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Original Research Paper

Pathology

EVALUATE WOMEN FOR PRECANCEROUS AND CANCEROUS LESION USING PAP SMEAR TESTS WITH CLINICAL CORRELATION

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ABSTRACT **Introduction:** Cervical cancer is a preventable disease as it has a long preinvasive stage. Early detection and appropriate treatment can be achieved through robust screening. The pap smear test, also known as the papanicolaou test, is a primary screening method for detecting precancerous cervical epithelial changes. This study aimed to analyze 400 Pap smear reports from women with various gynecological conditions, focusing on intraepithelial neoplasia and the early stage of invasive cervical cancer. **Material & Method:** After approval from the institutional ethical committee, this retrospective study was carried out on 400 women who qualified the inclusion criteria visiting the Gynaecology OPD at Index Medical College (IMCHC), Indore, M.P, India from 1 July 2023 to 30 September 2023. Pap smear samples were collected from women who either presented to the OPD with different gynaecological complaints (aged between 21 to 65 years) and as a routine test for women aged more than 45 years by using Ayres Spatula. A written informed consent was taken from all enrolled subjects. Smears were reported as per the Bethesda system for cervical cytology. Appropriate statistical analysis was undertaken. **Result:** Out of 400 pap smears, 250 were NILM, 100 were inflammatory, 25 were others (Bacterial vaginitis, Vaginosis, Candida, Trichomonas), LISL were 10, ASCUS were 10 and HSIL were 5. **Conclusion:** Pap smear is easy and economic screening method to detect premalignant and malignant lesion of cervix which help in proper treatment.

KEYWORDS : Pap smear, HSIL, LSIL and ASCUS

INTRODUCTION

Cancer of the cervix is an increasing health problem and an important cause of mortality in women worldwide. The incidence of cervical cancer arises worldwide. The difference in incidence between developing and developed countries, where cervical cancer cases have been significantly reduced, is large. In developing countries like India, the burden of cervical cancer is still high. According to the World Cancer statistics, >80% of all the cervical cancer cases are found in developing and low-resource countries, because of a lack of awareness and difficulty in running cytology-based screening programs.[1] More than one-fifth of all cervical cancer deaths occur in India. [2]

Every year, 122,844 women in India are diagnosed with cervical cancer, and 67,477 women die from the disease.[3] India has a national programmed for cancer since 1975, when the emphasis was on equipping premier cancer institution. In 2010, cancer control became a part of a more comprehensive, larger programmed on non-communicable disease called National Programmed for Prevention and Control of Cancer.[4]

Cancer is a preventable disease due to the long preinvasive stage. Early detection and appropriate treatment are possible if robust screening is implemented.[5] Early cervical epithelial changes can be identified by a Pap smear test, which is the primary screening test for detection of precancerous cervical intraepithelial neoplasia and the early stage of invasive cervical cancer. Due to widespread screening programs, there has been a significant reduction in mortality from cervical cancer in developed countries. The overall sensitivity of the Pap test in detecting a high-grade squamous intraepithelial lesion (HSIL) is 70.80%.[6]

A Pap screening done in association with an HPV DNA test increases the sensitivity for early detection of precancerous lesions.[7] There is a need to spread cervical cancer screening awareness programs, educate women regarding the symptoms of cancer, and motivate them to visit the hospital for a cancer screening. Women and all family members should be counseled about the need for cancer screening.

Pap smear-positive women need adequate treatment and regular follow-up. Thus, we have to strengthen our health services and health-care system to include screening at primary health centers. The Papanicolaou test also known as Pap test, Pap smear, Cervical smear or smear test is a screening method used to detect potentially precancerous and cancerous processes in the cervix. Greek doctor Georgios Papanikolaou invented this test and it was named after him.[8]

Pap smear test is performed by opening the vaginal canal with Cuscos speculum and collecting cells at the outer opening of the cervix i.e. at the transformation zone,[9] from posterior vaginal wall and endocervical canal. Then the collected cells are examined under a microscope. The test mainly meant to detect precancerous conditions like cervical intraepithelial neoplasia (CIN) or cervical dysplasia, squamous Intraepithelial Lesion (SIL) etc. [10]

Pap smear test is an effective, economical and widely used method for early detection of pre-cancer and cervical cancer. Usually, Pap smear screening test is recommended starting around 21 years of age until the age of 65 years. Can be repeated at three years interval. In case of abnormal Pap smear report, depending on the type of abnormality the test may need to be repeated in six to twelve months. More sensitive and specific investigations like colposcopy guided cervical biopsy etc are needed to diagnose and prevent further progression to cervical cancer.[11]

MATERIAL AND METHODS

After approval from the institutional ethical committee, this retrospective study was carried out on 400 women who

qualified the inclusion criteria visiting the Gynaecology OPD at Index Medical College (IMCHC), Indore, M.P, India from 1 July 2023 to 30 September 2023. Pap smear samples were collected from women who either presented to the OPD with different gynaecological complaints (aged between 21 to 65 years) and as a routine test for women aged more than 45 years by using Ayres Spatula. A written informed consent was taken from all enrolled subjects. Smears were reported as per the Bethesda system for cervical cytology.

Inclusive Criteria

- Women of Age >21years and <65 years with sexual history.

Exclusive Criteria

- Age <21 years and >65years.
- Women without sexual history
- Known case of cancer cervix
- Treatment case of cancer cervix.
- Women who were pregnant were excluded from study.
- Non consenting subjects.

Procedure

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.

Pap Smears Are Taken By Using Ayres Spatula.

- The broad end of spatula was placed on the Cervix and rotated through 360° and the collected material was spread over a glass slide.
- The oblong relabelled narrow end of spatula was used to take smear from posterior vaginal fornix and spreaded over a second glass slide.
- The Endo cervical sample was collected using a Cyto brush and was spread over labelled third glass slide.

All the slides were labelled and immediately transferred to 95% Ethyl alcohol (Transport Medium) and sent to Pathology Department for Cytological study.

Evaluation was done by Cytology using Bethesda Classification.[12]

- Within normal limits
- Infection (specify organism
- Reactive/reparative changes
- Atypical squamous cells of undetermined significance (ASCUS)
- Atypical glandular cells of undetermined significance (AGUS)
- Low Grade Squamous intraepithelial invasion (LSIL)
- High Grade Squamous intraepithelial invasion (HSIL)
- Invasive carcinoma

All the women with abnormal results were advised for Follow-up and treatment as per the standard guidelines by World Health Organization (WHO). Pap smear was advisable after 21 years in women having sexual history. [13] Can be repeated in every 3to 5 years if results are normal.

In case of abnormal results more frequent repetition of tests like in every 6 months to 1 year are needed. High risk group were subjected to Human Papilloma virus (HPV) DNA Testing. Negative procedure value of one HPV DNA testing and two negative cytology test was 100%. False negative tests can be < 1% after three consecutive negative Tests.

False negative reports can be due to

- Inadequacy of Sample
- Blood-stained Sample
- Poor Staining
- Misinterpretation by Cytologist.

RESULT

Distribution of patients according to the age: Out of the 400 women evaluated for Pap Smear tests, majority of patients were in 31-40 years and 41-50 years age group with 120 (30%) patients each followed by 70 (17.5%) in 21-30 years age group, 45 (11.25%) in 51-60 years age group and least 15(3.75%) were above 60 years (Table 1).

Table 1. Distribution Of Patients According To The Age.

Age in year	No. of patients
21-30	70
31-40	120
41-50	150
51-60	45
>60	15
Total	200

Reasons for Performing PAP Smears: Among the 400 women undergoing Pap smear tests, 120 (30%) women presented with chronic white discharge, 106 (26.5%) women underwent Pap smear test as part of routine gynaecological examination, 72 (18%) women presented with unhealthy cervix, 36 (9%) women were postmenopausal, 36 (9%) women presented with pelvic inflammatory disease and 18 (4.5%) each had abnormal uterine bleeding and intermenstrual spotting (Table 2).

Table 2. Reasons For Performing Pap Smears

Reasons for performing pap smears	No. of patients
Patients with chronic white discharge	120
Routine pap smear	106
Unhealthy cervix	72
Post menopause	36
Pelvic inflammatory smear	30
Abnormal uterine bleeding	18
Intermenstrual bleeding	18
Total	200

Distribution of Patients According Clinical Findings During Per Speculum Examination: Among the 400 Pap smear reports on per speculum examination of cervix 110 (27.5%) women had normal looking cervix, 115 (28.75%) women had discharge, 52 (13%) women had cervical erosion, 68 (17%) had chronic cervicitis and 25 (6.25%) had ectropion of cervix, while 30 (7.5%) had cervix which bled on touch (Table 3).

Table 3. Distribution Of Patients According Clinical Findings During Per Speculum Examination

Clinical features	No. of patients
Healthy looking cervix	110
Discharge	115
Cervix erosion	52
Chronic cervicitis	68
Ectropion of cervix	25
Bleed on touch	30
Total	200

PAP Smear Analysis Reports: Among the 400 Pap smear reports analyzed, 6 (1.5%) were reported unsatisfactory. 262 (65.5%) reports showed inflammatory smears. Possibility of malignancy was ruled out in 100 (25%) smears. Bacterial vaginosis was seen in 20 (5%) smears. 5 (1.25%) smears were given as Low grade squamous intraepithelial lesion (LSIL). High grade Squamous intraepithelial lesion (HSIL) was seen in 5 (1.25%) smears. Atypical squamous cells of undetermined significance (ASCUS) were seen in 2(0.5%) smears (Table 4)

Table 4. PAP Smear Anlysis Reports

Pap smear analysis reports	No. of patients
Unsatisfactory	6

Inflammatory	262
No evidence of malignancy or normal (NILM)	100
Bacterial vaginitis	20
Low grade squamous Intraepithelial Lesion (LSIL)	5
High grade squamous Intraepithelial Lesion (HSIL)	5
Atypical squamous cell of undetermined significance (ASCUS)	2
Total	200

DISCUSSION

Cervical cancer is the most widely screened cancer in both high and middle-income countries. Population based cervical cytology screening programmes offering Papanicolaou testing every 3–4 years have reduced cervical cancer incidence and mortality by up to 80% in developed countries in last 5 decades [14].

Cervical cancer is on the declining trend in India according to the population-based registries; yet, it continues to be a major public health problem for women in India [15]. In our study most of the women had Pap test for the first time in their life and none of the women knew that cervical cancer can be detected in precancerous state by Pap test. An effective population screening method in community settings has to be embraced extensively to increase the detection of cervical cancer in precancerous stage.

In our study we had taken 400 Pap smears taken from women presenting to Gynecology OPD of Index Medical College Hospital and Research Center Indore between 21 to 65 years presenting with different Gynaecological complaints and as routine beyond the age of 45 years. In study conducted by Lakshmi VP et al., 200 Pap smear reports were analysed.[16] In study conducted by Verma A et al., 200 Pap smear reports were analysed. [17] In study conducted by Sunita et al., 560 Pap smear reports were analysed.[18] In study conducted by Mandakini et al 995 Pap smear reports were analysed. [19] In study conducted by Sachan PL et al., 1650 Pap smear reports were analysed.[20]

In our study. maximum number of women were between 31 to 50 years age group i.e., 340 (85%). Similar prevalence was observed by Lakshmi VP et al., who reported maximum number of women in 45-55 years age group (34%). Verma A et al., and Sunita et al., reported that maximum number of women in their study were in 31-40 years age group (32.68%). Mandakini et al., reported maximum number of women to be in 15-30 years. Whereas in study conducted by Sachan PL et al. majority of patients were in 40-60 years age group.

In our study, abnormal Pap smear reports were observed in 294 (73.5%). Lakshmi VP et al., who reported 187(93.5%) abnormal reports in their study. Verma A et al. reported 86 (43%) abnormal reports. Sunita et al. reported 433(77.32%) abnormal reports. In study conducted by Mandakini et al., abnormal Pap smear reports were 689 (69.2%). In study conducted by Sachan PL et al. reported 844 (88.84%) abnormal reports.

Inflammatory smear reports were 262 (65.5%) in our study, whereas in study conducted by Lakshmi VP et al., 134 (67%) reports were inflammatory. Verma A et al., reported 65 (32.5%) as inflammatory. In study conducted by Sunita et al., 403 (71.96%) reports were inflammatory and Mandakini et al., reported 572 (57.5%) inflammatory Pap smear reports. In study conducted by Sachan PL et al., 704 (42.7%) Pap reports were inflammatory.

Smears showing ASCUS (Atypical squamous cells of undetermined significance) were 2(0.5%) in our study. Whereas in study conducted by Lakshmi VP et al., and Verma A et al., 2(1%) reports showed ASCUS. Sunita et al., reported 13(2.3%), Mandakini et al. reported 41(4.1%) and Sachan PL et al. reported 48(2.9%) ASCUS.

Only 5 (1.25%) reports showed LSIL (Low grade squamous intraepithelial Lesion) in our study. In study conducted by Lakshmi VP et al 15 (7.5%), Verma A et al. 11(5.5%), Sunita et al 11(1.9%), Mandakini et al 41(0.1%) and Sachan PL et al. 84 (5.1%) reports showed LSIL.

In our study, HSIL (High grade squamous intraepithelial lesion) was reported in 5(1.25%). Studies done by Lakshmi VP et al. reported 12(6%), Verma A et al. reported 5(2.5%), Sunita et al 2(0.3%), Mandakini et al were 1(0.1%) and Sachan PL et al. reported 8(0.48%) HSIL reports.

CONCLUSION

Pap smear testing is a very useful, simple, economical, and safe tool for detecting precancerous cervical epithelial lesions. It should be established as a routine screening procedure to reduce the treatment burden, morbidity, and mortality. Every woman above the age of 30 years should undergo routine cervical cancer screening, even into the postmenopausal period. The Pap test has been regarded as the gold standard of cervical screening programs. When the Pap test is combined with an HPV DNA test, the sensitivity for detection of cervical pathology is increased. The community should be educated about the Pap smear test, including its goal and the required frequency of application, by widespread educational and media programs. Most women who visited an outpatient clinic are not aware of cervical cancer screening. Thus, there is a need to spread cancer screening programs to help prevent mortality and morbidity due to cervical cancer.

REFERENCES

1. Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, et al. Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012. Int J Cancer 2015;136:E359-86.
2. Bruni L, Barrionuevo-Rosas L, Albero G, Aldea M, Serrano B, Valencia S, et al. ICO Information Centre on HPV and Cancer (HPV Information Centre). Human Papillomavirus And Related Diseases Reports. Available from: http://www.Hpvcentre.net/statistics/reports/XWX.pdf. [Last accessed on 2015 Mar 20].
3. ICO Information Centre on HPV and Cancer. Human Papillomavirus and Related Diseases in India (Summary Report 2014-08-22); 2014.
4. Thakur A, Gupta B, Gupta A, Chauhan R. Factors for cancer Cervix among rural women of a hilly state: a case-control study. Indian J Public Health 2015;59:45–8.
5. Bal, Goyal R, Suri AK, Mohi MK. Detection of Abnormal cervical cytology in papanicolaou smears. J Cytol 2012;29:45-7.
6. Ansari M, Mehdi G, Arif SH, Ansari H, Khan T. Smear Patterns and spectrum of premalignant and malignant Cervical epithelial lesions in postmenopausal Indian women: A hospital-based study. Diagn Cytopathol 2012;40:976-83.
7. Patel MM, Pandya AN, Modi J. Cervical pap smear study And its utility in cancer screening, to specify the strategy for Cervical cancer control. Natl J Community Med 2011;2:49-51.
8. Pap smear. By Healthline medical review team. www.Healthline.com/health/papsmear#Overview1/2015/11.
9. A practical manual on visual screening of cervicalmNeoplasia. IARC Press 2003(IARC Technical Publication No 41)
10. Monica Idestrom, Ian Milsom et al. Women's experience of Coping with a positive Pap smear: a register-based study of Women with two consecutive Pap smears reported as CIN 1. Acta Obstet Gynecol Scand. 2003:82:756-761.
11. Hande Celik Mehmetoglu, Ganime Sadikoglu et al. Pap Smear screening in the primary health care setting: A study From Turkey. N Am J Med Sci. 2010;2:1-28.
12. Jeffcoate's principles of Gynecology, 7th edition, 2008. Chapter 25, page.416.
13. Updated Pap smear test guidelines lead to decreased STI screening. https://www.sciencedail.com/Releases/2015/10/151015144701.htm
14. Nayir T, Okyay AR, Nizlican E, Yesilyurt H, Akbaba M, Ilhan B, et al. Cervical cancer screening in an early diagnosis and Screening centre in Mersin, Turkey. Asian Pac J Cancer Prev 2015;16:6909–12.
15. Sreedevi A, Javed R, Dinesh A. Epidemiology of cervical cancer With special focus on India. Int J Women's Health 2015;7:405–14.
16. P. Vijaya Lakshmi, S.R. Sree Gouri. Study and Analysis of two hundred cervical PAP smears in our hospital. International Journal of Contemporary Medical Research 2016;3(9):2787-2789.
17. Ashok Verma *, Suresh Verma, Shivani Vashist, Sumit Attri, Amrita Singhal. A study on cervical cancer screening in symptomatic Women using Pap smear in a tertiary care hospital In rural area of Himachal Pradesh, India :Middle East Fertility Society Journal (2017) 22, 39–42.

18. Sunita A.Bamanikar, Dadaso S.Baravkar, Shirish S.Chandanwale, Prachet Dapkekar, Study of Cervical Pap Smears in a Tertiary Hospital. Indian Medical Gazette. 2014:250-254.
19. Mandakini M Patel, Amrish N Pandya, Jigna Modi, Cervical Pap smear study and its utility in cancer screening, To specify the strategy for cervical cancer control. National Journal of Community Medicine. 2011:2:1:49-51
20. Sachan PL, Singh M, Patel ML, Sachan R. A Study on cervical cancer screening using pap smear test and clinical Correlation. Asia Pac J Oncol Nurs 2018;5:337-41.