ABSTRACT

Background: Cervical cancer is the third most common cancer affecting women worldwide. It is the most common cancer in women in several less developed countries, and now the second most common cancer in India. Almost 70% of the global burden of cervical cancer is in areas with lower levels of development, and more than one fifth of all new cases are diagnosed in India. Cervical cytology test (Papanicolaou smear) has traditionally been the primary screening method for cervical cancer. Aims: This study was aimed at evaluating prevalence of cervical cytological abnormalities and their demographic determinants in women who underwent cervical cytological screening at dept. of OBGY AIIMS BHOPAL. Settings and Design: A hospital based cross sectional study was designed to evaluate all cervical smears done at dept. of OBGY AIIMS BHOPAL from Jan 2014 to Dec 2014. Materials and Methods: We analysed the reports of all patients who had undergone cervical cytology test during this period as per the Bethesda nomenclature. Results and conclusions: A total of 1887 Pap smears were taken. 25 cases (1.31% with CI= 0.95-1.95) reported to have epithelial cell abnormality. The most frequent abnormality was ASCUS (0.48%). The prevalence of squamous cell carcinoma was 0.05%.

KEYWORDS: Papanicolaou smear, cervical cytology, Cancer screening, The Bethesda system.
INTRODUCTION
India has a population of 432.20 million women aged 15 years and older who are at risk of developing cervical cancer. Current estimates indicate that every year 122844 women are diagnosed with cervical cancer and 67477 die from the disease. Cervical cancer in India ranks as the 2nd most frequent cancer among women and the 2nd most frequent cancer among women between 15 and 44 years of age.\(^1\) In India, early marriage, early conception, multiparty, and low socio-economic condition, are the prevailing risk factors of cancer cervix.

Cervical cancer has a characteristic natural course that is slow progression through a premalignant stage. It represents a spectrum of intraepithelial lesions from low grade to high grade lesion to invasive cancer. The premalignant lesions of cancer cervix can be detected through exfoliative cytology (Papaniculaou smear). The premalignant lesion takes a long course to become malignant. And if timely detected these premalignant lesions are treatable. In 1941, Papanicolaou.\(^2\) described cervical mass screening for sexually active women for early detection of cervical cancer. For the Pap smear, cells are collected from the surface of the uterine cervix and the cervical canal, smeared on a glass slide, and analysed in a microscope. The sensitivity of pap smear on a single test for detecting cervical epithelial lesions is 55% to 80%.\(^3\) The fundamental goal of cervical cancer screening is to prevent morbidity and mortality from cervical cancer. The optimal screening strategy should identify those cervical cancer precursors likely to progress to invasive cancers (maximizing the benefits of screening). Cervical cancer and precancerous lesions can be identified by screening women systematically through population-based programs. In spite of such high occurrence of cancer cervix in India the efforts to increase the awareness about screening of cancer cervix are still minimal.

According to ASCCP Cervical cancer screening should begin at age 21 years. Women under the age of 21 should not be screened regardless of the age of sexual initiation or other risk factors. For women 21-29 years of age, screening with cytology alone every 3 years is recommended. Women ages 30-65 years should be screened with cytology and HPV testing (“co-testing”) every 5 years (preferred) or cytology alone every 3 years (acceptable). Women over 65 years of age with evidence of adequate negative prior screening and no history of CIN2+ within the last 20 years should not be screened for cervical cancer with any modality.
Screening with Pap smear has resulted in dramatic reduction in the incidence of invasive cervical cancer in different countries of the world. To date two types of Pap tests are in use: conventional and liquid-based cytology. Even as the liquid-based test is popular in the developed countries, in low resource settings, a conventional Pap test is the mainstay screening system. Various studies reveal that a majority of the cervical cancer mortality of the world comes from developing countries.\(^{4-6}\) This may be attributed to the absence of an efficient cervical cancer screening system. Therefore, it is important to know the overall scenario of epithelial cell abnormality in the Pap smear, in a developing country. Again, in order to counsel women and to organize a public health system for cervical cancer screening by Pap smear examination, it is imperative to know the pattern of premalignant and malignant lesions.

With the above-mentioned background, the present study was undertaken with the objectives to find out the prevalence of cytological abnormality among women visiting gynaecology OPD of a tertiary hospital in Bhopal, and to find out the correlation between demographic profile and cytological abnormality.

**MATERIALS AND METHOD**

The present study was a hospital based prospective study conducted at department of obstetrics and gynaecology, AIIMS Bhopal, Madhya Pradesh, India, for duration of one year i.e. from January 2014 to December 2014.

All women attending the Gynaecology OPD and fulfilling the selection criteria during the study period were included. After taking history and recording the findings of vaginal examination of the patients, the Pap smear was collected with the help of a wooden Ayer's spatula. The smear was immediately fixed in 90% alcohol for 30 minutes. Then Pap staining was done followed by light microscopy and slide interpretation. A total of 1887 slides were examined. Specimen adequacy as well as reporting was assessed according to the revised 2001 Bethesda system. Unsatisfactory smears were repeated. Epithelial cell abnormality was detected in a total of 25 patients. All patients with epithelial cell abnormalities were referred for colposcopy according to the standard procedure and recommendations.\(^7\)

**Inclusion criteria**

Married women of 21 years and above, attending outpatient department of OBGY, AIIMS Bhopal.
Exclusion criteria
pregnant women, women within 6 weeks following delivery or abortion, Women with already detected cancer cervix revealed from history or records. Women refusing consent.

Ethics
The procedures followed in the study were in accordance with the ethical standards of the institutional human ethics committee on human experimentation and with the Helsinki Declaration of 1975, as revised in 2000.

Statistics
Data were entered in Microsoft excel and analysed in SPSS. Categorical variables like presence of abnormality in cervical cytology, type of abnormality etc were summarised as frequency and proportion. Numerical variables like age, parity etc were summarised as mean and standard deviation where normally distributed and as median and inter-quarantine range where non-normally distributed. Prevalence of abnormal cervical smear is presented as proportion with 95% confidence interval. Some numerical variables like age, parity were converted into categorical variables. Association of abnormal cervical cytology with demographic determinant like age, parity was tested by fisher’s test.

RESULTS
Total 1887 Pap smears were submitted. The age range of the all patients was 21 – 80 years. Among the 1887 pap smears examined, 25 (1.31% with CI= 0.95-1.95) revealed cervical epithelial cell abnormality [Table 1]. The age range of the patients with cervical epithelial cell abnormality was between 28 and 65 years .The most frequent epithelial cell abnormality was ASC-US. Out of 25 women with cytological abnormality, 10 (40 %) women were in the 20 – 39 years age group and 15 (60 %) were ≥ 40 years of age [Table 2] (p= 0.013).

A total of 08(0.4%) Pap smears revealed high grade lesions and malignancy and these belonged to women of ≥ 30 years of age. Out of these 08 Pap smear 01 was vault smear [table 2]. 13 (52%) women with cytological abnormality had parity of 3 or more [table 3]. (p=0.229).
Table 1: Percentage of different categories of cervical cytological abnormalities in Pap smear

<table>
<thead>
<tr>
<th>Cytological findings in pap smear</th>
<th>Number of cases</th>
<th>Percentage of total pap smear</th>
</tr>
</thead>
<tbody>
<tr>
<td>NILM</td>
<td>1862</td>
<td>98.69%</td>
</tr>
<tr>
<td>ASC-US</td>
<td>09</td>
<td>0.48%</td>
</tr>
<tr>
<td>ASC-H</td>
<td>02</td>
<td>0.10%</td>
</tr>
<tr>
<td>LSIL</td>
<td>08</td>
<td>0.42%</td>
</tr>
<tr>
<td>HSIL</td>
<td>03</td>
<td>0.16%</td>
</tr>
<tr>
<td>AGC</td>
<td>02</td>
<td>0.10%</td>
</tr>
<tr>
<td>MALIGNANT(SCC)</td>
<td>01</td>
<td>0.05%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1887</td>
<td>100%</td>
</tr>
</tbody>
</table>

NILM: negative for intraepithelial lesion, ASC-US: atypical squamous cells of undetermined significance, ASC-H: atypical squamous cells high grade lesion cannot be excluded, LSIL: low grade squamous intraepithelial lesion, HSIL: high grade squamous intraepithelial lesion, AGC: atypical glandular cells, SCC: squamous cell carcinoma

Table 2: Number of patients with epithelial cell abnormality in Pap smear in different age groups

<table>
<thead>
<tr>
<th>Age group (Years)</th>
<th>Number of patients with cytological abnormalities in pap smear</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ASCUS</td>
</tr>
<tr>
<td>20-29</td>
<td>0</td>
</tr>
<tr>
<td>30-39</td>
<td>02</td>
</tr>
<tr>
<td>40-49</td>
<td>03</td>
</tr>
<tr>
<td>50-59</td>
<td>02</td>
</tr>
<tr>
<td>60-69</td>
<td>02</td>
</tr>
</tbody>
</table>

NILM: negative for intraepithelial lesion, ASC-US: atypical squamous cells of undetermined significance, ASC-H: atypical squamous cells high grade lesion cannot be excluded, LSIL: low grade squamous intraepithelial lesion, HSIL: high grade squamous intraepithelial lesion, AGC: atypical glandular cells, SCC: squamous cell carcinoma

Table 3: Classification of patients according to parity with abnormal Pap smear

<table>
<thead>
<tr>
<th>Parity</th>
<th>Number of patients with cytological abnormalities in pap smear</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ASCUS</td>
</tr>
<tr>
<td>0-2</td>
<td>02</td>
</tr>
<tr>
<td>3-4</td>
<td>06</td>
</tr>
<tr>
<td>&gt;=5</td>
<td>01</td>
</tr>
</tbody>
</table>

NILM: negative for intraepithelial lesion, ASC-US: atypical squamous cells of undetermined significance, ASC-H: atypical squamous cells high grade lesion cannot be excluded, LSIL: low grade squamous intraepithelial lesion, HSIL: high grade squamous intraepithelial lesion, AGC: atypical glandular cells, SCC: squamous cell carcinoma
DISCUSSION

In our study the prevalence of cervical epithelial cell abnormality in the Pap smear were 1.31%. Out of these 0.48% were ASC-US; 0.10% ASC-H; 0.42% LSIL; 0.16% HSIL; 0.10% AGC; and 0.05% malignancy. The most frequent abnormal finding in our study was ASC-US. Women with high grade lesions and malignancy were of ≥ 30 years of age.

Similar to our study another Indian study conducted in urban hospital cases reported a lower prevalence of epithelial abnormalities i.e. 1.39%. ASCUS, LSIL, HSIL, and SCC represented 0.64%, 0.216%, 0.16% and 0.07%, respectively.[8]

Hirachand et al found that 1.1% of total patients in their study had cytological abnormality; seven (0.51%) ASCUS (Atypical cells of undetermined significance), two (0.15%) LSIL (Low grade squamous intraepithelial lesion), four (0.29%) HSIL (High grade squamous intraepithelial lesion) and two (0.15%) SCC (squamous cell carcinoma).[9]

In another study intraepithelial lesion were found to be 1.3%; ASCUS 0.11%, LSIL 0.83%, HSIL 0.31%, SCC 0.05%, AGUS 0.02%.[10]

In the study conducted by Ghait,[11] J et al epithelial cell abnormalities were seen in 3.3% of the sample, with atypicalsquamous cells of undetermined significance (ASCUS) found in 1.8%, lowgradesquamous intraepithelial lesions (LSILs) found in 1.2%, and high-grade squamous intraepithelial lesions (HSILs) found in 0.3%. There were no cases of squamous cell carcinoma.

Other studies on cervical cytology had following observations. Haroon et al found cytological abnormality in 2.91% of all screened cases.[12] 5.5% were premalignant and malignant lesion.[13] in study by Patel et al.

In another study 6.92% cases were reported to have epithelial cell abnormality.[14] The variation in prevalence of cytological abnormalities may be due to difference in study population. Our study had women from urban areas with good education and awareness of cervical cancer, easy access to health facilities, and better living conditions.
The average life expectancy of people has increased and therefore if the low-grade cervical lesions persist and progress, then there is every chance that these women are at risk of developing higher grade lesions in the future.\textsuperscript{[15]} Therefore screening at early age will help to diagnose and treat pre-cancerous lesion and decrease the incidence of cancer cervix.

Pap smear is a low cost, effective screening method and is ideally suited for low resource settings. So it is the most appropriate method of cervical cancer screening in a developing country like India. But the study was conducted in urban women attending Gynae OPD so it was not the true representation of general population. So the percentages of epithelial cell abnormalites found in our study are not actual true prevalence of disease in the population.

**FUTURE RESEARCH**

There is need of large scale studies to be done including all women through screening programmes.

**CONCLUSION**

Pap smear examination is widely accepted screening method. In a developing country like India with predominant rural population, greater emphasis is still needed for screening and awareness programs for cervical cancer detection. Apart from efforts from governments cooperation from media and non-governmental organizations is also need for better results. The need of the hour is to implement well planned and systematic cervical cancer screening programs to curb the menace due to cervical cancer.

**REFERENCES**


