

A Study to Analysis of Various Cytopathological Patterns on Pap Smears- Cervical Cytology in Government Medical College and Attached hospital Dungarpur Rajasthan

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Abstract:

Background: The most effective method of detecting cervical cancer has been called the Pap smear (cervical cytology-Papanicolaou). Method for detecting premalignant and malignant lesions using a Pap smear. The study's primary goal is to analyze the wide range of cytopathological abnormalities found in all women's cervical Pap tests at the pathology lab of a government medical college with an adjacent hospital in Dungarpur.

Methods: This is a Cross sectional study which is conducted in Department of Pathology in Medical College Dungarpur for a period of 1 years during 15 August 2022 to 14 August 2023. We evaluated total 1870 reported pap smears during the study period and analysed for the prevalence of various cytopathological abnormalities.

Results: 86 instances of epithelial abnormalities were discovered in 1870 individuals. In 1732 patients (90.05%), a non-neoplastic cytological diagnosis was made. Low grade squamous intraepithelial lesion (LSIL) (42 cases, 2.24%) and High grade squamous intraepithelial lesion (HSIL) (22 cases, 1.17%) were the two most frequent epithelial abnormalities.

Conclusion: In India, one of the most frequent cancers among women is cervical cancer. We strongly advise performing a cervical cytology screening using conventional or liquid-based Pap cytology since they are quick, painless, economical, and efficient for finding precancerous lesions.

Keywords: Papanicolaou Smear, Cervical Screening, Epithelial Abnormalities, Squamous Intraepithelial Lesions.

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Introduction

Cervical cancer is a growing health issue and a significant factor in the death of women globally. Cervical cancer is on the rise everywhere. In India, cervical cancer accounts for about 6.29% of all female cancers.[1] More than one-fifth of all cervical cancer deaths occur in India.[2] An epithelial dysplasia or precancerous condition that begins in the cervix is known as cervical intra epithelial neoplasia (CIN). Intra epithelial lesions typically begin in the transformation zone.[3] These intraepithelial lesions may develop into invasive malignancy and in situ carcinoma. CIN can be treated if caught early. Due to the lengthy preinvasive stage, cervical cancer is a disease that can be prevented. If robust screening is used, early detection and proper treatment are achievable.[4] Though pap smear is a routine screening test, the

overall sensitivity in detection of HSIL is 70-80%.[5]

Step-by-step procedures are used for cervical cancer screening and prevention. The first Pap test should be performed at age 21 or within three years of the start of sexual engagement. Thereafter, the test should be performed every three years. Women who have had normal cytology findings and are HPV-negative beyond the age of 30 may have screenings every five years. Every six to twelve months, cervical cytology should be redone in women who have normal cytology findings but test positive for high risk HPV DNA. [8, 9]

The aim of the present study was to analyse and evaluate various cytopathological pattern of precancerous lesions using the Pap smear test.

Materials and Methods

A cross-sectional study was conducted at District Hospital Dungarpur on 1870 patients who had previously visited the OPD of the Department of Obstetrics and Gynecology between the dates of August 15, 2022, and August 14, 2023. The study covered all participants who underwent a Pap smear test throughout this time period and were older than 21 years.

All women provided their informed written consent. A clean bivalve speculum was introduced into the vagina while the patient was in the lithotomy position. To properly view the cervix and vaginal wall, the anterior vaginal wall was retracted anteriorly and the posterior vaginal wall posteriorly.

A wooden Ayre spatula was rotated 360 degrees in order to collect a sample from the ectocervix. The sample was swiftly applied to a glass slide with a label and then fixed in a jar with 95% ethyl alcohol. The Department of Pathology received the glass slides for cytopathological analysis. The 2014 Bethesda System for Reporting Cervical Cytology was used to report laboratory findings.

Result

Retrospective analysis was done on a total of 1870 cervical smear samples from patients. The age distribution of individuals with epithelial abnormalities was shown in Table 1. Most of the individuals who received cervical screening were between the ages of 31 and 60. Epithelial abnormalities were frequently observed in people between the ages of 41 and 60. LSIL was the most prevalent epithelial anomaly found in 42 cases (2.24%), the majority of which were found in patients between the ages of 41 and 60.

Squamous cell carcinoma (SCC) was found in 2 patients (0.1%) that were older than 50. 22 instances in all (1.17%) were found to have HSIL. Diagnoses of Negative for Intraepithelial Lesion/Malignancy (NILM) were made in 1732 patients (90.05%). (Table 2).

In 1732 patients (90.05%), a non-neoplastic cytological diagnosis was made. The most frequent infection observed in 132 cases (7.62%) was bacterial vaginosis, which was followed by vaginal candidiasis in 30 cases (1.73%). 52 cases (2.78%) of unsatisfactory smears were observed. (Table 3).

Table 1: Age wise distribution of cases

| Age group in years | ASC-US | LSIL | HSIL | SCC | Total number of cases | Percentage |
|--------------------|--------|------|------|-----|-----------------------|------------|
| 21-30 | 3 | - | - | - | 3 | 2.23% |
| 31-40 | 19 | 3 | 3 | - | 25 | 18.65% |
| 41-50 | 18 | 17 | 5 | - | 40 | 29.85% |
| 51-60 | 13 | 20 | 9 | 1 | 43 | 32.08% |
| >60 | 15 | 2 | 5 | 1 | 23 | 17.16% |

Table 2: Pap smear results

| Pap smear result | Number of cases | Percentage |
|------------------|-----------------|------------|
| Unsatisfactory | 52 | 2.78% |
| ASC-US | 20 | 3.63% |
| LSIL | 42 | 2.24% |
| HSIL | 22 | 1.17% |
| SCC | 2 | 0.10% |
| NILM | 1732 | 90.05% |

Table 3: Non neoplastic cytological diagnosis

| Pap smear results | Number of cases | Percentage |
|---------------------------|-----------------|------------|
| Atrophy | 144 | 8.31% |
| Nonspecific inflammation | 375 | 21.65% |
| Bacterial Vaginosis | 132 | 7.62% |
| Candidiasis | 30 | 1.73% |
| Trichomoniasis | 5 | 0.28% |
| Reactive cellular changes | 97 | 5.60% |
| No other changes | 949 | 54.79% |

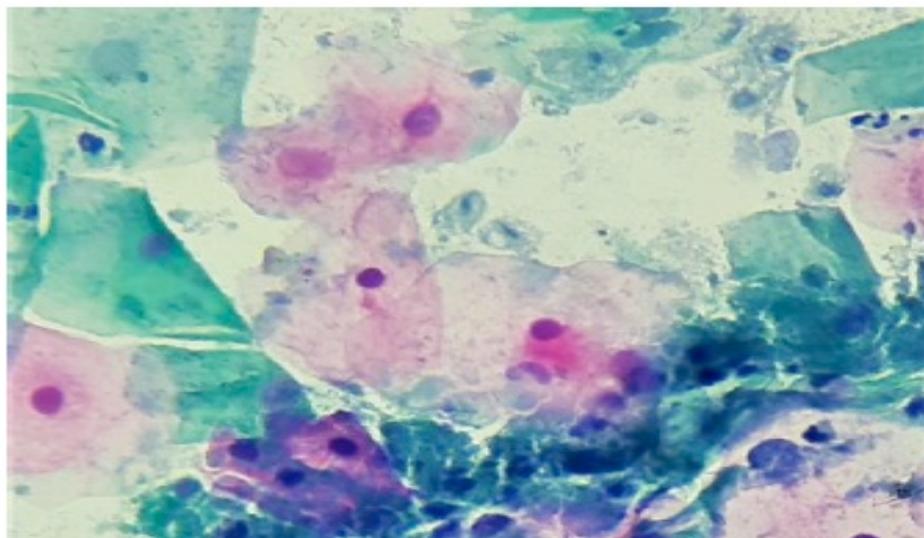


Figure 1: Photomicrograph showing *Trichomonas vaginalis* (Pap stain, 400x)

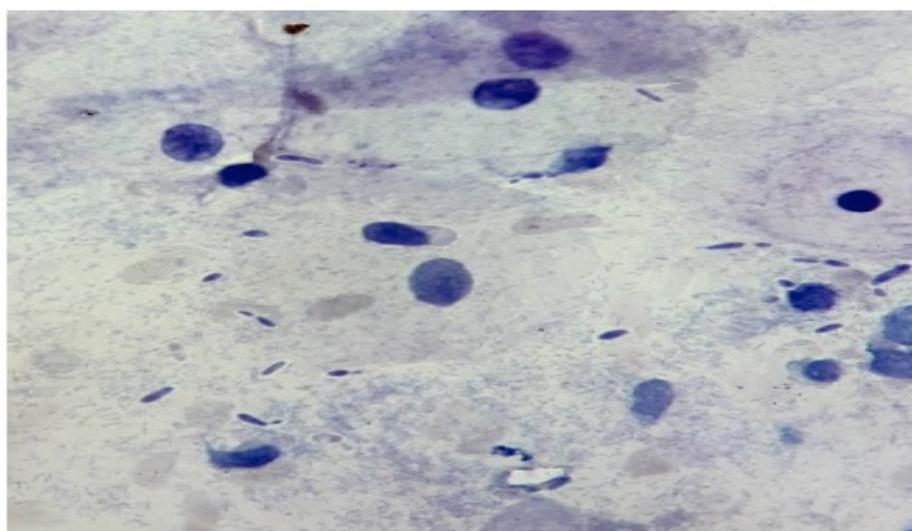


Figure 2: Photomicrograph showing *Candida Albicans* (Pap stain, 400x)

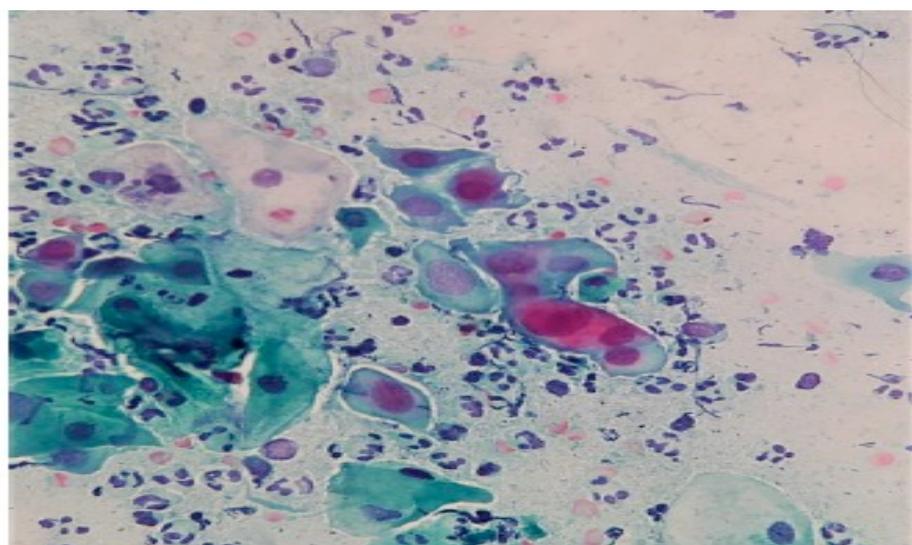


Figure 3: Photomicrograph showing Atypical squamous cells of undetermined significance (ASC-US) (Pap stain, 400x)

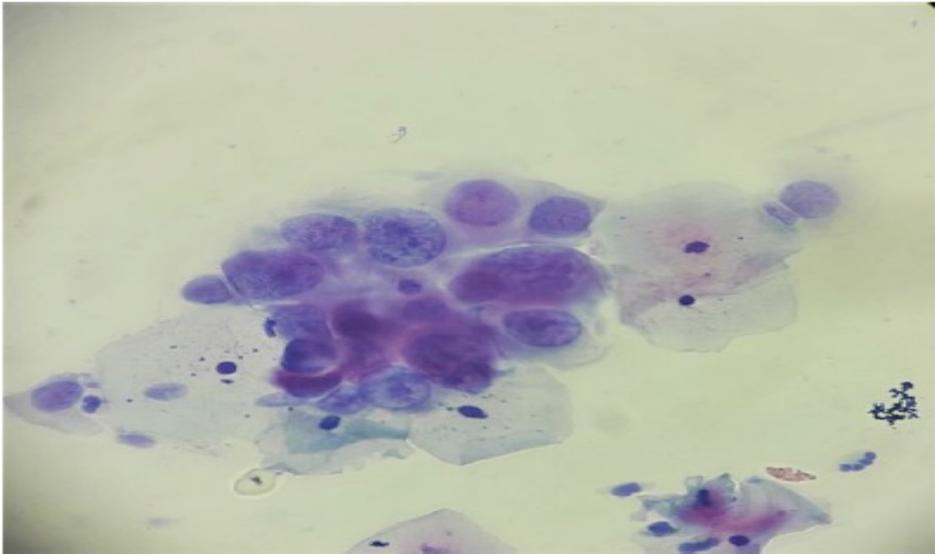


Figure 4: Photomicrograph showing High Grade Squamous Intraepithelial Lesion (HSIL) (Pap stain, 400x)

Discussion

Cytologic cervical cancer screening has significantly reduced mortality from cervical cancer. Cervical cancer continues to take a heavy toll in the nations where such screening is not commonly implemented. The fact that most tumors develop over years from precursor lesions explains why cytologic screening is so successful in avoiding cervical cancer. On cytologic inspection, these tumors exude aberrant cells that can be identified.[10] Pap smears, including conventional and liquid-based Pap cytology, automated image analyzers, the HPV DNA test, manual visual examination of the cervix after application of acetic acid, Lugol's iodine, speculoscopy, and cervicography are only a few of the screening techniques for cervical cancer. The gold standard for cervical screening, however, is exfoliative cytology by traditional Pap smear and liquid Pap cytology. Pap smears, a quick, affordable, repeatable, painless, and sensitive test, can screen for a variety of cervix lesions, both cancerous and non-cancerous. [7]

In our investigation, the majority of Pap smear cases had nonneoplastic cytologic diagnoses (90.18%), which was consistent with earlier research by Ranabhat et al. (95%). [12] Whereas Atilgan et al and Bamaniker et al reported 74.3% and 88.93% [13, 16]

In our investigation, 86 instances out of 1870 patients (4.59%) had aberrant epithelial cells, which was close to the study of Bamanikar et al. (5.36%) [16] whereas it was 1.89%, 2%, and 8.18%, respectively, in investigations by Tailor et al., Malpani et al., and Banik et al. [7, 14, 11] LSIL was the commonest epithelial cell abnormality in our study (2.24%), which was in accordance with

studies done by Bamanikar et al [16] and Malpani et al [14].HSIL was seen in 1.17% cases and seen more commonly above the age of 40 years. Rate of Squamous cell carcinoma in our study was 0.10%, other studies reported a higher rates of malignancy [15, 16, 11] In our study Squamous cell carcinoma (SCC) was diagnosed in women above the age of 50 years.

Among all NILM patients, nonspecific inflammation was the most frequently diagnosed ailment (21.65%). 8.31% of patients had atrophy visible. The most prevalent illness identified is bacterial vaginosis (7.62%), which is followed by vaginal candidiasis (1.73%) and trichomoniasis (0.28%).

Conclusion

Cervical cancer is one of the most prevalent malignancies among women in underdeveloped nations like India. In order to decrease the overall morbidity and mortality linked to cervical cancer, we strongly advise performing routine Pap cytology screenings using conventional or liquid-based methods because they are quick, non-invasive, sensitive, affordable, and reproducible. This will allow for the early detection and treatment of premalignant, malignant, and inflammatory conditions.

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