A Prospective Study on Cervical PAP Smear - It’s Implication and Utility for Cervical Cancer Screening in a Tertiary Medical College.

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Abstract - Cervical cancer remains the most common cancer in women of the developing world, largely as a result of a lack of screening. The gold standard screening test for cervical cancer, the Pap smear, has been effective in reducing cervical cancer incidence and mortality by identifying precancerous and cancerous lesions; however, little is known about quality assurance practices for gynecologic cytopathology in resource-limited settings. The goal of this study was to document baseline clinical and laboratorial characteristics in the hope of improving the efficacy of cervical cancer screening and informing future quality improvement initiatives. Patients in the age group 15-45 and 50-70 years with various complaints were screened during Jan 2016 to December 2017. Total 1000 patients were studied. Slides were fixed in 95% ethyl alcohol and stained with Pap stain. Slides were reported according to the 2014 Bethesda System, by cytopathologists. Out of 1000 patients studied, 950 showed inflammation and other benign lesions. 50 patients showed premalignant and malignant lesions. Premalignant lesions were present in 30-45 year of age group.

Keywords - PAP smear, Bethesda study, screening, premalignant lesion.

I. Introduction

Cancer of the uterine cervix is a leading cause of mortality and morbidity among women worldwide. In developing countries it is the most common gynecological cancer and one of the leading causes of cancer death among women.

Nearly 4 lacs new cases of cervical cancers are diagnosed annually worldwide and 80% of them are diagnosed in the developing countries. There are 1.7 million cases in the developing world and as many as 5-13 million women have precancerous lesions.\textsuperscript{1,2} Countries that have successfully reduced their burden of cervical cancer have been able to do this through organized screening programs.\textsuperscript{1,4} Cervical cancer has well-defined premalignant lesions before the development of invasive lesions.\textsuperscript{3} The objective of cervical cancer screening, therefore, is the detection of these lesions before developing into invasive cervical cancer.

According to National Cancer Registry Program of India, cancers of uterine cervix and breast are leading malignancies seen in Indian women.\textsuperscript{6} Cervical cancers can be prevented through early detection using several screening techniques. Cervical smear is a sensitive test for early screening of the cervical lesion and most widely used system for describing PAP smear result is TBS 2014, The Bethesda System.\textsuperscript{7}

The goal of this study was to document baseline clinical and laboratorial characteristics in the hope of improving the efficacy of cervical cancer screening and informing future quality improvement initiatives.

II. Materials and Methods

This prospective study was carried out on Department of Obstetrics & Gynaecology at Bankura Sammilani Medical College, west Bengal period from 1st Jan 2016 - 30th Dec 2017. This was a two year hospital based prospective study. A total of 1000 patients were for in this study.

Study design: Prospective observational study.

Study Location: This was a tertiary care teaching Hospital based study done in Department of Obstetrics & Gynaecology at Bankura Sammilani Medical College, west Bengal.

Study Duration: 1st Jan 2016 - 30th Dec 2017.

Sample Size: 1000 patients.

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Sample size calculation: The sample size was calculated on the basis of a single proportion design. The target population was from a mixed population having a varied socio-economic background.

Subject & selection method: The study population was drawn from all patients who presented with various complaints in the age group of 15-70 years.

Inclusion Criteria:
1. Age 15-70 years.
2. Patients having sexual intercourse irrespective of marital status.
3. Postmenopausal women with postcoital bleeding.
4. Women with multiple partners.

Exclusion criteria:
1. Age < 15 years.
2. Age > 70 years.
3. Patients with no relevant complaints of abnormal discharge.

III. Procedure And Methodology

This prospective study was carried out on Department of Obstetrics & Gynaecology at Bankura Sammilani Medical College, west Bengal period from 1st Jan 2016 - 30th Dec 2017. This was a two year hospital based prospective study. A total of 1000 patients were for in this study. The patients were in the age range of 15-45 and 45-70 years, having complaints like vaginal discharge, bleeding per vagina or something coming out per vagina. History and symptoms along with parity were recorded. Smears were taken by Post Graduate students using modified Ayres wooden spatula which was inserted and rotated 3600 over cervix. Both ectocervix and endocervix were sampled. Slides were prepared, labeled, fixed in 95% ethyl alcohol immediately and subsequently stained by Pap stain. After staining, slides were mounted with DPX (distrene dibutyl phthalateylene), screened and reported by two cytopathologists according to The 2014 Bethesda system.

IV. Result

Amongst the 1000 cervico-vaginal smears studied during Jan 2016 to December 2017 on patients, ranging from 15 to 70 years and above age, 481 (48.1%) showed inflammatory lesion, 20 (2.0%) showed atrophy, 38 (3.8%) showed ASCUS, 1 (0.1%) showed HSIL, 8 (0.8%) showed SCC, 28 (2.8%) showed metaplasia, 5 (0.5%) had Radiation changes, 120 (12%) were inadequate and 300 (30%) didn't show any remarkable pathology.

ASCUS has 40 (4.0%) while AGUS has 0.7% incidence. Ratio of inflammation and other lesions to premalignant and malignant ones was 938: 62 (93.8% and 6.2%).

Table 1: Relation of age with various non neoplastic and neoplastic pathology of cervix

<table>
<thead>
<tr>
<th>Age group(years)</th>
<th>15-30</th>
<th>31-40</th>
<th>41-50</th>
<th>50-70</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>100</td>
<td>140</td>
<td>50</td>
<td>19</td>
<td>300</td>
</tr>
<tr>
<td>Inadequate</td>
<td>40</td>
<td>40</td>
<td>15</td>
<td>5</td>
<td>120 (40%)</td>
</tr>
<tr>
<td>Inflammatory</td>
<td>258</td>
<td>210</td>
<td>12</td>
<td>1</td>
<td>481 (48.1%)</td>
</tr>
<tr>
<td>Atrophy</td>
<td>0</td>
<td>1</td>
<td>8</td>
<td>11</td>
<td>20 (0.2%)</td>
</tr>
<tr>
<td>Metaplasia</td>
<td>5</td>
<td>15</td>
<td>2</td>
<td>3</td>
<td>25 (2.5%)</td>
</tr>
<tr>
<td>Radiation changes</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>5 (0.5%)</td>
</tr>
<tr>
<td>ASCUS</td>
<td>3</td>
<td>8</td>
<td>17</td>
<td>10</td>
<td>38 (3.8%)</td>
</tr>
<tr>
<td>AGUS</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1 (0.1%)</td>
</tr>
<tr>
<td>LSIL</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1 (0.1%)</td>
</tr>
<tr>
<td>HSIL</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0 (0.1%)</td>
</tr>
<tr>
<td>SCC</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>8 (0.8%)</td>
</tr>
<tr>
<td>Total</td>
<td>426</td>
<td>418</td>
<td>110</td>
<td>46</td>
<td>1000</td>
</tr>
</tbody>
</table>
V. Discussion

With the changes in the life styles and demographic profiles in developing countries, non-communicable diseases are emerging as an important health problem which demand appropriate control programs before they assume epidemic propagation. Cancer has been a major cause of morbidity and mortality. According to National Cancer Registry Program of India, 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 groups for detecting precancerous conditions before they progress to invasive cancers. 

In a study conducted by Herbert and Smith (1999), cervical premalignant lesions peak in the late 20s. Human papillomavirus (HPV) the causative organism of cervical cancer is mainly sexually transmitted; it follows that peak incidence of HPV infection like any other sexually transmitted infection will be shortly after commencement of sexual intercourse and CIN the precursor lesions of cervical cancer also peaks about a decade after the peak incidence of HPV infection and a decade earlier than invasive cervical cancer. That is one of the reasons why screening for cervical cancer is recommended to start in the early 20s. This is the age that screening is most likely to be successful in preventing cervical cancer. Screening beyond this age will detect more advanced lesions or invasive cancer. The implication of this finding is that women in this environment commence screening for cervical cancer late, past the age at which premalignant conditions can be detected and treated. It is an important public health concern because it implies that cervical screening programs in countries like India where women commence screening late may be ineffective because most preinvasive lesions might have been missed. The United States Preventive Services Task Force (USPSTF) and the American Cancer Society (ACS) recommend that screening for cervical cancer should commence at the age of 21 years and should be done every 3 years.

Globally, cervical cancer screening is discouraged before the age of 21 years because many consider it to be a waste of scarce resources since cervical cancer is rare below this age and screening below this age does not lead to decrease in the incidence of cervical cancer. Screening before the age of 21 years is also associated with high false positive rates, lower detection, and may likely lead to unnecessary interventions which may cause more harm than good. In this study, women who were less than 20 years of age constituted less than 1% of the women screened. Though presently India does not have a cervical screening policy, this is in line with global practice.

Our study showed that there were 946 (94.6%) benign and inflammatory and 60 (6.0%) premalignant and malignant lesion, out of which premalignant lesions 72 (7.2%) that were ASCUS and AGUS. ASCUS progresses to LSIL, HSIL, and SCC. AGUS progresses to adenocarcinoma. ASCUS was found to be highest in age group 41-50 years in our study. ASCUS is to be labelled as ASCUS–reactive and ASCUS–SIL which on biopsy turned out to be 83.6% positive for LSIL or HSIL. As percentage of ASCUS reported in other studies correlated with our findings, we should advocate PAP smear study and follow up at 31 years and above. There are various screening tests 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, speculosity, cervicography.

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Out of all these, exfoliative cytology has been regarded as the gold standard for cervical screening programs. The role of HPV is very important in the development of cervical cancer; however, if Pap screening is associated with HPV-DNA testing, we can increase the sensitivity. World Health Organization (1992) recommended that cervical cancer screening every 3 years of beginning coitus. It is also recommended every 1-2 years, women who have crossed the age of 30 years and have had 3 consecutive normal Pap results may be screened after 2-3 years. Society recommends that all women should begin cervical cancer screening every 3 years of beginning coitus. It is also recommended every 1-2 years, women who have crossed the age of 30 years and have had 3 consecutive normal Pap results may be screened after 2-3 years.

VI. Conclusion

The Pap smear is a sensitive and specific screening method for cervical cancer in our setting. We hope that documentation of baseline quality and services of cervical cytology will inform future quality assurance programs and assist other laboratories in the development of similar programs in resource-limited settings. Women in this part of the country start cervical cancer screening late in their reproductive life and this may be a contributing factor to the high burden of cervical cancer in developing countries. The prevalence of epithelial cell abnormalities was considerably higher than in many parts of the world. Efforts should be intensified to encourage women to screen at an earlier age. Equally important is that a method that reduces the frequency of screening should be introduced.

Conflicts of interest

There are no conflicts of interest.

Reference


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