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STUDY OF PAP SMEAR TEST AND ITS CLINICAL CORRELATION IN FEMALES ATTENDING INTEGRAL INSTITUTE OF MEDICAL SCIENCES AND RESEARCH, LUCK NOW.

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ABSTRACT **Background:** Cervical cancer ranks as the second most frequent cancer among women between 15 and 44 years of age. Cervical cancer is preventable because it has long preinvasive stage. Early cervical epithelial changes can be detected by a Pap smear test, which is the primary screening test for detection of precancerous cervical intraepithelial lesions and the early stage of invasive cervical cancer. The use of the cervical smear (Papanicolaou /Pap smear) as a screening method has significantly reduced the incidence of cervical cancer.

The aim of the present study was to evaluate the pattern of cervical cytology and its correlation with clinical findings.

Methods: It was a prospective cross sectional study that was conducted in 340 women attending Obstetrics and Gynecology OPD at Integral Institute of Medical Sciences and Research.

This study was done over a period of 6 months. Detailed clinical data and Pap smear cytology. Reports were obtained and data was noted in a structured Proforma. All the smears were reported according to new Bethesda System for Reporting Cervical Cytology 2014. Clinical correlation with Pap smear findings was done.

Results: Among 340 screened patients (23, 6.76%) patients were found to have epithelial cell abnormality in their pap smear report. Women in the age group of 41- 60 years showed maximum (16, 69.5 %) abnormal reports. No case of epithelial cell abnormality on pap smear was reported in women of 21-30 years of age. Maximum number (83.3 %) of ASCUS and 66.6 % of AGC were seen among women of 41-60 years of age. 3 cases of HSIL were found in 51-70 years of age.

Conclusion: In the present study, most of the abnormal epithelial reports were seen in women of age group of 41-60 years. So priority should be given to screen all women of 30 years or more with Pap smear test.

INTRODUCTION

Cervical Cancer is the fourth most lethal cancer in women worldwide and is the third most common cause of cancer-related death in developing countries (230158 deaths), contributing to more than 80% of the global burden occurs in developing countries. [1]

Cervical cancer is the second most common cancer in Indian women. Latest data shows that India accounts for one –fourth of the cervical cancer deaths globally with 60,078 deaths of women die of cervical cancer in India. [1, 2]

Cancer cervix is a preventable cancer as it has a long premalignant phase which can be detected by cytological screening with pap smear test (papanicolaou) and timely treatment of precancerous lesion can prevent the development of cancer.

Majority of cases and deaths contributed by cervical cancer tend to occur among women who are not adequately screened and treated. [3] Pap smear test is the primary screening test for detection of precancerous cervical intraepithelial neoplasia and the early stage of invasive cervical cancer. The sensitivity and specificity of Pap Smear test has been found to be 50-75% and 98-99% respectively. [4].

According to latest recommendations, pap tests should be started at the age of 21 years. Until 65 years cytology screening should be done every 3 years. Cotesting (cytology and HPV-DNA) should be done every 5 years from 30-65 years. For women older than 65 years, screening is stopped when the result of 3 consecutive cytology screening is negative. [5]

Cancer cervix has been reduced significantly in developed countries because of wide spread use of screening by pap test, but the incidence of cervical cancer in India is still very high because most women in India are not aware about the screening with pap smear test.

The aim of this study is to evaluate the pattern of pap smear cytology findings, and to correlate the abnormal pap smear with clinical findings.

OBJECTIVE:

To study the pattern of pap smear cytology.
To correlate it with the clinical findings.

Methodology

It was a cross-sectional descriptive study, conducted in 340 women attending Obstetrics and Gynecology outpatient department at Integral Institute of Medical Sciences and Research.

This study was conducted from Febraury 2019- July 2019, over a period of 6 month.

We screened, 340 women who were sexually active and more than 21 years of age.

Women with different complaints, including vaginal discharge, blood-mixed discharge, foul-smelling discharge, postcoital bleeding, irregular bleeding, postmenopausal bleeding were also included in this study.

Exclusion Criteria
- Those not willing to participate in the study
- Women who had a frank growth,
- had been treated for cervical cancer
- pregnancy

Written informed consent was obtained from all women.
Detailed history was taken. After placing the patient in the lithotomy position, a sterile bivalve speculum was inserted into the vagina to allow proper visualization of the cervix.

Smear from ectocervix was taken by using broad end of Ayre spatula and rotating it 360 degrees. The sample was quickly transferred onto a labeled glass slide and fixed with 95% ethyl alcohol in a jar. Sample from endocervix was also taken using cytobrush and smear was made

on a separate slide. The glass slides were sent to the Department of Pathology for cytopathological examination. Evaluation was done according to new Bethesda System for Reporting Cervical Cytology 2014.

RESULTS

In our study, 340 Pap smears were studied with respect to age group, clinical signs and symptoms, and cytology findings.

40.3 % (137) women belonged to 31-40 years of age group. 25.3 % (86) were in 41-50 years of age, followed by 23.2 % (79) women falling in 21-30 years of age. 7.05% (24) women belonged to 51-60 years age group. Only 4.12 % (14) women belonged to more than 61 year of age. (Table-1)

In this study, most women (10, 83.3%) with ASCUS, belonged to the 41–60 years of age group, followed by 2 women who belonged to the 31–40-year old age group. 2 cases of HSIL were found in women of 61–70 years of age. AGC was also found to be maximum (4, 66.6%) in 41-60 years of age group.

Most women (66.6 %) with ASCUS had four or more children. All 3 women with HSIL belonged to parity of 5 or more. Out of 6 women with AGC, 4 were found to have parity 4. This indicates that multiparity (>4) is a significant risk factor for premalignant conditions of cervix. (Table 1)

55.5% women in the study were Hindu, and 45.5% were Muslims. We observed that 70% ASCUS was seen among Muslim women, while HSIL and AGC were more in Hindu women.

Most women (58.2%) belonged to rural area versus 41.8% of urban areas. (Table-1)

Majority of pap smear were done in the age group of 31-50 years followed by 21-30 age groups. Inflammatory smear was most the common finding in both age groups being 60.6% and 65.8% respectively. (Table -1)

Out of 340 cases, 255 (75%) cases were symptomatic, and 85 (25%) cases were asymptomatic. Asymptomatic group comprised patients who came for routine checkup. (Table-2)

Table-2 also shows that white discharge was the most common problem observed in 37.35 % of women who underwent pap smear examination. Second most common symptom was irregular bleeding (23.2%). Post coital bleeding and postmenopausal bleeding were present in 8% and 1.6% of women, respectively.

Table 3 shows gross appearance of cervix on per speculum examination in all women who came to us for pap smear examination. 25.4% women had healthy cervix on examination. Cervical discharge and erosion was seen in 22.7% and 21.1% women, respectively. Hypertrophied cervix was seen 15.9% women. Bleed on touch and ectropion was seen in 7.8% and 7.1% cases, respectively.

Out of total 340 women, 298 (87.6%) were reported as Negative for intraepithelial lesion or malignancy (NILM). It was also observed that among 298 women diagnosed as NILM, 200 (58.82%) women had inflammation. 98 (28.82 %) women were found to have normal pap smear report. (Table-4)

19 (5.58%) samples were reported as unsatisfactory smears either due to inadequate material or hemorrhagic smears. There were 23 cases of epithelial cell abnormality (ECA) accounting for 6.76 % of the total samples. Among 23 women of epithelial cell abnormality, ASCUS (3.53%), AGC (1.76 %), LSIL (0.29%), HSIL (0.89%) and squamous cell carcinoma (0.29%) were noted. (Table-4)

60.6 % of smears were reported as NILM with inflammation in the age group of 31–50 years; Out of 298 smears reported as NILM, 98 (28.82 %) were normal. Among inflammatory smears, nonspecific inflammation was reported in 73.5 %, Bacterial Vaginosis was seen in 22.5 % and was the most common infection. Trichomonas and Candida infections were reported in (3%) and (1%) cases, respectively. (Table-5)

Out of 23 cases of ECA, ASCUS was most common finding (52.1 %) cases of the epithelial cell abnormality and it accounted for 3.53 % of the total pap smear examined. Atypical glandular cells were reported in six cases comprising 26 % of all ECA and 1.76 % of the total samples examined. HSIL was seen in 0.88 % of total cases and 13 % of all ECA. LSIL accounted for 0.29 % of total and 4.34 % of ECA. There was 1 case of malignancy, which was squamous cell carcinoma. (Table-6)

Table-7 shows correlation of abnormal pap smear (epithelial cell abnormality) finding with age, parity and symptoms in the women examined. It was observed that 39.1 % cases of epithelial cell abnormality were seen in 41- 50 years of age group, followed by 30.4 % in the women in 51-60 years of age.17.39 % ECA were seen in 61-70 years of age group. No case of ECA was seen in 21- 30 years age group and >71 years of age group.

Among parous women, it was observed that 69.5 % women having been diagnose as ECA had parity 4 and more.

It was also observed that in 47.8% cases of epithelial cell abnormality, discharge per vaginum was the main complaint followed by post coital bleeding in 21.7% of all cases of ECA.

Table 1-Demogrphic profile of patients

	NILM N=98	NILM with non specific Inflammation N= 147	NILM with bacterial Vaginosis N=45	NILM with Trichomonas N=6	NILM with Candida N=2	ASCUS N=12	AGC N=6	LSIL N= 1	HSIL N= 3	SCC N=1	Unsatisfactory
AGE IN YEARS											
21-30	21	34	17	1	0	0	0	0	0	0	6
31-40	45	61	18	4	0	2	1	0	0	0	6
41-50	22	40	9	1	1	6	3	0	0	0	4
51-60	6	8	1	0	0	4	1	1	1	0	2
61-70	3	2	0	0	1	0	1	0	2	1	1
>71	1	2	0	0	0	0	0	0	0	0	0
PARITY											
Nulliparous	1	3	3	0	0	0	0	0	0	0	0
1	5	8	4	0	1	1	0	0	0	0	3
2	11	38	7	0	0	1	1	0	0	0	4
3	32	47	9	1	0	2	1	1	0	0	6
4	30	45	12	2	1	4	4	0	0	1	4
5 or more	19	6	10	3	0	4	0	0	3	0	2
RELIGION											
Hindu	47	87	30	3	0	3	5	1	3	1	8
Muslim	51	60	15	3	2	7	3	0	0	0	11
RESIDENCE											
Rural	46	96	26	4	2	5	5	1	3	1	9
Urban	52	51	19	2	0	5	3	0	0	0	10

Table 2- Symptoms of women

SYMPTOMS	NUMBER (n=340)	PERCENTAGE
Asymptomatic	85	25
White discharge per vaginum	132	38.8
Irregular bleeding	89	26.2
Post coital bleeding	28	8.2
Postmenopausal bleeding	6	1.8

Table- 3- Per speculum findings

FINDINGS	NUMBER (n=340)	PERCENTAGE
Healthy looking cervix	86	25.3
Hypertrophied cervix	54	15.8
Abnormal discharge	112	32.9
Bleeds on touch	26	7.6
Cervical erosion	37	10.8
Ectropion	25	7.3

Table- 4- Cytological diagnosis in pap smear examined

FINDINGS	NUMBER	PERCENTAGE
Adequate	321	94.4
Unsatisfactory	19	5.60
NILM	98	28.82
Inflammation	200	58.88
ASCUS	12	3.53
AGC	6	1.76
LSIL	1	0.29
HSIL	3	0.88
Malignancy	1	0.29

Table- 5- Pattern of cases reported as negative for intraepithelial malignancy (NILM) on pap smear examined

CYTOLOGY DIAGNOSIS	NUMBER N=298	PERCENTAGE OF NILM (N-298)	PERCENTAGE OF TOTAL (N-340)
NILM with no infection	98	32.8	28.82
NILM with nonspecific infection	147	49.3	43.2
NILM with Bacterial Vaginosis	45	15.1	13.2
NILM with Trichomonas vaginalis (TV)	6	2.01	1.76
NILM with Candida	2	0.67	0.58

Table 6- Pattern of epithelial cell abnormality (ECA) on pap smear examined

ECA	NUMBER OF CASES	PERCENTAGE OF ECA N= 23	PPERCENTAGE OF TOTAL N=340
ASCUS	12	52.17	3.53
AGC	6	26.1	1.76
HSIL	3	13.04	0.88
LSIL	1	4.34	0.29
SCC	1	4.34	0.29

Table-7-Correlation of abnormal pap smear finding with age, parity and symptoms

Parameters	ECA (n=23)	Percentage
AGE (YEARS)		
21-30	0	0
31-40	3	13.04
41-50	9	39.1
51-60	7	30.4
61-70	4	17.39
>70	0	0
PARITY		
Nulliparous	0	0
1	1	4.34
2	2	8.69
3	4	17.39
4	9	39.1
5 or more	7	30.4

SYMPTOMS		
Asymptomatic	1	4.34
Discharge	11	47.8
Irregular bleeding	2	8.69
Post coital bleeding	5	21.7
Postmenopausal bleeding	4	17.39

DISCUSSION

In the developing countries including India, cervical cancer is a major cause of morbidity and mortality among all the malignancies in women.

Cervical cancer is the only cancer that is preventable as it can be diagnosed at preinvasive stage.

There are various screening tests for screening of cervical cancer such as Pap smear, liquid Pap cytology, visual inspection of the cervix after Lugol's Iodine and acetic acid application, and HPV DNA testing. Out of all these, exfoliative cytology (pap smear) has been regarded as the gold standard for cervical screening programs. If pap smear screening is done as per the recommendations, mortality due to cervical cancer can be reduced by 80%. [6]

Pap smear is a very simple, painless, cost-effective, and reasonably accurate test, and sensitive test for screening of various types of lesion in cervix both nonneoplastic and neoplastic. [7]

Our present study was conducted to evaluate the pattern of cervical cytology by pap test and its correlation with clinical findings.

In our study, maximum number of the patients (40.8%) women belonged to 31-40 years of age group followed by 24.9% were in 41-50 years of age, thus comprising of 65.7% women in the age group 0f 31-50 years. Similar observations were made by other studies where maximum numbers of cases were in age group of 31–40 years.[8, 9]

We observed that white discharge per vaginum (37.35 %) was the most common symptom, which was also reported in other similar studies.[10, 11]

Cervical discharge and erosion was seen in 22.7% and 21.1% women respectively and were the most common presentation in our study. Hypertrophied cervix was present in 15.9 % of the cases. A study done by Kaveri and Khandelwal, observed cervical erosion (38.3%) being the most common finding. [9]

In our study, Pap smear cytology findings were broadly categorized into unsatisfactory, NILM, and ECA that included ASCUS, AGC, HSIL, LSIL and malignancy.

In our study, 5.58 % smears were reported as unsatisfactory, which could be due to dryness of samples or technical errors. This category included smears with inadequate material and hemorrhagic smears. A study done in luck now observed an unsatisfactory report rate of 6.42%. [12]

Percentage of unsatisfactory smears reported by Bukhari et al. (1.8%) and Bal et al. (4%), were lower as compared to our study. [13, 14]

Shrivastava et al. reported 8.0% cases as unsatisfactory for interpretation which was higher as compared to our study. [11]

We observed that Pap smears reported as NILM was most common finding (298) accounting 87.6 % of all smears examined. This was in accordance with other studies in literature. [9, 15] In our study, 28.2% of NILM were reported as normal smear and 58.8% were found to be inflammatory smear. Among inflammation category, nonspecific inflammation was most common finding (73.5 %) of all NILM cases. Among specific inflammation, Bacterial Vaginosis was reported in 22.5 % of NILM cases, Trichomonas Vaginalis was seen in 3% and Candida (1 %) was least common finding.

Other studies have reported 95% and 74.5% inflammation indicated by the Pap smear test, respectively. [16, 17]

In our study, epithelial cell abnormality rate (ECA) was found to be 6.76 %. ECA group comprised ASCUS, AGC, LSIL, HSIL, and malignancy.

Filipi and Xhani and Balaha et al. observed epithelial cell abnormality rate of 4.95%, and 4.8%, respectively. [15, 18]

Al Eyd et al and Sarma et al have reported ECA detection rates of 12.60 % and 11.95% in their studies, respectively, which was much greater than in our study. [19, 20]

Another study conducted in luck now showed 8.48 % epithelial cell abnromality. [12]

In our study, ASCUS was the most commonly reported ECA with accounting for 12 cases (3.53 %) while AGC as ECA was reported in 6 (1.76 %) cases. Bamanikar et al observed ASCUS to be the predominant type (2.32%) in their study. [21]

In our study, there was only 1 case which was reported as LSIL on cytology constituting 0.29 % and HSIL was reported in 3 cases (0.89 %) of all cases.

A study conducted in luck now showed that ASCUS was found in 2.9% of screened women, LSIL in 5.09%, and HSIL in 0.48%.[12] In contrast to this we found much less LSIL in our study. We found AGC in 1.76 % women.

Filipi and Xhani reported LSIL and HSIL in 1.6% and 0.18% of cases, respectively. [15]

Padmini et al. also reported ASCUS (8%), LSIL (5%), and HSIL (3%) in women screened with the Pap smear test, that was much higher as compared to our study.[22]

We observed that majority females, who had epithelial cell abnormality were in 41-60 years of age group, had parity 4 or more and discharge was also most common symptom in women with ECA. We did not find any case of ECA in women more than 71 years of age. This could be because we had very few females in this age group.

Squamous cell carcinoma was reported in 1 woman (0.29 %) in our study. Other studies have reported malignancy in 0.7% of cases.[18, 21]

CONCLUSION-
Most of the abnormal epithelial abnormalities were seen in women of age group of 41-60 years. So priority to be given to screen all women above the age of 30 years, with pap test who visit hospital for any reason.

Conflicts of interest-none

Ethical approval: This study was approved by the Institutional ethics committee.

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