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PAP Smear and their Correlation with Cervical Biopsy

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Abstract: ***Introduction: Cervical cancer is one of the most common forms of cancer worldwide. Screening women with regular Pap smear allows diagnosis of treatable pre-invasive and invasive lesions. Objective: The objective of the study was to correlate the Pap smear diagnosis with histopathology and to know the accuracy and efficacy of Pap smears in diagnosing premalignant and malignant cervical lesions. Material and methodology: This two year prospective study which was done in the Department of Pathology in ANMMCH, Gaya, includes 100 Pap smears for which histopathological diagnosis was also done. Method of sample selection was simple random sampling. After Pap smear examination, the cervical biopsies received from the same patients were also studied and then correlated with the diagnosis of Pap smears. Results: Out of 100 Pap smears, maximum cases were reported as NILM (64%), followed by ASCUS (6%), LSIL (10%), HSIL (15%), squamous cell carcinoma (4%) and 0.0% cases of adenocarcinoma were diagnosed. On histopathology, 69% cases were diagnosed as chronic cervicitis, CIN I (15%), CIN II and III (6.0%), squamous cell carcinoma (7%) and (0.0) % cases of adenocarcinoma were diagnosed. Overall sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy was 88.89%, 87.32%, 72.73%, 95.38% and 87.55%. Conclusion: As per our study, maximum number of cases diagnosed on Pap smears correlated on histopathology, thereby concluding that Pap smears has an important role in diagnosis of cervical lesions.***

Keywords: Cervix, Pap Smears, Cytology, NILM, LSIL, HSIL

1. Introduction

World-wide Ca cervix is fourth[1] most common cancer in female and in INDIA it is the second most common cancer in female. In 2020[1] approx 604000 new cases and 342000 deaths happened globally. About 90% of the new cases and deaths occurred in low-and middle-income countries. Cervical cancer is one of the leading causes of death for middle age women in developing world. Yet it is almost completely preventable if precancerous lesions are identified and treated in a timely manner[2]. Unfortunately in developing countries in many cases, diagnosis is delayed due to non-availability of facilities at rural areas. To overcome this screening method PAP smear can be done in high-risk patients and in selected cases cervical biopsy can be done.

2. Aims and Objectives

This study aimed to: (a) Compare the diagnostic value of Pap smear and VIA and their clinical correlation with cervical biopsy and evaluate their usefulness as tools for screening of premalignant and malignant lesions of cervix. (b) Early detection of precancerous condition and treating them before they progress into invasive cancer.

3. Review of Literature

1) July 2019 Simridhi Bindroo et al.4conducted a study on 250 Patients, maximum patients (32%) belonged to the age group of 41-50 years and were multipara. Maximum cases were reported as NILM (59%), followed by ASCUS (16%), LSIL (15%), HSIL (7%), squamous cell carcinoma (1.6%) and 0.8% cases of adenocarcinoma were diagnosed. On histopathology, 41.2% cases were diagnosed as chronic cervicitis, 27.2% cases as chronic cervicitis with squamous metaplasia, CIN I (22.4%), CIN II (4.0%), CIN III (2.8%), squamous cell carcinoma (1.6%) and (0.8) % cases of adenocarcinoma. Overall sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy was 75.24%, 97.98%, 96.20%, 85.38% and 88.8%.

2) June 2020 Ventatesh M et al.5 Conducted a study on 194 patients. Out of 194 smears studied, reactive changes were 69 (35.57%), ASCUS were 47 (24.23%), LSIL were 3 (1.55%) and HSIL were 29 (14.95%). Atypical endocervical cells were 2 (1.03%), Atypical endocervical cells favor neoplastic was 4 (2.06%) and endocervical adenocarcinoma in situ was 1 (0.5%). Squamous cell carcinoma was 39 (20.10%). In the histopathological examination results, non-neoplastic lesions were 90 (46.4%), premalignant lesions were 31 (16%) and malignant lesions were 73 (37.6%). This correlative study of Pap smear and histopathological examination of the cervix revealed the overall sensitivity of 97%, the specificity of 74% and an accuracy of 87%.

4. Materials and Methodology

- **Study design:** Cohort study (prospective observational study)
- **Setting:** ANMMCH, Gaya, Bihar. (2020-2022)
- **Sampling technique:** Simple random sampling

∗Sample selection

Inclusion Criteria ≈ Sexually active women with intact uterus and cervix. ≈ Age 20-65 yr. ≈ With presenting complain of vaginal discharge, post coital bleed, post-menopausal bleeding, intermenstrual bleeding or persistent leucorrhea. ≈ Non pregnant. ≈ No history suggestive of CIN or Ca cervix. EXCLUSION CRITERIA ≈ Hysterectomized patient. ≈ Done therapy of cervical lesions. ≈ Women with frank lesions. ≈ Women with clinical evidence of acute pelvic infection.

5. Method

Patient who fulfilled the criteria were explained the procedure and informed consent taken with relevant history. Firstly a Pap smear was taken with Ayer's spatula and cyto-brush close to transformation zone[6]and slide fixed with 95% ethanol. After that cervical biopsy was done. Biopsy specimen were fixed in formaldehyde and was sent for HPE.

6. Result

PAP smear was taken for all 100 patients.5% of smear were found to be normal, 59%showed inflammatory atypia, 6% showed ASC-US, 10% showed LSIL, 15% for HSIL and 4% showed SCC[3]. An inadequate smear was 1%. Among the 100 cases studied, 99 % were diagnosed as colposcopically abnormal. All 100 cases were subjected to colposcopy directed biopsy or direct biopsy. Majority of cases, 69% had chronic cervicitis. The positive biopsy includes 28 cases out of 100. Biopsy was considered positive if it revealed CIN-1 and above. It includes 15 CIN-1 (LSIL), 6 CIN-2 & 3 (HSIL) and 07 malignancies.

Table 1: PAP Smear findings Table 2: Histopathology findings

PAP Smear	Number of patients	Percentage%
Normal	5	5
Abnormal	95	95
Inflammatory	59	59
ASC-US	6	6
LSIL	10	10
HSIL	15	15
SCC	4	4
Inadequate	1	1

Histopathology Finding	Number of patients (n=100)	Percentage %
Normal/Inflammatory	2	2.0
Non-specific cervicitis	69	69.0
CIN-1	15	15.0
CIN-2 & 3	6	6.0
Squamous Cell Carcinoma	7	7.0
Adenocarcinoma	0	0.0
Inadequate	1	1.0

7. Conclusion and Discussion

Sensitivity of pap smear was found to be 89% compared to its specificity which was 87%. This was attribution to the high number of false negative smears. Diagnostic accuracy of cytology / histopathology

SENSITIVITY	88.89%
SPECIFICITY	87.32%
POSITIVE PREDICTIVE VALUE	72.73%
NEGATIVE PREDICTIVE VALUE	95.38%
FALSE POSITIVE RATE	7.01
FALSE NEGATIVE RATE	0.13
ACCURACY	87.55%

The regular screening of population by Pap smear is a cost-effective method for early detection of premalignant and malignant cervical lesions and down staging of carcinoma cervix. The procedure is simple, inexpensive and can be performed in the outpatient department. Hence, it should be recommended routinely as a method of improving reproductive health.

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Conflict of Interest: None

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