

## Original Research Article


# Study of cervical cytology in papanicolaou smears in a tertiary care center

K. Bhavani<sup>1</sup>, P. Vijaya Sheela<sup>2\*</sup>, I. Vani<sup>3</sup>, Y. Jyothsna<sup>4</sup>, N. Uma<sup>5</sup>

<sup>1</sup>Assistant Professor, <sup>2</sup>Assistant Professor, <sup>3</sup>Associate Professor, <sup>4</sup>Post Graduate, <sup>5</sup>Professor

Dept. of OBG, AMC, KGH, Visakhapatnam, Andhra Pradesh, India

\*Corresponding author email: [ispvsheela195@gmail.com](mailto:ispvsheela195@gmail.com)

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## Abstract

**Background:** Cancer cervix is a leading cause of mortality and morbidity in developing countries like India most probably due to lack of proper screening facilities in the rural and suburban areas or due to the lack of awareness amongst the women of developing countries. Cervical cancer is the fourth most common cancer in the world. Developing countries accounted to about 80% of the global burden. This study was conducted to highlight the importance of Pap smear study in differentiating premalignant and malignant lesions.

**Materials and methods:** This was a prospective study aimed to evaluate all pap smears examined at KGH over a period of 6 months i.e. from December 2016 to May 2017. Detailed clinical data and pap smear cytology reports were obtained and data noted in a structured proforma. All PAP smears reported as per THE BETHESDA System 2014. Women with abnormal smears were followed up by repeat pap smears or acetic acid guided cervical biopsy.

**Results:** Total of 770 pap smears were examined in 6 months duration. Max no. of patients (around 40%) were of 31-40 years age group. Most of the patients (90.77%) were categorized into NILM (negative for intraepithelial lesion or malignancy). Among the five organisms, we found trichomonas were 38 (4.9%), and candida 38 (4.9%) cases of total NILM cases. Epithelial cell abnormalities in cytological examination were found in total 61 cases constituting 7.92%. Among epithelial cell abnormalities, LSIL was the commonest (27 cases, 3.57%).

**Conclusions:** Cervical cytology by Pap smear is an important tool for early detection of premalignant and malignant lesions of cervix. Regular Pap smear screening should be conducted in vulnerable age group.

## Key words

Cervical cytology, Papanicolaou smear, Tertiary care center.

## **Introduction**

In India, 200 women die each day due to cervical cancer “prevention is better than cure” holds true for cervical cancer - screening with pap smear (Secondary prevention) can identify early premalignant lesions can reduce mortality and morbidity [1].

The Papanicolaou (Pap) smear was introduced in 1941 and became the standard screening test for cervical cancer and premalignant lesions. Cervical cancer is the most common cancer among women after breast and colorectal cancer in the world, but in developing country like India it is the leading cause of mortality and morbidity [2]. Women in these countries usually present to the clinic only when they have symptoms, such as pain, discharge, and/or abnormal bleeding [3]. Nearly 4 lacks new cases of cervical cancers are diagnosed annually worldwide and 80% of them are diagnosed in the developing countries. Cervical cancers can be prevented through early detection by means of effective screening techniques. Cervical Pap smear is a sensitive test for early screening of the cervical lesion [1]. Though Pap smear is just a routine screening test, the overall sensitivity in detection of premalignant lesions like high grade squamous intraepithelial lesion (HSIL) is 70-80% and has been proved very effective in differentiating between inflammatory, premalignant and malignant lesions [6]. Thus the epithelial changes can be treated, preventing the cervical cancer. The lesions into high grade and low grade squamous intraepithelial lesions (SIL) for Pap smear reporting and some studies reported comparison of various terminologies [16]. Recently the Bethesda System (TBS) 2014 for reporting the results of cervical cytology was developed with introduction of some newer terminology that could provide clear guidance for clinical management.

## **Materials and methods**

### **Inclusion criteria**

All people who were attended Gynecology OPD were underwent pap smear as it is routine screening technique.

### **Exclusion criteria**

All women suspected to have pregnancy; those who were menstruating were excluded.

This prospective study was conducted on 770 patients to evaluate all previously conducted cervical smears of patients who attended the Obstetrics and Gynecology outpatient department at the teaching tertiary care hospital during the period December 2016 to May 2017. All patients who had undergone Papanicolaou (Pap) smear testing during this period were included in the study. Smears were taken of all patients who presented with complaints of vaginal discharge, post-coital bleeding, inter menstrual bleeding, and pain in lower abdomen as well as those who had no complaints and had come for routine cervical screening. Relevant clinical data and Pap smear reports were obtained and data was noted in a structured proforma. The smears were obtained with the help of Ayer’s spatula and cytobrush to collect specimen from the squamocolumnar junction. The cellular material obtained on the spatula and cyto brush was quickly smeared on a clean glass slide. Two smears were prepared for each case. The glass slides were then fixed immediately by immersing them into the coplin jar containing 95% ethyl alcohol. The smears were stained with Papanicolaou stain. After mounting the slides with DPX (Distrene dibutyl pthalate xylene), slides were examined under light microscope and were reported by two pathologists independently according to The 2014 Bethesda system.

## **Results**

Total of 770 pap smears were examined in 6 months duration. Max no. of patients (around 40%) were of 31-40 years age group. Out of these 770 smears 9 were inadequate or unsatisfactory due to blood/ mucus and were excluded from our study (9 cases, 1.1%).

Most of the patients (90.77%) were categorized into NILM (negative for intraepithelial lesion or malignancy) followed by LSIL (low grade squamous intraepithelial lesion) and ASCUS (atypical cells of undetermined significance) HSIL (high grade squamous intraepithelial lesion. Non-specific inflammation was the commonest finding in NILM. Among the five organisms, we found trichomonas were 38 (4.9%), and candida 38 (4.9%) cases of total NILM cases (**Table – 1, 2**).

**Table - 1:** Different cytological findings according to THE BETHESDA system.

Different cytological findings	Number	%
Unsatisfactory smears	9	1.1%
Inadequate sample	2	0.2%
Obscured with blood	7	0.9%
Normal smears (neegative for intaepithelial lesion or malignancy)	699	90.77%
Abnormal smears	61	7.92%
Total	770	100%

**Table - 2:** Cytological abnormalities according to THE BETHESDA SYSTEM 2014.

Cytodiagnosis	No. of patients	%
NILM	699	90.77%
Normal	153	19.87%
Inflammatory	443	57.14%
Atrophic	27	3.5%
Candida	38	4.9%
Trichomonas	38	4.9%
ASCUS	18	2.33%
LSIL	27	3.5%
HSIL	14	1.8%
AGC	1	0.12%
Carcinoma SCC	1	0.12%
ADC	0	--
Inadequate	9	1.1%
Total	770	100%

Epithelial cell abnormalities in cytological examination were found in total 61 cases

constituting 7.92%. Among epithelial cell abnormalities, LSIL was the commonest (27 cases, 3.57%) followed by ASCUS (18 cases, 2.33%), Followed by HSIL (14 Cases 1.8%) and AGC (1 case 0.12%), squamous cell carcinoma (1 case 0.12%).

Age of patients ranged from 25-80 years in our study. Majority of the cases of inflammation was seen in the reproductive age group 25-35 years.

## Discussion

According to national cancer registry program of India, cancers of uterine cervix and breast are the leading malignancies in Indian women [5]. There should be an effective mass screening program for earlier detection of precancerous conditions especially in the high risk age group so that their treatment can be started earlier and morbidity and mortality rated can be reduced.

### Cytological findings in different age groups

About 65% of the total cases are above the age of 30 years in our study. Our finding is similar to a study by Ranabhat, et al. who got 76% of his total cases above 30 years age [6]. This supports that cervical screening is delayed by many years in majority of females in India. There is a need for educating the people and increasing awareness about the benefits of early pap smear testing by conducting regular education programs. Moreover, the physicians and healthcare professionals should also motivate and educate the general public regarding pap testing.

The majority cases of malignancy were seen in the age group of 51-60 years and cases of intraepithelial lesion was seen mostly in the age group of 41-50 years. Our finding is similar to Naik, et al. who reported the same age group for malignancy and intraepithelial lesion [3]. Even Ranabhat, et al. reported that eighty percent of all epithelial cell abnormalities were found in the age group >40 years of age [6].

Among all the NILM lesions, inflammatory lesion was the most common diagnosed

condition which covered almost three fourth cases (57.14%). Majority of the cases of inflammation was seen in the age group of 31-40 years. Our findings were similar to Naik, et al. study which reported the same figures. However Mulay, et al. found 19.6% cases of non-specific inflammation in Indian study group and 25.34% in the Mauritian group [3, 7]. Ranabhat, et al. found 26 % cases of non-specific inflammation in their study which is very low as compared to our study [6].

Among all the infections diagnosed bacterial vaginosis was most common as seen with other study [6].

### **Epithelial cell abnormalities**

In our study there were 61 cases (7.9%) of abnormal epithelial lesions. Our findings were similar to Ranabhat, et al. who has reported prevalence of 6.7%. The prevalence of epithelial cell abnormalities around the world has a wide range of 0.98% to as high as 15.5% [6]. The percentage of epithelial abnormalities had ranged from 2.3 to 6.6% in US, 1.6% to 7.9% in the Middle East, 0.98% to 4.41% in Israel and 1.87% to 5.9% in India [7]. The reason for this wide variation could be many like different criteria's used for diagnosis of lesions, the difference in the sample size studied and the difference in the prevalence of risk factors in the population studied by different groups.

In our study out of all epithelial cell abnormalities, LSIL was found to be most common followed by ASCUS and then HSIL. Our figures are similar to study by gupta.8 However in a study by Ranabhat, et al. HSIL was the most common lesion [6].

### **Conclusion**

Pap smear is a less invasive, cost effective and simple procedure to diagnose cervical lesions and epithelial cell abnormalities in developing country like India. Therefore periodical cytological screening helps in early detection of cervical lesions and help in reducing the

morbidity and mortality associated with cervical cancer. Even the government and NGOs can help in increasing the awareness and educating the people about the screening benefits of Pap smear at an early stage.

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