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Original Research Article

EVALUATE THE PATTERN OF CERVICAL PAP SMEAR CYTOLOGY IN BIHAR POPULATION OF GAYA DISTRICT

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Abstract

Background: Cervical cancer is one of the major cause of mortality among women worldwide. The present prospective study aimed to analyze pap smear samples of women presenting with various Gynaecological indications. **Materials and Methods:** 1267 Papsmears samples from patients attending Gynaecology OPD of our Institute were included. Ayres Spatula was used to take samples for Pap smears from subjects between ages 18 to 76 years presenting with different Gynaecological complaints and as a routine where indicated. Smear reporting was done as per the 2001 Bethesda system. **Result:** Of the 1267 Pap smears taken 1.5 % smears were inflammatory. 0.2% smears showed low grade squamous intraepithelial lesion (LSIL), 0.2% smears showed high grade squamous intraepithelial lesion (HSIL). Among routine Pap smears 87.9% samples were negative for malignancy, 2 smears showed squamous cell carcinoma. **Conclusion:** Pap smear is an easily available and affordable screening tool to detect premalignant and malignant lesions of cervix. Pap smear test results can be used reliability.

INTRODUCTION

The cervical Pap smear, also known as the Pap test, is a vital screening tool used to detect abnormalities in the cervix and to identify early signs of cervical cancer. This was first developed by Dr. Georgios Papanikolaou in the 1920s, who suggested that by examining cells from the cervix the pre-cancerous / cancerous cell can be evaluated.[1-4]

This technique utilized simple procedure but has a significant role in reducing the incidence and mortality rates associated with cervical cancer. By examining cervical cells for any abnormalities or precancerous changes, the Pap smear has become an importance tool for regular screenings and early detection of cervical abnormalities.[5-8]

Cervical cancer develops in the cervix, the lower part of the uterus. If left undetected and untreated it may cause a serious and potentially life threat. Cervical cancer may affect women at any age, but elderly women usually in the age group of 50s and above are more affected. As a standard global policy for safety from cervical cancer it is recommended to do pap smear test as early as around the age of 21 and continue every three years until the age of 65.[9-13]

The human papillomavirus, also known as HPV is the most likely causative factor for cervical cancer. This virus may be transmitted through sexual contact. Not all HPV infections lead to cervical cancer, but some high-risk types can increase the risk.

While HPV takes the spotlight for causing cervical cancer, there are a few other risk factors to keep in mind. Smoking, a poor immune system, a family history of cervical cancer, and certain hormonal imbalances are amongst the other causative factor. Taking preventive measures and regular screening is the key to safety. The cervical pap smear is noninvasive and is of preventive nature. By diagnosing any abnormal changes in the cervical cells early, it can help prevent the development of cervical cancer.[6,8,15-19]

The Bethesda system (2001) reflects important advances in biological understanding of cervical neoplasia and cervical screening technology and is most widely used system for describing pap smear result. The results typically categorizes findings into different groups. The most common categories are- Negative for Intraepithelial Lesion or Malignancy (NILM), Atypical Squamous Cells of Undetermined Significance (ASC-US), Low-Grade Squamous Intraepithelial Lesion (LSIL), and High-Grade Squamous Intraepithelial Lesion (HSIL).[20-22]

This prospective study was undertaken to evaluate the pattern of cervical pap smear cytology and find out the incidence of epithelial cell abnormalities in Bihar Population of Gaya District.

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MATERIALS AND METHODS

Study Design: This prospective, unicentric, cross-sectional, descriptive study was conducted in the department of Gynecology, Anugrah Narayan Magadh Medical College and Hospital Gaya, Bihar. The study was approved by the institutional research and ethical committee. This study was conducted over a period of 12 Months from December 2021 to November 2022. An informed and written consent was obtained from all the participating subjects prior to the commencement of the study.

Inclusion Criteria

Subjects with age 18 years and above with vaginal discharge and / or post coital bleeding and / or inter-menstrual bleeding and / or postmenopausal bleeding and / or abdominal pain.

Exclusion Criteria

Subjects who are pre diagnosed for carcinoma cervix and / or under treatment for carcinoma cervix. Pregnant patients were also excluded from the study.

Study Sample: The study samples were collected from the Gynaecology Outpatient Department of our institute. All the cervical pap smears were collected conventionally. All samples meeting the inclusion and exclusion criteria and collected during the study duration were collected.

Sample Size: All the samples were randomly selected. A total 1267 samples were included in this study.

Sample Evaluation: Cytology smears were fixed in 95% isopropyl alcohol and the slides were stained by Papanicolaou's method by cyto technicians. Slides were then mounted with DPX (Distrene Dibutyl phthalate Xylene) and examined by pathologists. The Revised 2001 Bethesda System of Reporting was used for smear sample reporting.

Statistical Analysis: All the data was manually collected and subsequently analyzed. The data was Tabulated and was subjected to statistical analysis.

RESULTS

Pap smear test is essentially, a screening tool used to detect early signs of cervical cancer. A total of 1267 cervical pap smears were reported in the study period. The age of the participating subjects ranged from 18 to 76 years. Majority of the pap smears sample (68.59 %) were in the reproductive age group (21- 45 years). 15 samples of pap smears were from subjects below 20 years and 2 samples were from subjects above 75 years. [Table 1].

Table 1: Age wise distribution of total number of patients

Age range	Number of subjects	Percentage
< 20	15	1.18
21-45	869	68.59
46-55	253	19.97
56-65	86	6.79
66-75	42	3.31
>75	2	0.16
Total	1267	100

Table 2: Cervical pap smear findings according to 2001 Bethesda System

Result Interpretation	Number of subjects	Percentage
Unsatisfactory for evaluation	11	0.9
Negative for intraepithelial lesion or malignancy	1113	87.9
Low-grade squamous intraepithelial lesion (LSIL)	3	0.2
High-grade squamous intraepithelial lesion (HSIL)	3	0.2
Atrophy	30	2.4
Reactive cellular changes associated with inflammation	19	1.5
Shift in flora suggestive of bacterial vaginosis	67	5.3
Trichomonas vaginalis	19	1.5
Atypical squamous cells of undetermined significance (ASCUS)	2	0.1
Total	1267	100

Of the total samples, 11 samples were found to be unsatisfactory for smear evaluation. The most common cause for unsatisfactory smear was obscure inflammation, absence of transformation zone component and obscure blood. 1113 samples were found to be Negative for Intraepithelal Lesion or Malignancy. Epithelial cell abnormalities were observed in 08 cases which included 03 cases of Low-grade squamous intraepithelial lesion (LSIL), 03 cases of High-grade squamous intraepithelial lesion (HSIL) and 02 cases of Atypical squamous cells of undetermined significance (ASCUS). Low-grade squamous intraepithelial lesion was the most common finding in reproductive age group i.e; 20- 45 years, while and High-grade squamous intraepithelial lesion was most common observation in peri-menopausal age group i.e; 46-55 years. Atrophic and reactive cellular changes were found in 30 and 19 subjects respectively. Organism associated lesion like bacterial vaginosis was seen in 67 subjects while trichomonas vaginalis was seen in 19 subjects. Cervical pap smear findings were tabulated in [Table 2].

DISCUSSION

Cervical carcinoma is responsible for approximately 5% of all cancer-related deaths in women worldwide.

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Developing countries report an alarming number of deaths, with estimates ranging from 200,000 to 300,000 annually. However, the implementation of national screening programs in developed countries has resulted in a significant reduction in cervical cancer-related deaths. The United States has also made significant efforts towards cervical cancer screening. Over the past thirty years, the incidence of cervical cancer has decreased by more than 50% due to widespread screening with cervical cytology. Given the efficacy of pap smear cytology in preventing cervical cancer, it is recommended that all women begin screening at the age of 21 years.

In our study, the age range of the patients was between 18 and 76 years, with the predominant population falling between the ages of 21 and 45 years (68.59 %). This finding is consistent with previous studies conducted by Hirachand et al, Ranabhat et al, Bukhar et al, and Bamanikar et al. 4-6,13 Only 1.18 % of the pap smears were obtained from patients below the age of 20, which is similar to the results of a study conducted in Karnataka, India (0.7%) 14 However, in studies conducted in the mid-western region of Nepal and Bangladesh, there were no cases of pap smears obtained from patients below the age of 20 5,8 In contrast to these findings and our own study, the number of cases of pap smears obtained from patients below the age of 20 was quite high (11.7%) in Pakistan.[15]

Obtaining adequate material for pap smear can be challenging. Our study found that 0.9% of cases resulted in unsatisfactory smears, with the most common causes being obscuring inflammation and absence of endocervical/ transformation zone component. Variations in incidence were observed across multiple studies. For instance, studies conducted in Kathmandu, Pakistan, and India reported unsatisfactory smear rates of 0.3%, 1.8%, and 1.2%, respectively. 4,6,14 Conversely, other studies indicated a higher incidence of unsatisfactory smears, ranging from 4.8% to 11.9%.[9,11,13,16]

In majority of cases, no evidence of intraepithelial lesion or malignancy was observed, which is consistent with the findings of Bamanikar et al in a tertiary hospital.[13] Conversely, Vaghela et al and Saha et al reported rates of negative findings for intraepithelial lesion or malignancy at 47% and 50.6%, respectively.[16,17]

The present study found that epithelial cell abnormalities accounted for 8 cases, including LSIL, HSIL, and ASCUS. Previous research has demonstrated that the prevalence of epithelial abnormalities varies across different locations, ranging from 1.2% to 13.6%.[5,14,17-22] A study conducted at the same hospital in 2010 reported a prevalence of 1.1%.[23] Since then, there has been a decrease in epithelial cell abnormalities, which may be attributed to the inclusion of pap smear as a routine screening procedure for cervical cancer. The prevalence of LSIL (0.2%) in our study was consistent with other studies, with most cases exhibiting mild dysplasia and morphological features consistent with HPV cytopathy. HSIL was observed in 0.2% of cases in our study, which is similar to findings reported in studies conducted in Nepal and India.4,5,8 The incidence of ASCUS (0.1%) in our study was also comparable to other studies, although one study conducted in Gujarat, India reported a much higher incidence of ASCUS.[19]

LSIL and HSIL were predominantly observed in the reproductive age group (20-45 years) and perimenopausal age group (46-55 years), respectively, which is consistent with the findings of Hirachand et al.[4] Other studies have reported epithelial cell abnormalities in individuals aged 40 years and above.[8,19] Atrophic changes were observed in 2.4% of cases, which is in line with studies conducted in Bangladesh, India, and Pakistan.[8,9,11] Bacterial vaginosis was the most common organism-associated lesion, accounting for 5.3% of cases in our study. Other studies have reported similar and comparable rates for bacterial vaginosis.[14,16,17,22] Trichomonas vaginalis was observed in 1.5% of cases, which is lower than rates reported in other studies.[17,19,20] Reactive cellular changes (1.5%) observed in our study were associated with inflammation. Two studies conducted in India reported rates of 3.2% and 26.8% for reactive cellular changes17,19, indicating that interpretation of these changes is subjective and results may vary.

The commencement of Pap smear examination is recommended upon the onset of sexual activity in females, regardless of their age, and should be incorporated as a standard gynaecological screening procedure. The establishment of a pap screening program throughout all regions of our country is imperative for the timely identification of cervical premalignant lesions.

CONCLUSION

Pap smear tests are inexpensive and easily affordable by patients of all socio-economic group. The possibility of easy malignancy detection at early stage helps in prompt treatment and timely referral in cases with cancer cervix. Pap smear test is vary useful and reliable screening tool for cervical cancer.

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