) and high grade squamous intraepithelial lesions (HSIL). The available evidence suggests the existence of a sequence of events that in some cases leads to the progression to a full-blown invasive malignancy while some milder forms regress spontaneously. Cancer of the cervix can be prevented by interpreting it at the preinvasive stage.[13,14,15]

Cervical cancer is considered preventable, as majority of cancers are preceded by a long-standing precancerous lesion. This lesion may exist in the non-invasive stage for years and shed abnormal cells that can be detected on cytological examination.[16]

The Papanicolaou (Pap) smear is one of the modern success stories in the field of preventive medicine which detects cervical cancer in its early stages. The Pap test is a screening test performed using cells from ectocervix, endocervix and vagina.

The conventional Pap smear test is used widely in developed countries, where it has decreased both the incidence and mortality of carcinoma cervix. It has been estimated that the use of this simple and cost-effective technique has reduced the incidence of carcinoma cervix by at least by 70%, yet false positive results are common. Unfortunately, many developing countries lack the facility to carry out widespread Pap screening.[17,18,19] Therefore we planned this study to measure the prevalence carcinoma cervix among women attending Gynaecology OPD (Hospital based)

MATERIALS AND METHODS

A cross sectional study was conducted on 114 women attending gynaecology OPD with sign and symptoms suspicious of disease of cervix at District hospital Samba, Jammu; Jammu and Kashmir from March 2013 to February 2014. The women who presented with symptoms like vaginal discharge, perineal itching, lower abdominal pain, backache, menstrual abnormalities and postcoital bleeding were included in the study. In each case detailed history, gynaecological/ obstetrics history, general physical examination and per vaginum examination was done. Pap smears were prepared in lithotomy position, the gynaecologist inserted a speculum into vagina and then using a wooden spatula took a sample of cells from and around the cervix; ensuring adequate sampling of squamocolumnar junction, this material was then smeared on glass slides and immediately fixed in 90% methanol or 90% propanol and then sent to cytology laboratory for evaluation.

RESULTS

Age of patients ranged from 18 – 77 year and mean age was 31.41 year. Most of the patients were para 1 or para 2 however para 4 or para 5 patients were also there. Discharge per vaginum was the most common symptom (39.13%) followed by pain lower abdomen (37.68%) and menstrual abnormalities (15.94%). Bleeding per vaginum was in only five cases (7.25%).

Out of a total of 114 Pap smears that were evaluated for cytomorphological features, 9 cases were diagnosed as normal cervical smears, 85 (75 %) cases were diagnosed as inflammatory cervical smears, 6 (5.27 %) cases were diagnosed as infection in smears, 1 (0.44 %) case was of atrophic smear, 7 (6.14 %) cases were diagnosed as LSIL and

6 (4.82 %) cases were inadequate for evaluation. Various diagnoses rendered on Pap smears are illustrated in table 1.

Pap Smear Diagnosis	No.	%
Normal Cervical Smear	9	8.33
Inflammatory Cervical Smear	85	75.0
Organisms Bacterial Vaginoses	5	4.39
Trichomonas Vaginalis	1	0.88
Atrophic Smear	1	0.44
LSIL	7	6.14
Inadequate for Evaluation	6	4.82
Total	114	100.0
Table 1. Pap Smear Diagnosis		

Pap smear diagnoses in patients who presented with discharge per vaginum is shown in table 2

Clinical Feature	Normal	Inflammatory	Organisms	Atrophic	LSIL
Discharge per Vaginum	3	18	2	0	4
Table 2. Pap Smear Diagnosis in Patients Who Presented with Discharge Per Vaginum					

Pap smear diagnoses in patients who presented with pain lower abdomen is shown in table 3.

Clinical Feature	Normal	Inflammatory	Organisms	Atrophic	LSIL
Pain Lower Abdomen	2	20	2	0	3
Table 3. Pap Smear Diagnosis in Patients Who Presented with Pain Lower Abdomen					

Pap smear diagnoses in patients who presented with menstrual abnormalities is shown in table 4.

Clinical Feature	Normal	Inflammatory	Organisms	Atrophic	LSIL
Menstrual Abnormalities	1	7	1	0	2
Table 4. Pap Smear Diagnosis in Patients Who Presented with Menstrual Abnormalities					

Pap smear diagnoses in patients who presented with bleeding per vaginum is shown in table 5.

Clinical Feature	Normal	Inflammatory	Organisms	Atrophic	LSIL
Bleeding per Vaginum	0	3	1	0	1
Table 5. Pap Smear Diagnosis in Patients Who Presented with Bleeding Per Vaginum					

DISCUSSION

The clinico-cytological evaluation of 114 cervical smears establishes the spectrum of hospital-based lesions of cervix in India. It also establishes the importance of cervical cancer screening by cervical Pap smears. The cervical Pap smear screening is useful for developing countries like India where majority of population is rural and belong to low socioeconomic status and cannot afford universal screening and newer techniques like liquid-based cytology, automated scanning devices, computer assisted microscopy, digital

colposcopy with automated image analysis, human papilloma virus testing, molecular markers and HPV vaccine. Using conventional cytology, a definite diagnosis could be reached in 108 of total 114 cases. The cytology diagnoses of cancer cervix and precursor lesions (LSIL/HSIL) has to be confirmed by histopathology which is considered gold standard. Based on cytohistology correlation, conventional cervical Pap smear test is not sufficiently sensitive in reliably detecting cervical intraepithelial neoplasia.[20] A median analysis of European studies has shown that the median sensitivity of conventional cytology is only 50%, but with marked variation in sensitivity in different national settings.[21] It is because of this low sensitivity and specificity of cervical Pap smears, newer techniques for cervical cancer screening were introduced.

Inflammatory cervical smear was the commonest diagnoses rendered in evaluation of cervical smears i.e., 85 cases out of 114 cases. This was followed by normal cervical smear, LSIL, unsatisfactory smears, microbial infection and atrophic smears. Most of the patients in our study were symptomatic who attended gynaecology clinic for some complaints, and this could be the reason for inflammatory cervical smears being the commonest diagnosis encountered. Had it been the screening of general population/random screening the incidence of different diagnoses rendered would have been different. The results of other studies also support this observation.[22,23] Persistent inflammatory cervical smears can lead to chronic irritation and can be fertile soil for neoplastic transformation.[24] In our study the incidence of normal cervical smears is low as most of the patients were attending gynaecology clinic for some complaints and none of the patient was volunteer for cervical cancer screening.[23,24] In our study, the diagnoses of LSIL was in seven cases (6.14 %) out of total of 114 cases. This establishes the importance cervical Pap smears in diagnosing precancerous lesions of cervix. LSIL cases are followed up clinically and repeat Pap smear is done after one year. The study by Mufti ST et al (2014)[25] diagnosed LSIL in 2.2% cases. There was a single case of atrophic smear in our study and she was 77-year-old. The incidence of atrophic smears was much less compared to the studies in the literature.[26,27] This could be because of less number of postmenopausal women in our study. We found six cases of infectious smears which included five cases of bacterial vaginoses and one case of Trichomonas vaginalis. The reporting of bacterial vaginoses is important as it predisposes to postoperative infections, preterm delivery, chorioamnionitis, urinary tract infections, endometritis and pelvic inflammatory disease. The reporting of Trichomonas is also important since they are also associated with adverse pregnancy outcomes, such as premature rupture of membranes, preterm-delivery, low birth weight as well as increased risk of HIV transmission.

CONCLUSION
In our country where majority of population is rural, screening for carcinoma cervix by Pap smears and conventional cytology can play an important role in diagnosing precancerous lesions of cervix and thus can play an important role in decreasing the incidence of carcinoma cervix. This study also establishes that conventional cytology Pap smear screening has low sensitivity and needs to be supplemented by HPV testing, and liquid based cytology.

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