

## To Evaluate the Pattern of Cervical Pap Smear Cytology and its Clinical Correlation

Rubaiya Ahmad<sup>1</sup>, Mahesh Prasad<sup>2</sup>, Chandra Shekhar Jha<sup>3</sup>

<sup>1</sup>Tutor, Department of Pathology, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar, India

<sup>2</sup>Professor and HOD, Department of Pathology, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar, India

<sup>3</sup>Associate Professor, Department of Pathology, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar, India

Received: 14-02-2024 / Revised: 10-03-2024 / Accepted: 20-04-2024

Corresponding Author: Dr. Chandra Shekhar Jha

Conflict of interest: Nil

### Abstract

**Aim:** The present study is intended to evaluate the pattern of cervical Pap smear cytology at a tertiary hospital and to correlate it with clinical findings.

**Methods:** The prospective study was carried out in the Department of Pathology, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar, India during for the period of one year and total 500 patients were screened. The patients were in the age range of 19-69 years, having complaints like watery vaginal discharge, bleeding per vaginal, intermenstrual bleeding, post-coital bleeding, something coming out per vagina, foul smelling discharge and itching in private parts.

**Results:** The maximum number of cases was in the age group 30-39 years constituting 34% of the total cases followed by age group 20-29 yrs. The oldest case was of age 65 years. Minimum percentage (2%) of cases were under 60-69 age group. The maximum number of cases was in the age group 30-39 years constituting 34% of the total cases followed by age group 20-29 yrs. The oldest case was of age 65 years. Minimum percentage (2%) of cases were under 60-69 age group. Vaginal discharge was the commonest chief complaint followed by lower abdominal pain. Total 46% showed inflammatory lesion, 1% showed atrophy, 0.2% showed ASCUS, 0.2% showed LSIL, 0.2% showed HSIL, 2% showed SCC, 10% showed metaplasia. Cytological findings broadly classified into unsatisfactory smears, normal and abnormal smears. There were 350 (70%) abnormal Pap smears (benign cellular changes of inflammation as well as Epithelial Cell Abnormalities (ECA), with 20% normal cases and 10% unsatisfactory samples. Inadequate smear are reported unsatisfactory. They did not show adequate number of well visualized and preserved squamous cells either less in number or observed by inflammatory cells or blood.

**Conclusion:** This study emphasized the importance of Pap smears screening for early detection of premalignant and malignant lesions of cervix.

**Keywords:** Pap smear, Epithelial cell abnormality, ASCUS

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

### Introduction

Cancer of the cervix is a global health problem and it is a leading cause of mortality and morbidity among women worldwide. Every year in India, 122,844 women are diagnosed with cervical cancer and 67,477 die from the disease. [1] Cervical cancer is the second most common cancer in women aged 15-44 years. India also has the highest age standardized incidence of cervical cancer in South Asia Bangladesh, Iran.<sup>1</sup> Cancer of cervix is readily preventable, by early detection and appropriate timely treatment of its precursor lesions by simple Pap screening test. But, women usually present to

the clinic only when they have symptoms, such as pain, discharge, and/or abnormal bleeding. [2]

Cervical epithelial cell abnormalities in the Pap smear represents a spectrum of intraepithelial lesions that lie along the pathway, from mild-to-severe dysplasia to invasive cancer. [3] Though Pap smear is a routine screening test, the overall sensitivity in detection of high grade squamous intraepithelial lesion (HSIL) is 70 -80%. [4] The Bethesda System (TBS) for reporting the results of cervical cytology was developed as a uniform system of terminology that could provide clear guidance for clinical management.

India has the highest age standardized incidence of cervical cancers in South Asia. [5] By simple pap screening test cervical cancer and its precursor lesions can be detected and treated early. Pap smear is a routine screening test with sensitivity of 70-80% in detecting HSIL. [6] Usually Pap smear screening test is recommended starting around 21 years of age upto 65 years. Repeated examination is recommended after every three years interval and in case of abnormal Pap smear report follow up is advisable six monthly. [7] In 1988, the Bethesda system of reporting has been introduced to classify the lesions into low- and high-grade intraepithelial lesions. It provides uniform system of terminology which makes management and treatment simple. [8]

The present study is intended to evaluate the pattern of cervical Pap smear cytology at a tertiary hospital and to correlate it with clinical findings.

### Methods

The prospective study was carried out in the Department of Pathology, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar, India

during for the period of one year and total 500 patients were screened. The patients were in the age range of 19-69 years, having complaints like watery vaginal discharge, bleeding per vaginal, intermenstrual bleeding, post-coital bleeding, something coming out per vagina, foul smelling discharge and itching in private parts.

History and symptoms along with parity were recorded. Smears were taken by trained technician using modified Ayres wooden spatula which was inserted and rotated 360 over cervix. Both ectocervix and endocervix were sampled. The cellular material obtained on the spatula and cyto brush was quickly smeared on a clean glass slide, labeled, fixed in 95% ethyl alcohol immediately and subsequently stained by Pap stain. After staining, slides were mounted with DPX (Distrene dibutyl phthalate xylene), screened and reported by two cytopathologist under light microscope according to the 2001 Bethesda system.

### Results

**Table 1: Distribution of Cases according to age**

Age group in years	No. of cases	Percentage (%)
20-29	150	30
30-39	170	34
40-49	120	24
50-59	50	10
60-69	10	2
Total	500	100

The maximum number of cases was in the age group 30-39 years constituting 34% of the total cases followed by age group 20-29 yrs. The oldest case was of age 65 years. Minimum percentage (2%) of cases were under 60-69 age group.

**Table 2: Distribution of cases according to symptoms**

Symptoms	No. of cases	Percentage (%)
Asymptomatic	30	6
Vaginal Discharge	160	32
Pain lower abdomen	100	20
Intermenstrual bleeding	80	16
Post- Coital Bleeding	50	10
Post- menopausal Bleeding	40	8
Something coming out of vagina	30	6
Burning Micturation	10	2
Total	500	100

Vaginal discharge was the commonest chief complaint followed by lower abdominal pain.

**Table 3: Cytological findings**

Diagnosis		No. of cases	Percentage	
NILM	Normal	100	20	
	Inflammatory	Non-specific	200	40
		Candida	25	5
		Trichomonas	5	1

	Reactive		100	20
	Metaplasia		50	10
Atrophy			5	1
Radiation			2	0.4
ASCUS			1	0.2
LSIL			1	0.2
HSIL			1	0.2
SCC			10	2

Total 46% showed inflammatory lesion, 1% showed atrophy, 0.2% showed ASCUS, 0.2% showed LSIL, 0.2% showed HSIL, 2% showed SCC, 10% showed metaplasia. Cytological findings broadly classified into unsatisfactory smears, normal and abnormal smears. There were 350 (70%) abnormal Pap smears (benign cellular changes of inflammation as well as Epithelial Cell Abnormalities (ECA), with 20% normal cases and 10% unsatisfactory samples. Inadequate smear are reported unsatisfactory. They did not show adequate number of well visualized and preserved squamous cells either less in number or observed by inflammatory cells or blood.

**Discussion**

Cervical cancer is an increasing health problem, comprising approximately 12% of all cancers among women worldwide. [9] According to the world cancer statistics, developing and low resource countries have more than 80% of all the cervical cancers due to lack of awareness and difficulty in running cytology-based screening programmes. [10]

Cancers of uterine cervix and breast are the leading malignancies seen in females of India. There should be an effective mass screening program aimed at specific age group for detecting precancerous condition before they progress to invasive cancers. [11,12] Cervical cytology is currently widely used as the most effective cancer screening modality. Objective data from hospital-based studies are required in order to detect the efficiency of the screening test. The maximum number of cases was in the age group 30-39 years constituting 34% of the total cases followed by age group 20-29 yrs. The oldest case was of age 65 years. Minimum percentage (2%) of cases were under 60-69 age group. Vaginal discharge was the commonest chief complaint followed by lower abdominal pain. In our study, the mean age of patients with abnormal smears was 43.7 years. Similar finding was detected by other studies. [13] This study determines 200 cases (20%) of normal findings, inflammatory lesions in 460 cases (46%). Our study showed that there were 87% benign and inflammatory and 3% were premalignant and 10% malignant lesion, out of which premalignant lesions 55.55% that were ASCUS and AGUS. The Epithelial Cell Abnormality (ECA) rate, that is the total of ASCUS, ASC-H, LSIL, HSIL, AGUS and carcinoma

diagnosis varied between 1.5 and 12.60% in various studies. [14,15]

Total 46% showed inflammatory lesion, 1% showed atrophy, 0.2% showed ASCUS, 0.2% showed LSIL, 0.2% showed HSIL, 2% showed SCC, 10% showed metaplasia. Cytological findings broadly classified into unsatisfactory smears, normal and abnormal smears. There were 350 (70%) abnormal Pap smears (benign cellular changes of inflammation as well as Epithelial Cell Abnormalities (ECA), with 20% normal cases and 10% unsatisfactory samples. Inadequate smear are reported unsatisfactory. They did not show adequate number of well visualized and preserved squamous cells either less in number or observed by inflammatory cells or blood. Edelman et al, studied Pap smears from 29295 females over a period of one year and the Pap smear abnormalities were as follows: 9.9% ASC-US, 2.5% LSIL, 0.6% HSIL, and 0.2% invasive cancer. [16] Study by Banik U revealed the following scenario: 0.18% ASCUS, 0.12% Atypical glandular cells (AGC), 6.36% LSIL, 1.18% HSIL and 0.35% malignancy. [17] In our study shows ASCUS 0.5%, ASC-H 0.5%, HSIL 0.5%, SCC 0.5% and AGUS 0.5%. SCC cases are more than other country studies because our study includes women of rural areas along with urban areas. Rural area women are unaware of the Pap test. Also they are shy and live in unhygienic conditions. Most common age to develop carcinoma cervix is between 40 and 50 years and the precursor lesions occur 5 - 10 years prior to developing invasive cancer. Various screening test for cervical cancer like Pap smear, liquid Pap cytology, automated cervical screening techniques, visual inspection of cervix after Lugol's Iodine and acetic acid application, speculoscopy, cervicography should be started for early detection of premalignant lesions.

**Conclusion**

This study emphasized the importance of Pap smears screening for early detection of premalignant and malignant lesions of cervix. Larger studies are required to estimate the pattern of cervical cytological abnormalities along with detection of common HPV strains in cervical cancer in Indian population. Pap smear examination should begin at 30 years. By proper implementation of Pap screening program, incidence of invasive cervical

malignancy can be prevented due to early detection of cervical premalignant lesions.

#### References

1. ICO Information Centre on HPV and cancer. Human Papillomavirus and Related Diseases in India (Summary Report 2014-08-22). 2014.
2. Bamanikar SA, Chandanwale SS, Baravkar DS, Dapkekar P. Study of Cervical Pap Smears in a Tertiary Hospital.
3. Toews HA. The abnormal pap smear: a rationale for follow up. Canadian Family Physician. 1983 Apr;29:759.
4. Maryem A, Ghazala M, Arif, HA, Tamkin K. Smear Pattern and Spectrum of Premalignant and Malignant Cervical Epithelial Lesions in Postmenopausal Indian Women: A Hospital Based Study. Diagnostic Cytopathology. 2011;40(11):976-83.
5. Sreedevi A, Javed R, Dinesh A. Epidemiology of cervical cancer with special focus on India. International journal of women's health. 2015 ;7:405.
6. Patel M.M, Pandya A.N, Modi J. Cervical pap smear study and its utility in cancer screening, to specify the strategy for cervical cancer control. N J Comm Med. 2011;2(1):29-31.
7. Mehmetoglu HC, Sadikoglu G, Ozcakil A, Bilgel N. Pap smear screening in the primary health care setting: A study from Turkey. North American Journal of Medical Sciences. 2010 Oct;2(10):467.
8. Pradhan B, Pradhan SB, Mital VP. Correlation of PAP smear findings with clinical findings and cervical biopsy. Kathmandu University medical journal (KUMJ). 2007 Oct 1;5(4):461-7.
9. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. International journal of cancer. 2010 Dec 15; 127(12):2893-917.
10. Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. International journal of cancer. 2015 Mar 1;136(5):E359-86.
11. Kalkar RA, Kulkarni Y. Screening for cervical cancer: an overview. Obstet Gynecol India. 2006;56(2):115-22.
12. Khan MS, Raja FY, Ishfaq G, Tahir F, Subhan F, Kazi BM et al. Pap smear Screening for Precancerous conditions of the cervical cancers. Pak J. Med. Res. 2005;44(3):111-3.
13. Cancer TC, Cervical Cytology Research Group. Prevalence of cervical cytological abnormalities in Turkey. International Journal of Gynecology & Obstetrics. 2009 Sep 1;106(3):206-9.
14. Ghaith JE, Rizwana BS. Rate of Opportunistic Pap smear Screening and Patterns of Epithelial Cell Abnormalities in Pap Smears in Ajman, United Arab Emirates. Sultan Qaboos Univ Med J. 2012;12(4):473-8.
15. Saslow D, Solomon D, Lawson HW, Killackey M, Kulasingam S, Cain et al. American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology Screening Guidelines for the Prevention and Early Detection of Cervical Cancer. Journal of Lower Genital Tract Disease. 2012;16(3):175-204.
16. Edelman M, Fox AS, Alderman EM, Neal W, Shapiro A, Silver EJ, Spigland I, Suhrland M. Cervical Papanicolaou smear abnormalities in inner city Bronx adolescents: prevalence, progression, and immune modifiers. Cancer Cytopathology: Interdisciplinary International Journal of the American Cancer Society. 1999 Aug 25;87(4):184-9.
17. Banik U, Bhattacharjee P, Ahamad SU, Rahman Z. Pattern of epithelial cell abnormality in Pap smear: A clinicopathological and demographic correlation. Cytojournal. 2011;8.