

Detection of Abnormal Cervical Cytology by Papanicolaou Smears at Tertiary Care Hospital, Rajkot, Gujarat, India

Dharmesh Karamata¹, Milan Purohit², Trupti Purohit³, Gauravi Dhruva⁴

¹3rd Year Resident, Department of Pathology, PDU Medical College and Hospital, Rajkot, India

²Associate professor, Department of Pathology, PDU Medical College and Hospital, Rajkot, India

³Assistant Professor, Department of Pathology, PDU Medical College and Hospital, Rajkot, India

⁴Professor & Head, Department of Pathology, PDU Medical College and Hospital, Rajkot, India

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Corresponding author: Dr. Dharmesh Karamata

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Abstract:

Introduction: In countries like India which is in the developing stage, the cervical cancer burden is still high. World Cancer statistics show that >80% of all cervical cancer cases are found in developing countries, because of a lack of awareness. Pap tests not only diagnose cervical cancers but also aid in the diagnosis of inflammatory conditions and help in treatment.

Material and Methods: A retrospective study was done at P.D.U. Medical College and Hospital, Rajkot, Gujarat from October 2023–march 2024. A total of 586 pap smears are included in the study. Both endocervix and ectocervix were sampled. Immediately slides were fixed with 95% ethyl alcohol and later stained by PAP and H and E stains. Then slides were mounted with DPX and reporting was done by pathologist according to the Bethesda system.

Result: A total of 586 pap smears are included in the study. Out of which, 161 smears were found to have pathology accounting for 27.47%. 111 smears were found to be inflammatory accounting for 18.94%. Atypical squamous cells of undetermined significance, low-grade squamous intraepithelial lesions, and high-grade squamous intraepithelial lesions were 0.51%, 4.09%, and 1.87%, respectively. About 0.34% of cases were of squamous cell carcinoma.

Conclusion: We can conclude Pap test is a simple and cost-effective tool in the diagnosis of inflammatory, premalignant, and malignant lesions of the cervix. Screening has to be done effectively to detect premalignant lesions thus reducing the incidence of cervical cancer.

Keywords: Bethesda system, Cervical cancer, PAP smear.

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Introduction

In countries like India which is in the developing stage, the cervical cancer burden is still high. Every year, 122,844 women in India are diagnosed with cervical cancer, and 67,477 women die from the disease. [2] Pap test is a simple cost cost-effective and sensitive test for screening of various lesions of cervix. Pap smear includes collecting exfoliated cells from cervix onto slides which are processed and examined for the presence of premalignant cells. HPV is sexually transmitted oncogenic virus and plays a key role in development of cancer. [3,4] Apart from diagnosing cervical cancers pap

test also aids in the diagnosis of inflammatory conditions. Cervical cancer is a preventable disease. Screening is required from the age of 21 years till 3 consecutive negative results before increasing the screening interval depending on the risk group of the woman. According to National Cancer Registry cancers of uterine cervix and breast are leading malignancies seen in Indian women.8 Sensitivity and specificity of pap smear screening is 50-75% and 90-99% respectively. [9] If precancerous stages are identified early and treated it is a preventable disease. [10]

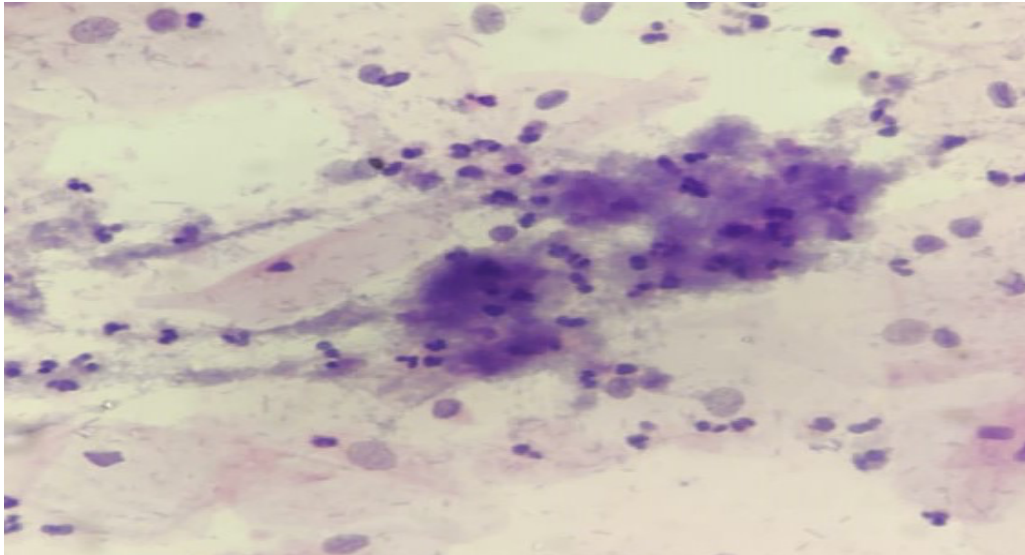


Figure 1: Clue cells in bacterial vaginosis

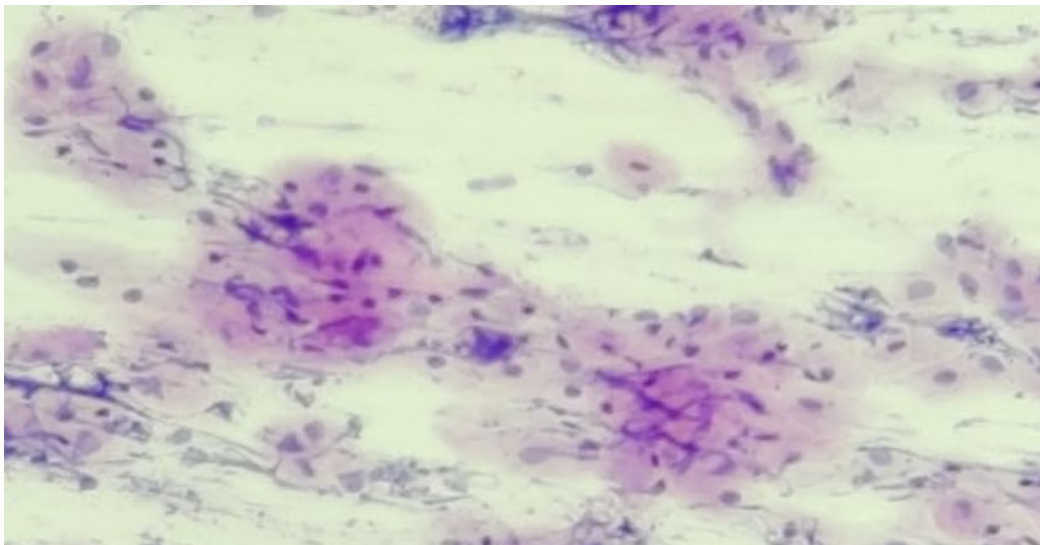


Figure 2: Low-grade squamous intraepithelial lesion

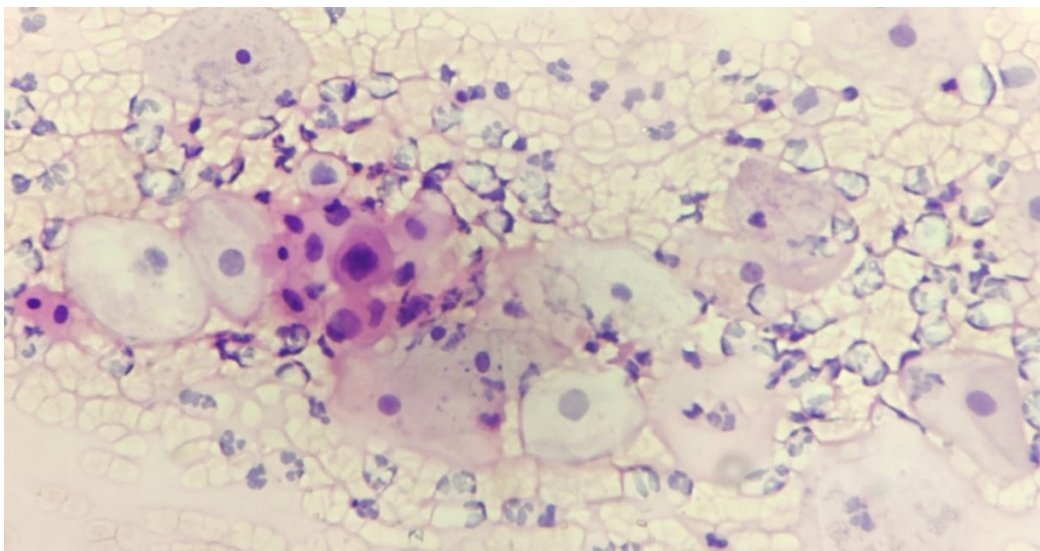


Figure 3: Atypical squamous cells of undetermined significance

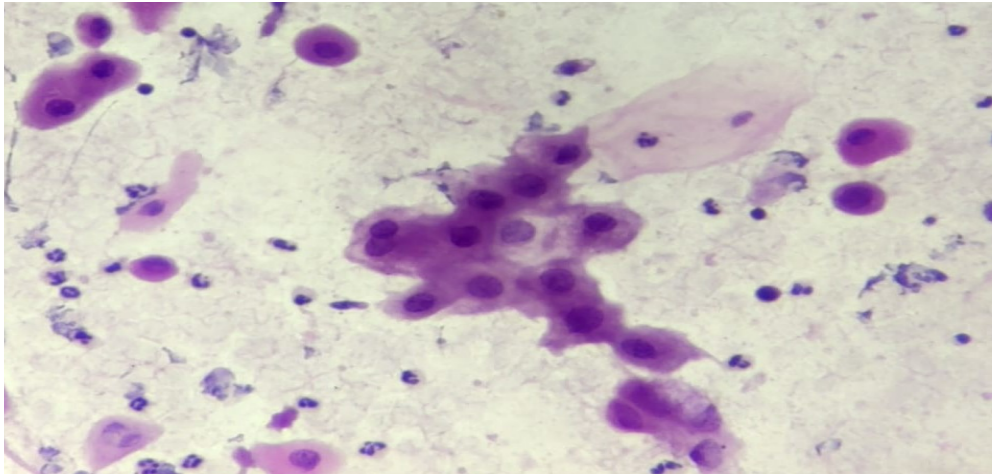


Figure 4: High-grade squamous intraepithelial lesion

Material and Method

This is a retrospective study carried out at P.D.U. Medical College and hospital, Rajkot, Gujarat during October 2023 to march 2024. Total of 586 pap smears are included in the study. Smears are taken by a medical professional by using modified ayre spatula which was inserted and rotated over 360 degrees. Both endocervix and ectocervix were sampled. Immediately slides were fixed in 95% ethyl alcohol and subsequently stained by PAP and H&E stains. PAS stain is used for fungal confirmation Stained slides are mounted with DPX and reported by a Pathologist according to the Bethesda system.

Observations and Results

A total of 586 pap smears are included in the study, Out of which 17 smears were found to be unsatisfactory accounting for 2.90%.

408 smears were found to be normal on screening. Table 1 shows the Pattern of distribution.

Out of 586 pap smears, 161 smears were found to have pathology accounting for 27.47%. 111 smears were found to be inflammatory accounting for 18.94%. ASCUS, LSIL, and HSIL accounted for 0.51%, 4.09%, and 1.87% respectively. 02 cases of squamous cell carcinoma were found accounting for 0.34% of total cases.

Table 1: Number of cases according to Bethesda system

Result	Cases	Percentage
Unsatisfactory	17	2.90
NILM	408	69.62
Inflammatory	111	18.94
ASCUS	03	0.51
LSIL	24	4.09
HSIL	11	1.87
Atypical glandular cells	10	1.70
SCC	02	0.34
Total	586	100

NILM: Negative for intra epithelial lesions or malignancy, ASCUS: Atypical squamous cells of undetermined significance, LSIL: Low- grade Squamous intraepithelial lesion, HSIL: High-grade squamous intraepithelial lesion, SCC: Squamous cell carcinoma.

Table 2: Clinical presentations

Symptoms	No. of cases
Leucorrhea	82
Low backache	156
Abdominal pain	73
Irregular P/V bleeding	78
Vulvar itching	70
Dyspareunia	30
Dysmenorrhea	62
Burning and frequency of micturition	35

Many of the patients had more than one symptom. Among them, 82 patients had complaints of leucorrhoea, 156 low backache, and 73 pain in abdomen, 788 irregular bleeding and 30 dyspareunia. Abnormal pap smears are shown in Table 3. In our study youngest women was 20 years and the oldest women was 70 years. Most of

the pap smears reported in the age group of 22- 40 were NILM and inflammatory.

ASCUS and LSIL were mostly seen in the age group of 41-50. Total 11 HSIL were reported and majority are seen in age group of 51-70 years. Most common age group of squamous cell carcinoma were 51-70 years.

Table 3: Distribution of abnormal sample age-wise age group (Years)

Age group(Years)	NILM	Inflammatory	ASCUS	LSIL	HSIL	Atypical glandular cells	SCC
20-30	46	23	01	00	00	00	00
31-40	141	33	00	05	04	03	00
41-50	154	39	02	06	02	01	00
51-60	41	11	00	05	03	00	01
61-70	26	05	00	08	02	06	01
Total	408	111	03	24	11	10	02

NILM: Negative for intraepithelial lesion malignancy, ASCUS: Atypical squamous cells of undetermined significance, LSIL: Low-grade squamous intraepithelial lesion, HSIL: High-grade squamous intraepithelial lesion, SCC: Squamous cell carcinoma.

Table: 4 Comparison study

Result	Verma et al.	Divya et al.	Present study
NILM	19(15.20)	160(17.9)	408(69.62)
Inflammatory	86(68.80)	396(56.4)	111(18.94)
ASCUS	4(4)	84(11.95)	03(0.5)
LSIL	7(5.6)	00(00)	24(4.09)
HSIL	00(00)	17(2.4)	11(1.87)
SCC	1(0.8)	00(00)	02(0.34)

NILM Negative for intraepithelial lesion malignancy, ASCUS: Atypical squamous cells of undetermined significance, LSIL: Low-grade squamous intraepithelial lesion, HSIL: High-grade squamous intraepithelial lesion, SCC: Squamous cell carcinoma.

Discussion

The cervix is covered with two types of cells: the glandular and the squamous cells. The junction of these is known as the transformation zone. Mainly cervical cancer arises from the transformation zone. Squamous cell carcinoma (95%) and adenocarcinoma (5%) are the two major histological types of an epithelial tumor of the cervix, but in rare cases, the tumor can also be of a non-squamous variant including adenosquamous carcinoma, neuroendocrine carcinoma, glassy cell carcinoma. [13]

Screening strategies includes Pap smear, primary HPV testing, or contesting (with Pap and HPV testing). For patients aged less than 21, screening is not mandatory regardless of the age of starting of sexual activity. In patients aged 21 to 29, screening is started at age 21 with cervical cytology every three years. For patients aged 30 to 65, either Pap testing alone every three years or contesting (PAP and HPV testing combined) every five years is recommended. Patients aged more than 65, screening depends if the patient has had a required prior screening. Patients with symptoms must have

Pap smear testing as part of a diagnostic workup, regardless of prior screening [14].

Many studies showed that cervical screening by pap smear is the best technique for diagnosing premalignant and malignant diseases of cervix. With regular follow up and management the incidence and mortality due to cervical cancer have reduced.

We compare our result with Verma et al. [11] and Divya J et al. [12] In both study inflammatory cases were leading while our study shows normal smear in lead.

Negative for intraepithelial lesion or malignancy category analyzed further and showed a majority of non-specific inflammation. There is a high incidence of Trichomonas and Candida was noted. Patients first visited them having main complaints of leucorrhoea rather than go for specific screening in the hospital. They get easily treated with radical use of metronidazole and anti-fungal drugs

Our study shows 0.51% cases of ASCUS, while Verma et al and Divya j et al show 4% and 11.95%. In 2019 Guidelines allow patients with HPV + ASC-US or LSIL at their 1-year follow-up visit after colposcopic biopsy showing normal or low-grade histology to return for repeat HPV-based testing in 1 more year, rather than immediately return to colposcopy. The main goal is to treat women at high risk of developing invasive diseases

observe women who are not at high risk of developing invasive diseases and protect them from over-treatment. Our study shows 24 cases of LSIL which is 4.09% while Verma et al had 5.6%. Observation is preferred for LSIL. Our study shows 1.87% HSIL while Divya J et al have 2.4% of HSIL cases. A colposcopic biopsy is suggested according to the guidelines.

Our study shows 2 cases of squamous cell carcinoma which is 0.34% while Verma et al. has 1 case which is of 0.8%. [11,12] Cervical cancer commonly develops in women between the ages of 40 and 50 years and its precursor lesion usually occurs 5–10 years earlier. Therefore, it is recommended that women should have at least one Pap smear test before the age of 45 years. [15,16]

Conclusion:

Pap smear test is a simple and cost-effective tool for diagnosis of Inflammatory, Premalignant, and Malignant lesions of the cervix. Women above the age of 30 years are recommended for regular cervical screening every year and women with epithelial abnormalities are advised for close follow-up and colposcopic biopsies. Awareness and screening programs have to be done effectively which helps in detection of premalignant lesions and reduces the incidence of cervical cancer.

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