

## CYTOLOGICAL EVALUATION OF CONVENTIONAL CERVICAL PAP SMEARS IN A TERTIARY CARE CENTER-A CROSS SECTIONAL STUDY

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### Abstract

**Background:** Cervical cancer being the second most common cancer worldwide after breast cancer, however is the most common gynecological cancer in the developing countries like India. Pap Smear is a simple and cost effective screening method for early diagnosis of premalignant and malignant cervical lesions. The aim of this study is to evaluate the spectrum of cervical pap smear cytology in a tertiary hospital in central India. **Materials and Methods:** The present study is a Descriptive Cross sectional Observational study. The data has been collected for one year from January 2022 to December 2022. Total 967 smears received were included in our study. They were stained by conventional papanicolaou technique. The reporting of the pap smear was based on 2014 Bethesda system. **Result:** Out of 967 cases, 313 cases (32.87 %) were reported as negative for intraepithelial lesion/malignancy (NILM), 117 cases (12.28%) were unsatisfactory. 388(40.75%) cases were reported as reactive cellular changes associated with inflammation. 16 cases (1.6 %) were atrophic smears. 59 cases (6.19%) were reported as Bacterial Vaginosis. 12 cases(1.26%) showed candidiasis, 10 cases (1.05) showed Trichomonas Vaginalis. 3 cases (0.32%) of reactive cellular changes associated with radiation was reported. Among Intraepithelial lesions / Malignancy, 20 cases(2.10%) were ASCUS, 1 case (0.10%) of ASC-H, 15 cases (1.57 %) were LSIL, 11 cases(1.15%) of HSIL and 2 cases (0.21%) of squamous cell carcinoma cervix were reported. **Conclusion:** Premalignant and malignant lesions of cervix can be diagnosed early by conventional PAP smears and thus proper and timely management could be suggested for better outcome.

## INTRODUCTION

Incidence of cervical carcinoma is defined as occurrence of new cases of overt carcinoma cervix per year. In India, cervical cancer incidence ranges from approximately 6–29% of all cancers in women.<sup>[1-4]</sup> As World bank statistics shows, the Pap smear test has been a cost effective, noninvasive screening method for cervical cancer,<sup>[5]</sup> Carcinoma cervix is one the most common cancer amongst the Indian women population, particularly affecting the 15-44 years of age.<sup>[6]</sup> Cervical cancer screening using Papanicolaou (PAP) stained cervical smears is one of the most effective way of cervical cancer detection and prevention which has great potential in developing countries like India. However, cervical smear screening has significant rates of false-positive and false negative results.<sup>[7]</sup> Carcinoma cervix encountered in developing countries accounting for 30% of world cases, 18%

are from India. Every year in India, 122,844 women are diagnosed with cervical cancer and 67,477 die from the disease. India has a population of 432.2million women aged 15years and older who are at a risk of developing cancer.<sup>[8-10]</sup>

### Risk factors for cervical cancers include

1. Women with low socio-economic status
2. Sexually active at a younger age
3. Poor genital hygiene
4. Malnutrition
5. Use of oral contraceptives

The papanicolaou test also known as Pap test, Pap smears, 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.<sup>[11]</sup> Pap smear is pivotal in cervical cancer screening in developing countries. It also identifies various inflammatory, infective, benign and malignant pathologies at the earliest.<sup>[12]</sup> It is a

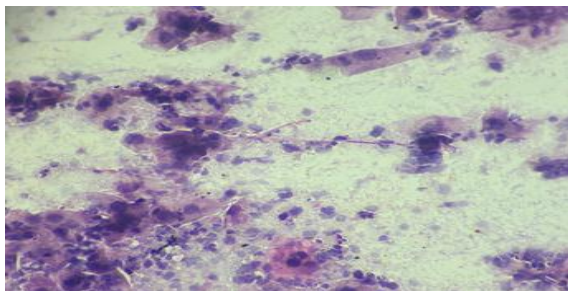
simple, safe and effective test to detect premalignant and malignant lesions of the cervix at an early age.<sup>[13]</sup> It is recommended that females who are having sexual exposure should undergo regular Pap smear testing.<sup>[14]</sup> It should be a continuous process in order to prevent people dropping out for follow up visits and treatment procedure.<sup>[15]</sup>

First Bethesda system of cervical smear reporting was developed in 1988 and a two tier system i.e low grade squamous intraepithelial lesions (LSIL) and high grade squamous intraepithelial lesion (HSIL) was introduced and also used adequacy criteria alongwith human papilloma virus related preinvasive changes in the cervical epithelium<sup>16</sup>. Our study aims to present the pap smear results based on Bethesda system 2014 by evaluating the benign, infective and precancerous lesions in women presenting to our tertiary care center.

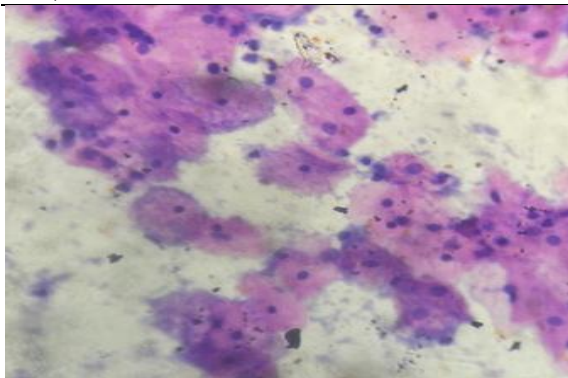
## MATERIALS AND METHODS

This study was conducted at a tertiary care health center of central India over a period of from January 2022 to December 2022 and a total of 967 patients were included, who underwent pap smear examination with chief complaints of vaginal discharge, menstrual irregularities, pelvic pain, dyspareunia and who had bleeding pervagina. Pap smears were taken using conventional method of cervical cytology by using pap kit (endocervical brush, Ayres spatula and cotton swab). Smears were fixed immediately in 95% ethylalcohol and stained by Pap staining. Smears were reported as per the Bethesda system 2014.

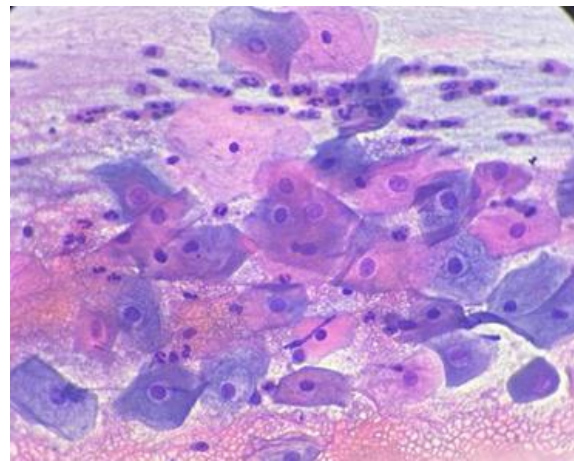
## RESULTS



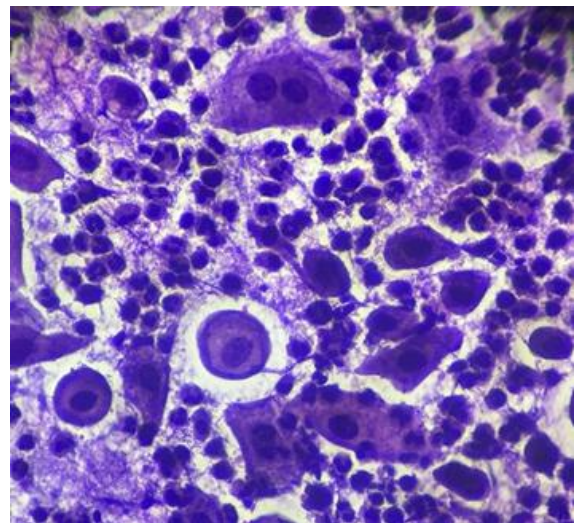
**Figure 1: 40X- Candidial hyphae and spores (pap stain)**



**Figure 2: 40X Bacterial vaginosis with clue cells (Pap stain)**



**Figure 3: 40X Reactive Cellular Changes of Inflammation (Pap stain)**



**Figure 4: 40 X Koilocytic changes (pap stain)**

Out of 967 cases, 313 cases (32.87 %) were reported as negative for intraepithelial lesion/malignancy (NILM), 117 cases (12.28%) were unsatisfactory. 388(40.75%) cases were reported as reactive cellular changes associated with inflammation. 16 cases (1.6 %) were atrophic smears. 59 cases (6.19%) were reported as Bacterial Vaginosis. 12 cases (1.26%) showed candidiasis, 10 cases (1.05) showed Trichomonas Vaginalis. 3 cases (0.32%) of reactive cellular changes associated with radiation were reported. Among Intraepithelial lesions/ Malignancy, 20 cases (2.10%) were ASCUS, 1 case (0.10%) of ASC-H, 15 cases (1.57 %) were LSIL, 11 cases (1.15%) of HSIL and 2 cases (0.20%) of squamous cell carcinoma cervix were reported. [Table 1]

**Age ranges from 20-75 years with mean age of 37.55 years.**

Most common age group showing epithelial cell abnormality was 41-50 yrs of age. The examination of 49 abnormal smears reveal 20 cases (2.06%) of ASCUS with maximum number in age group 31-40 years, ASC-H, 1 case in the ages 21-30 yrs, LSIL - 15 cases maximum in the age range 31-40 yrs and 41-50years with 5 cases in each age category. HSIL

-11 cases maximum in age range 41-50 yrs. Squamous cell carcinoma cervix only 2 cases seen between age 61-70 years, as shown in [Table 2]. Microscopy of inflammatory smears reveal bacterial vaginosis, Trichomonas, Candidiasis, mixed

infection showing 1 case of Bacterial Vaginosis with trichomonas vaginalis and 2 cases of Bacterial Vaginosis with candidiasis. Three of the case shows reactive cellular changes associated with Radiation, as shown below in [Table 3].

**Table 1: Spectrum of Cytodiagnosis on Pap smear reporting by Bethesda system 2014.**

Diagnosis	No. of cases (967)	Percentage (100%)
NILM	313	32.36
Unsatisfactory	117	12.09
RCCI	388	40.12
Atrophic smear	16	1.65
Bacterial vaginosis	59	6.10
Candidiasis	12	1.24
Trichomonas Vaginalis	10	1.03
Reactive cellular changes associated with Radiation	03	0.31
ASCUS	20	2.06
ASC-H	01	0.10
LSIL	15	1.55
HSIL	11	1.13
SCC	02	0.20

**Table 2: Age wise distribution of epithelial cell abnormality in Pap smear reporting**

Epithelial Cell Abnormalities	<20 yrs	21-30	31-40	41-50	51-60	61-70	>70	Total
ASCUS	-	02	06	05	04	01	02	20(2.06%)
ASC-H	-	01	-	-	-	-	-	01(0.10%)
LSIL	-	-	05	05	03	02	-	15(1.55%)
HSIL	-	-	03	06	01	01	-	11(1.13%)
SCC	-	-	-	-	-	2	-	02(0.20%)

**Table 3: Agewise distribution of Inflammatory smear on Pap smear reporting.**

Diagnosis	<20	21-30	31-40	41-50	51-60	61-70	>70	Total
Non specific Inflammation (RCCI)	-	135	115	106	32	-	-	388(40.12%)
Bacterial Vaginosis	-	20	22	15	02	-	-	59(6.10%)
Candiasis	-	04	06	02	-	-	-	12(1.24%)
Trichomonas Vaginalis	-	04	05	01	-	-	-	10(1.03%)
Mixed infection	-	-	02	-	-	-	-	03(0.31%)
Radiation Induced reactive Cellular Changes	-	-	-	03	-	-	-	03(0.31%)

## DISCUSSION

In a study done by Singh K and Singh A in 2015 they found negative for intraepithelial lesions in 156 cases (83.9%) cases and epithelial cell abnormality in 30(16%) cases<sup>17</sup>. In our study we found negative for intraepithelial lesion in 313(32.36%) cases and 49(5.06%) cases showed epithelial cell abnormalities.

In a study done by Sachan P, Singh M, Patel M, Sachan R in 2018 they observed ASCUS in 2.9% of screened women, LSIL in 5.09%, and HSIL in 0.48% cases.<sup>[18]</sup> In study by Lakshmi P et al, found ASCUS in 5 cases (2.5%), LSIL in 15 cases(7.5%), and HSIL in 1 case(6%) cases.<sup>[19]</sup> In our study Among Intraepithelial lesions / Malignancy we found 20 cases(2.10%) ASCUS, 1 case (0.10%) of ASC-H, 15 cases (1.57 %) were LSIL, 11 cases (1.15%) of HSIL and 2 cases (0.20%) of squamous cell carcinoma cervix. In a study by Warpe B M et al in 2016, nonspecific inflammation was found in 61.2%, candida infection in 0.8%, Trichomonas infection 7.35%, bacterial vaginosis in 12.24%.<sup>[20]</sup> Similar results were obtained in study done by Kalyani R et al in 2016.<sup>[21]</sup> Pudasaini S, et al in 2015 found Bacterial vaginosis (5.3%) was commonest

among organisms in their study which was similar to our study.<sup>[22]</sup> In our study 388(40.75%) cases were reported as reactive cellular changes associated with inflammation. 16 cases (1.6 %) were atrophic smears. 59 cases (6.19%) were reported as Bacterial Vaginosis. 12 cases (1.26%) showed candidiasis, 10 cases (1.05) showed Trichomonas Vaginalis. 3 cases (0.32%) showed radiation induced reactive cellular changes.

In the study done by Rawat Kiran et al in 2016 mean age of patients with LSIL was 39.1years and those of ASC-H, HSIL & Carcinoma cervix were 54, 51.1 and 64.6 years respectively.<sup>[23]</sup> While in our study mean age of LSIL was 45.6 years, 50 yrs for ASC-H, 47.2 yrs for HSIL & 65.4 yrs for carcinoma cervix.

## CONCLUSION

Premalignant and malignant lesions of cervix are common lesions in females and can be detected early by conventional PAP smears. Conventional pap smears play important role not only to identify and diagnose premalignant lesions but also to identify the infectious etiologies and thus guide proper treatment. Cervical cancer commonly occurs

in women between ages 60 and 70 years and its precursor lesion is considered to occur 10-20 years earlier. Therefore it is recommended that women should have at least one pap smear test before the age of 45 years. Thus, we need to strengthen our health services to spread cervical cancer screening programs, educate and motivate women to visit the hospital for cancer screening.

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