Original Research Article

A study on cervical screening by PAP smear and correlation with microbiological and clinical finding

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Abstract

Introduction: Cervical cancer is one of the most common cause in India with over 75% of incidence and mortality. The objective of cervical cancer screening, therefore, is the detection of these lesions before developing into invasive cervical cancer.**Methods:** This prospective study was carried out over 2 year at the Department of Obstetrics and Gynaecology in National Institute of Ayurveda, Jaipur. Pap smears were collected from 400 sexually active women who were more than 21 years of age.**Result**: Most common findings were Inflammatory lesion (46.5%), followed by NILM(30%). Atrophic smear was seen in 16 cases (4%), rest had abnormal cellular changes in the form of ASCUS (1.25 %), LSIL (2 %) and Carcinoma (1%).**Conclusion :** Inflammatory smear is most common cytological finding in premenopausal age group . Epithelial cell abnormality is most common finding in premenopausal and postmenopausal age groups. Pap smear examination can be coupled with culture and sensitivity of vaginal swab to provide adequate treatment.

Keywords : Pap smear, Cervix, LSIL.

Introduction

Cervical cancer is one of the most common cause in India with over 75% of incidence and mortality. Cervical cancer has well-defined premalignant lesions before the development of invasive lesions. The objective of cervical cancer screening, therefore, is the detection of these lesions before developing into invasive cervical cancer. Treatment of these lesions is highly effective in preventing cervical cancer.The introduction of Papanicolaou (Pap) test led to significant reduction in mortality and morbidity. Since the introduction of the conventional cytology or Pap smear, named after the man who popularized this method of screening, the incidence, and mortality of cervical cancer has dramatically decreased in many developed countries. The screening coverage in India is appalling low. As a result, the diagnosis of carcinoma cervix is based on opportunistic screening or after the onset of the symptoms. The infections of the genital tract are common in reproductive age women. Many women remain asymptomatic in the presence of vaginitis or cervicitis.[1,2] The clinical significance of inflammation on pap smear of asymptomatic women is practically unknown since no guidelines exist on appropriate management. The clinicians are often faced with dilemma on whether these women should be counselled to present for vaginal/ cervical cultures in order to isolate possible pathogens [3,4]. This study assessed the possible association between inflammation on pap smears and the presence of cervical/ vaginal pathogens as determined by cultures. The problem of vaginal discharge is most common narrated complaint of woman of Vaginosis, Candida, Trichomonas, normal physiological discharge [7]. This study is done to compare the characteristics of pap smear and microbiological pattern among patients with abnormal vaginal discharge and also to evaluate women for precancerous lesion using the pap smear test and investigate clinical correlation.

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Methods

This prospective study was carried out over 2 year at the Department of Obstetrics and Gynaecology in National institute of Ayurveda, Jaipur. We screened 400 sexually active women who were more than 21 years of age. Women with different complaints, including vaginal discharge, blood-mixed discharge, foul-smelling discharge, post coital bleeding, intermenstrual bleeding, postmenopausal bleeding, abdominal pain, infertility, and secondary amenorrhea, were included in this study. Those not willing to participate in the study had a frank growth, had been treated for cervical cancer, or were pregnant were excluded from the study. A detailed history was taken using a predetermined proforma that included the chief complaint and the findings of per speculum and vaginal examinations.Written informed consent was obtained from all women. Patients were placed in the lithotomy position, and a sterile bivalve speculum was inserted into the vagina. The posterior vaginal wall was retracted posteriorly and the anterior vaginal wall anteriorly to allow proper visualization of the cervix and vaginal wall.A sample was taken from the ectocervix by rotating a wooden Ayre's spatula 360°. The sample was quickly smeared onto a labeled glass slide and fixed with 95% ethyl alcohol in a jar. The glass slides were sent to the Department of Pathology for cytopathological examination. Laboratory results were reported according to the New Bethesda System for Reporting Cervical Cytology 2014. The system broadly divides lesions into those negative for intraepithelial neoplasia and epithelial cell abnormalities (ECA) that include squamous and glandular cells.

Women who had abnormal Pap test results, including atypical squamous cells of undetermined significance(ASCUS), low-grade

squamous intraepithelial lesion (LSIL), and HSIL were sent for a colposcopic examination. Women who had an abnormal colposcopic finding, i.e., a Reid score 6 or above, underwent a colposcopy-guided biopsy. Treatment was provided according to the stage of the disease.

Results

Table 1: Number of patient with each complaint

Complaints	No. of patients
Asymptomatic	21(4.8%)
White discharge	200(45.7%)
Vaginal Itching	74(16.9%)
Burning micturition	46(10.5%)
Backache	47(10.7%)
Irregular menstruation	31(7.1%)
Foul smelling discharge	13(2.9%)
Postcoital bleeding	3(0.6%)
Postmenopausal bleeding	2(0.5%)

White discharge was most common problem observed in 45.7 % of women attended for pap smear examination followed by vaginal itching(16.9%). 21 women were asymptomatic at the time of examination.

Table 2: Number of patients in following age group

Age groups	Number of patients
<40yrs	289
41-50yrs	71
>50yrs	40

In this study, out of 400 cases, 289 (72.2 %) were in premenopausal age group and 71 (17.7 %) were in 41-50 years age group . The lowest number 40 (10 %) of patients from post menopausal age group.

Table 3: Cytological diagnosis of patients in Pap smear

Lesion	Number of patients
Unsatisfactory	15
Inflammatory	186
NILM	120
Bacterial vaginitis	33
Candida	8
Atrophic smear	16
Trichomonas	1
Actinomycosis	1
ASCUS	5
LSIL	8
HSIL	3
Squamous cell carcinoma	4

Majority of pap results were in the category inflammatory (46.5%), followed by NILM(30%). Atrophic smear was seen in 16 cases (4%) , rest had abnormal cellular changes in the form of ASCUS (1.25 %), LSIL (2 %) and Carcinoma (1%).

Table 4:Correlation of cytological diagnosis with age group

Age groups	21-30	31-40	41-50	51-60	61-70	TOTAL
NILM	40	58	15	5	2	120
Inflammatory	81	66	33	4	2	186
Bacterial vaginitis(33%)	11	17	3	1	1	33
Candida	02	4	1	1		8
Trichomonas		1				1
Actinomyces			1			1
Atrophic vaginitis(50%),			8	4	4	16
ASCUS		1	2	2		5
LSIL		2	4	2		8
HSIL		1	1	1		3
Squamous cell carcinoma			1	1	2	4
TOTAL	134	150	69	21	11	385

Majority of pap results were in the age group of 31-40 followed by 21-30 age groups . Inflammatory smear was most common finding in both age groups . Epithelial cell abnormality was most common in 41-50 age group followed by 51-60 age group.

Table 5:Culture and sensitivity results available among 100 inflammatory lesions

Organism	Positive in number of patients
No growth	15
Coagulase negative Staphylococci	37
Gram positive bacilli	23
Escherichia coli	13
Candida	8
Klebsiella	4

Vaginal swab culture results among 100 cases of inflammatory lesions were as follows, among 15 cases (15%) no growth was seen. The most frequent organism isolated were 37 cases of (37%) coagulase negative staphylococci followed by Gram positive bacilli 23 (23%), 13(13%) E.coli, 8 (8%) Candida, 4 (4%) Klebsiella.

Discussion

The uterine cervix, like other organs can be affected by both inflammation and malignancy. Chronic cervicitis is a very common condition in adult females, at least at the microscopic level. Pap smear is considered to be an ideal screening test. This study emphasised the importance of pap smears in early detection of premalignant and malignant lesions of cervix as well as to compare the characteristics of pap smear and microbiological pattern among patients with abnormal vaginal discharge.Out of 400 cases in observational study of pap smears received in cytopathology lab we found pap smear result as Inadequate(3.75%) cases, Normal (30%), Nonspecific inflammation (46.5%), Specific inflammation (14.75%), Epithelial abnormalities (5%).In our study maximum number of patients 37.5% were in the age group of 31-40 years . Similar observations were made by other studies where maximum numbers of cases were in age group of 31-40 years.Whitish discharge per vaginum (45.7%) was the most common symptom as was also reported in other similar studies [8,9]. Other symptoms were vaginal itching, backache, burning micturition, irregular menstruation in decreasing order. In our study (3.75%) cases were found to be unsatisfactory. This category included smears with inadequate material and hemorrhagic smears. Percentage of unsatisfactory smears reported by other workers Bukhari et al.[10] (1.8%), Bal et al.[11] (4%) and Kapila et al.[12] (3.9%) which was almost similar to our study.Our study reported (30%) Pap smears as NILM, Among infectious category Nonspecific inflammation (46.5%) was most common finding, Specific inflammation included 14.75% cases. Out of specific inflammation category, Bacterial vaginosis (8.25%) was most common finding and Trichomonas and Actinomycosis was least common finding. Similar observations were obtained in other studies Inflammatory smear was diagnosed in 186 cases (46.5%) in our study.Kulkarni[13]found a high rate of 73.7% and, Lawley [14] observed a lower rate of 14.3% inflammatory smears.Epithelial cell abnormalities (5%) group comprised of ASCUS, LSIL, HSIL, and malignancy. Epithelial abnormalities rate reported by various studies in literature are comparable to our study. Abdullah, [15], Altaf, [16], Balaha et al., [17] and Filipi and Xhani [18] reported ECA rate as 5%, 4.7%, 4.95%, and 4.8% respectively. In this study, approximately 1 % of the study population had squamous cell abnormalities excluding inflammatory smear results. This was considerably lower than the reported figure from Enugu in Eastern Nigeria where a prevalence of 12.2% was discovered by Ajah *et al.* (2015).[19] In Bangladesh, epithelial cell abnormalities constituted 8.18% of the Papsmear results in the study conducted by Banik *et al.* (2011).[20] In our study there are 8 cases reported LSIL on cytology with 2%, and HSIL 3 cases (.75%) , ASCUS 5 cases (1.25%), SCC 4 cases (1%) this was comparable to other studies. In our study we found bacterial vaginosis (8.25%) as the main infectious agent which was similar Turkey, Krabulut A et al., reported frequency of BV to be 8.3%. The diagnosis of BV was made by the presence of clue cells i.e mature squamous epithelial cells are covered by cocobacilli typically extending beyond the cell margin and relative absence of lactobacilli on mixed flora. It has been suggested that the presence of clue cells on the pap smear agrees reasonably well with clinical criteria. Donder et al[21] reported that prevalence of BV was higher in the inflammatory smear group as similar to our study. BV was found more in middle aged groups in our study. The most common fungal disease in women is vaginal candidiasis and affects 75% of women at some stage in their lifetime. Our study showed 2% prevalence of candida infection which was less as compare to Adad et al.,(4.61%) and Bukhari et al (6.5%)[22,23]. In our study middle aged women had significantly higher prevalence of candidiasis. Trichomonas vaginalis is a parasite that causes symptomatic and asymptomatic infection of the female urogenital system. In our study only one sample was positive for Trichomonas vaginalis in women with inflammation which is consistent with others reporting low prevalence and different from studies that found an increased frequency of this parasite.In our study vaginal swab culture was carried out in 100 patients out of 400 patients who underwent Pap smear examination also. The results of culture was in 15 cases no growth was seen. The most frequent organism isolated were 37 cases of (37%) coagulase negative staphylococci followed by Gram positive bacilli 23 (23%), 13(13%) E.coli, 8 (8%) Candida, 4 (4%) Klebsiella which correlates with Sandhiya et al.,[24]Vaginitis is a very common disease of women in reproductive age groups all over the world. Vaginitis is commonly attributed to bacterial vaginosis, Vulvovaginal candidiasis and Trichomoniasis. But there is high prevalence rate of aerobic vaginal pathogens from vaginal swabs. This condition will not respond to antibacterial vaginosis medication. So it has to be managed based on culture and sensitivity reports.

Conclusion

Pap smear is very useful and economical method for detecting premalignant condition of cervix as well as detecting various inflammatory and infectious causes in different age groups . Focus should be given to screen every women after the age of 21 years in developed country like India. Inflammatory smear is most common cytological finding in premenopausal age group . Epithelial cell abnormality is most common finding in premenopausal and postmenopausal age group. Pap smear examination can be coupled with culture and sensitivity of vaginal swab to provide adequate treatment.

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