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CYTOPATHOLOGICAL SPECTRUM OF PAP SMEARS AT JHALAWAR MEDICAL COLLEGE: A TWO-YEAR OBSERVATIONAL STUDY

Pathology

Dr. Shivam Lavania* PG resident Department of Pathology, Jhalawar Medical College, Jhalawar, Rajasthan, India. *Corresponding Author

Dr. Sumit Prakash Rathore Professor Department of Pathology, Jhalawar Medical College, Jhalawar, Rajasthan, India.

Dr Akshita Shekhawat PG resident Department of Pathology, Jhalawar Medical College, Jhalawar, Rajasthan, India.

ABSTRACT

Background: Cervical cancer continues to be a leading cause of female cancer mortality in low- and middle-income countries, including India. Effective cytological screening through the Pap smear enables early detection and thus reduces morbidity and mortality.**Methods:** This cross-sectional study included 764 women aged 21 years and above attending the Obstetrics & Gynaecology OPD at Jhalawar Medical College from July 2022 to June 2024. Pap smears were evaluated cytomorphologically and classified as per the 2014 Bethesda System. Demographic and clinical data were analyzed for associations with cytological findings. **Results:** Most study participants were multiparous (78%) and of rural background (62%). The most common presenting complaint was vaginal discharge (58%), followed by lower abdominal pain (33%). Cytologically, 51.05% of smears were negative for intraepithelial lesion or malignancy (NILM), while inflammatory smears accounted for 31.2%. Dysplasia (epithelial cell abnormalities) was present in 7.4%, with LSIL most common (4.7%). Only 0.4% (n=3) of cases were diagnosed as squamous cell carcinoma, all in women over 45 years.**Conclusions:** Pap smear remains a simple, cost-effective, and reliable screening tool for the early detection of cervical epithelial lesions. Enhanced awareness and regular screening, especially for rural multiparous women, are crucial to further reduce the burden of cervical cancer in India.

KEYWORDS

INTRODUCTION

Cervical cancer remains a major public health problem among women worldwide and is especially prevalent in low- and middle-income countries such as India. Despite being largely preventable, it is responsible for a significant fraction of female cancer deaths, second only to breast cancer among Indian women.[1,2]

Persistent infection with high-risk types of human papillomavirus (HPV) is the primary etiologic factor for cervical cancer. The Pap smear, introduced by Dr. George Papanicolaou, has played a pivotal role in detecting pre-cancerous and cancerous lesions, thus significantly lowering the incidence and mortality where routinely implemented.[3]

The present study was conducted to analyze the incidence and spectrum of cervical epithelial lesions detected by Pap smear and to correlate these findings with clinical and demographic factors in women attending a tertiary-level hospital in Rajasthan.[4]

MATERIALS AND METHODS

STUDY DESIGN AND DURATION:

Cross-sectional, observational study conducted from July 2022 to June 2024.

Setting:

Department of Pathology, Jhalawar Medical College and Hospital, Rajasthan, India.

Participants:

A total of 764 women aged 21 years and above attending the Obstetrics & Gynaecology OPD with gynecologic symptoms or for routine screening.

INCLUSION CRITERIA:

- Women aged 21 years and above
- Presenting with symptoms such as vaginal discharge, bleeding per vagina, post-coital bleeding, irregular menstruation, or for routine screening

EXCLUSION CRITERIA:

- Non-cooperative or unwilling to consent
- Active heavy vaginal bleeding
- History of treated cervical carcinoma
- Pregnant women

DATA COLLECTION

Detailed history, clinical examination, and sample collection as per standard gynecological practice. Pap smears (conventional) were obtained from the squamocolumnar junction using Ayre's spatula and endocervical cytobrush, fixed in 95% ethanol, and stained by the rapid Pap staining method.

CYTOLOGICAL EVALUATION

All slides evaluated according to the 2014 Bethesda System:

- Specimen adequacyGeneral categorization (NILM, epithelial cell abnormalities, others)
- Specific epithelial and non-epithelial diagnoses

DATA ANALYSIS

Results were tabulated for age, parity, residence, education, presenting complaints, and cytological findings.

RESULTS

Demographic and Clinical Profile

- Age distribution: 41–50 years: 36.9%; 31–40 years: 30.9%; 21–30 years: 16.75%; >50 years: 15.45%
- Parity: Multipara: 78%; Primipara: 16%; Nullipara: 6%
- Residence: Rural: 62%; Urban: 38%
- Education: Literate: 60.8%; Illiterate: 39.2%

Chief complaints:

- Vaginal discharge: 58%
- Lower abdominal pain: 33%
- Irregular menses: 16%
- Minor itch/asymptomatic: 18%
- Post-menopausal bleeding: 8%
- Uterine/vaginal prolapse: 8.9%
- Post-coital bleeding: 2.5%
- Others: 4.6%

Cytological Findings

Cytological Diagnosis	Frequency	Percentage
Unsatisfactory	19	2.5%
NILM (Negative for intraepithelial lesion/malignancy)	390	51.05%
Inflammatory Smear	238	31.2%
LSIL (Low-Grade Squamous Intraepithelial Lesion)	36	4.7%

HSIL (High-Grade Squamous Intraepithelial Lesion)	14	1.8%
ASCUS (Atypical Squamous Cells of Undetermined Significance)	7	0.9%
SCC (Squamous Cell Carcinoma)	3	0.4%
Bacterial Vaginosis	27	3.55%
Chronic Cervicitis with Squamous Metaplasia	20	2.6%
Senile Atrophic Changes	10	1.3%

- Total dysplasia/equivocal (LSIL, HSIL, ASCUS): 7.4%
- Malignancy (SCC): 0.4%, all in patients aged ≥45 years

DISCUSSION

The study demonstrates that multiparity, rural residence, and lower education are correlates with higher rates of cervical cytological abnormalities in the study population. The majority of abnormal Pap smears showed low-grade epithelial abnormalities and inflammation, affirming the necessity for regular screening.

These findings are in agreement with multiple Indian and international studies highlighting the effectiveness of Pap smear in early detection. The low prevalence of high-grade lesions and frank malignancy emphasizes the preventive potential of routine cytological surveillance.[5,6]

The study supports the continued utilization and public health promotion of Pap smear screening, alongside HPV testing and vaccination, in reducing cervical cancer burden.

CONCLUSION

Regular Pap smear screening is a safe, simple, and crucial public health intervention for the early identification of cervical pre-malignant and malignant lesions. Given the high rate of abnormal findings, especially among high-risk women, widespread implementation and increased public awareness should remain a priority.

RECOMMENDATIONS

- All women ≥21 years of age should have regular Pap smear screening, with increased frequency for high-risk groups.
- Combination with HPV DNA testing is encouraged for heightened sensitivity.
- Public health strategies must concentrate on rural and multiparous women, addressing gaps in awareness and healthcare access.

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