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Original Article

Assessment of Colposcopic Findings and Papanicolaou Smear in Patients Having Vaginal Discharge at Tertiary Care Centre

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Abstract

Aims: The present study was performed in tertiary care center with aim to find out relationship between vaginal discharge and papanicolaou (PAP) smear with colposcopic findings.

Materials and Methods: A prospective and observational study was performed in a tertiary care referral institute in 100 sexually active symptomatic women in age group of 21–60 years. PAP smears were performed by PAP method and colposcopy with biopsy was done for all 100 women having complaint of vaginal discharge, intermenstrual, post-coital or postmenopausal bleeding and with abnormal PAP smear. Finally, results of PAP and colposcopy were correlated and results were calculated.

Results: In colposcopic biopsy and cytology combined sensitivity is 70.37%, specificity is 93.47%, positive predictive value 92.68, and negative predictive value 72.88%.

Conclusion: In the present study, incidence of cervical intraepithelial neoplasia (CIN I) is 33% CIN II 15%, CINIII 3%. Carcinoma *in situ* 2%, squamous cell carcinoma 4%, and adenocarcinoma 1% this concludes that all three methods PAP smear, colposcopy and histology helps to reduce false negative cases.

Key words: Colposcopy, Papanicolaou smear, Vaginal discharge

INTRODUCTION

According to World Health Organization (WHO), cervical cancer is the second most common type of cancer in women. The main cause of cervical cancer is a sexualy transmitted human papillomavirus. Worldwide, human papilloma virus prevalence in cancer cervix is 99%.[1] Cervix is the lower portion of uterus with external os and internal os.[2] Squamocolumnar junction is a junction between the squamous and glandular epithelium. Its location varies with age, hormonal influence. In younger age, columnar epithelium lies near the external os, later after puberty because of metaplasia of columnar epithelium the squamous epithelium comes near external os.[3,4]

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Transformation zone lies between this original and new squamocolumnar junction.[3] Cervical carcinoma is the most common gynecological cancer in developing countries. Carcinoma of cervix is preventable with vaccine now, yet 4.9 lacks new cases and 27.3 thousand deaths each year among women worldwide. In developed countries, 85% of women had at least one papanicolaou (PAP) test in their lifetime, but this rate is only 5% in developing counties.[4]

The PAP smear is simple, safe, non-invasive, and effective method for the detection of precancerous and non-cancerous lesions. Colposcopy provides a unique method to study the benign and premalignat lesions.[5] It is a simple non-invasive procedure which helps in determining size, location, and extent of abnormal cervical lesion. Colposcopy is complementary to cytology.[6] The PAP smear is interpreted according to The New Bethesda system and Histopathological slide by the WHO classification.[7]

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MATERIALS AND METHODS

This prospective study was conducted in the Department of Gynaecological Oncology, Government Medical College and Cancer Hospital, Chhatrapati Sambhajinagar, India, from August 2022 to 2023 on 100 patients reporting in Out Patient Department (OPD). Inclusion and exclusion criteria for the study are formulated.

Inclusion Criteria

Sexually active women of age group 21–60 years, abnormal vaginal discharge, irregular menstrual bleeding, postmenopausal bleeding, post-coital bleeding, and abnormal PAP smear were included in the study.

Exclusion Criteria

Women >60 years and <21 years, women having diagnosed, cancer cervix, post-hysterectomy patients, and normal PAP smear were excluded from the study.

Written informed consent was taken from all the patients. A detailed history including age, parity, age of marriage, socioeconomic status, education, and occupation was taken. Information was noted on printed proforma. Systemic examination followed by local examination was done for each patient. PAP smear taken from squamocolumnar junction, slides were fixed with 95% ethyl alcohol and sent for cytology department. All the women were subjected to colposcopy.

Colposcopic-directed biopsy is taken and tissues are sent for histopathological examination. PAP smears cytological findings such as normal cytology, inflammatory changes, atypical squamous cells, dysplastic cytology and colposcopic findings as normal, punctuation, erosion, and mosaic pattern noted. All data are filled in Microsoft Excel sheet. Moreover, descriptive statistics is calculated.

RESULTS

In the present study, women attending OPD for vaginal discharge and having abnormal PAP smear are subjected to colposcopy and colposcopic biopsy and results are analyzed. Total 100 patients with abnormal PAP smears are taken from August 2022 to 2023 for 1 year.

Colposcopy and colposcopic biopsy are done by gynecological oncology department and histopathological examination is done by pathology department. The most common age is 38–51 years. About 55% are postmenopausal cases, 73% from rural areas, and 34% literate.

Table 1 shows most frequent finding on colposcopy is aceto-white area in 44% of cases.

Table 2 shows most frequent histopathological finding is chronic cervicitis, 42% as compared to other.

Table 3 shows that most frequent biopsy finding in all the inflammatory smear is chronic cervicitis – 38%.

Table 4 shows that relation of PAP smear with colposcopic findings out of which NLIM is 60%.

This Table 5 shows the relation between histological findings and colposcopy findings.

Table 6 shows relation between PAP smear and histological diagnosis in which 41% positive and 59% negative.

Table 7 shows how to calculate sensitivity specificity, positive predictive value (PPV), and negative predictive value (NPV).

DISCUSSION

In the present study, sensitivity of PAP smear is 70.37%, specificity is 93.47%, positive predictive value 92.68%,

Table 1: Colposcopic findings and distribution of cases with colposcopic findings

Colposcopic observation	Number of cases	Percentage
Normal	29	29
Acetowhite	44	44
Punctuation	17	17
Mosaic pattern	10	10
Total	100	100

Table 2: Histological findings

Histological findings	Number of cases	Percentage
CC	42	42
CIN I	33	33
CINII	15	15
CIN III	3	3
CIS	2	2
SCC	4	4
Adenocarcinoma	1	1

CC: Chronic cervicitis, CIN: Cervical intra-epithelial neoplasia, CIS: Carcinoma *in situ*, SCC: Squamous cell carcinoma

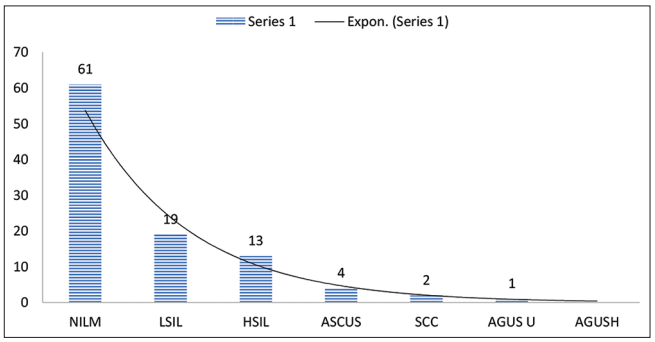

Figure 1: 61% of papanicolaou smear are negative for intraepithelial malignancy

Table 3: Relation of histological findings and PAP smear

PAP smear	Histopath findings								
	CC	CINI	CINII	CINIII	CIS	SCC	Adenocarcinoma	Total	Percentage
NILM	38	16	5	1	-	1	-	61	61
ASCUS	-	4	-	-	-	-	-	4	4
LSIL	2	13	4	-	-	-	-	19	19
HSIL	2	-	6	2	2	1	-	13	13
SCC	-	-	-	-	-	2	-	2	2
AGUS-U	-	-	-	-	-	-	1	1	1
AGUS-H	-	-	-	-	-	-	-	0	0
TOTAL	42	33	15	3	2	4	1	100	100

PAP: Papanicolaou, NILM: Negative for intraepithelial lesion or malignancy, AGUS: Atypical glandular cells of undermined significance, ASCUS: Atypical squamous cells of undetermined significance, SCC: Squamous cell carcinoma, HSIL: Highgrade squamous intraepithelial lesion, LSIL: Low-grade squamous intraepithelial lesion

Table 4: Relation of PAP and colposcopic finding

PAP smear	Colposcopic findings				
	NORMAL	ACW	MOSAIC	PUNTATION	TOTAL
NILM	26	21	5	9	61
ASCUS	-	2	1	-	3
LSIL	3	9	3	1	16
HSIL	-	9	5	-	14
SCC	-	-	3	-	3
AGUS-U	-	1	-	-	1
AGHS-H	-	2	-	-	2
TOTAL	29	44	17	10	100

PAP: Papanicolaou, NILM: Negative for intraepithelial lesion or malignancy, AGUS: Atypical glandular cells of undermined significance, ASCUS: Atypical squamous cells of undetermined significance, SCC: Squamous cell carcinoma, HSIL: High-grade squamous intraepithelial lesion, LSIL: Low-grade squamous intraepithelial lesion

Table 5: Relation between colposcopy finding and histology findings

Histological findings	Colposcopic findings				
	NORMAL	ACW	MOSAIC	PUNCTUATION	TOTAL
Chronic Cervicitis	26	10	1	5	42
CIN1	3	22	5	3	33
CINII	-	9	4	2	15
CINIII	-	2	1		3
CIS	-	-	2	-	2
SCC	-	-	4	-	4
Adenocarcinoma	-	1		-	1
TOTAL	29	44	17	10	100

PAP: Papanicolaou, NILM: Negative for intraepithelial lesion or malignancy, AGUS: Atypical glandular cells of undermined significance, ASCUS: Atypical squamous cells of undetermined significance, SCC: Squamous cell carcinoma, HSIL: Highgrade squamous intraepithelial lesion, LSIL: Lowgrade squamous intraepithelial lesion

Table 6: Relation between PAP smear and histopath diagnosis

Histopathology	Positive	Negative	Total
PAP smear			
Positive	38	3	41
Negative	16	43	59
	54	46	100

and negative predictive value 72.88% for diagnosing low-grade squamous intraepithelial lesion and above

Table 7: Specificity and Sensitivity of PAP smear

Sensitivity	TP/TP+FN	70.37%
Specificity	TN/TN+FP	93.47%
Positive predictive value	TP/TP+FP	92.68%
Negative predictive value	TN/TN+FN	72.88%
Accuracy	TP+TN/TP+TN+FP+FN	81%

TN true negative, TP true positive, FN false negative, FP false positive

lesions. On comparison with other studies, we found following results.

Study	Sensitivity%	Specificity%	PPV%	NPV%
Present study	70.37	93.47	92.68	72.88
Ashmita *et al*.[8]	90.24	72.73	66.6	86.54
Joshi *et al*.[1]	65.38	95.83	94.44	80
Kumari *et al*.[3]	89.4	98.8	96.6	82.3
Chaudhari *et al*.[6]	25.4	99.27	94.12	74.32

PPV: Positive predictive value, NPV: Negative predictive value

As it can be seen, PAP smear is reliable test for finding precancerous lesions of cervix.

Accuracy of PAP smear test in the present study is 81%. On comparison with other studies, we found

Study	Accuracy
Present study	81%
Joshi *et al*.[1]	80
Chaudhari *et al*.[6]	80.5

As it can be seen that accuracy of PAP smear is high and reliable.

In the present study, maximum number of cases is from age group of 38–51 years. Similarly reported by Joshi *et al.*[1] and by Nair *et al*.,[4] the mean age was 40.2 years.

In the present study, vaginal discharge per vaginum is the most common complaint which is similar as Nair *et al*.[4,8,9]

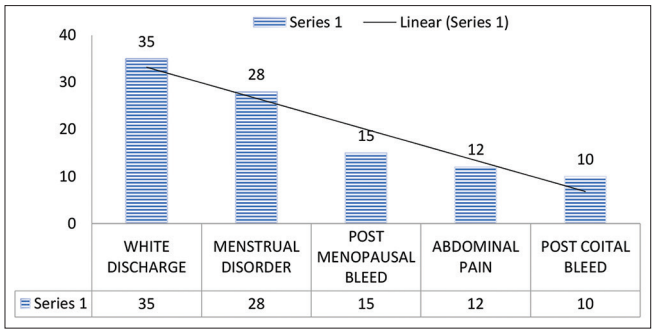

Figure 2: Most common complaint is white vaginal discharge 35% of cases, 28% mentrual disorde, 15% postmenopausal bleed, 10% post-coital bleed, and 12% abdominal pain

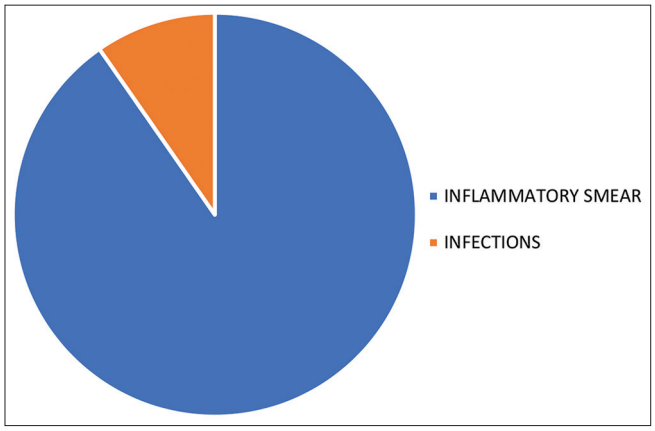

Figure 3: Out of 61 cases of negative for intraepithelial lesion or malignancy, 55 are inflammatory smear, and six with infection as bacterial vaginosis and candidiasis

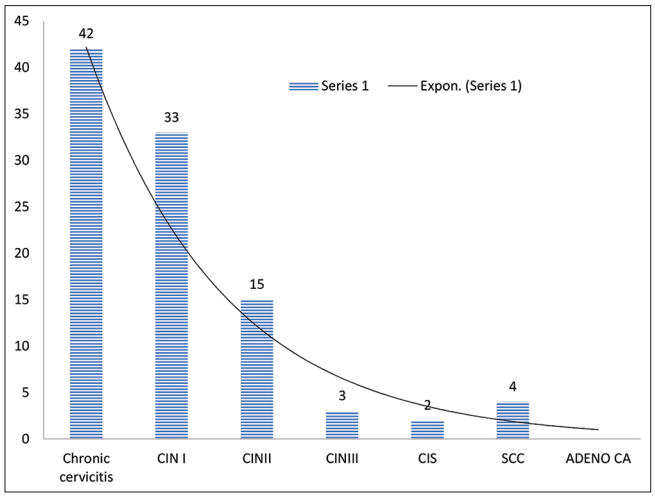

Figure 4: Histological findings

In the present study, most common colposcopic finding is acetowhite area (44%) and is similar in study reported by Chaudhary *et al*.[5]

On PAP smear, 61% are reported negative for intraepithelial lesion or malignancy (NILM) and frank malignancy is reported as 4%, low-grade squamous intraepithelial lesion in 19% and high-grade intraepithelial lesion in 13% cases.

Figure 1, Table 4 shows similarity with Chaudhary *et al*.[5] reported 66% NILM and frank malignancy in 2% of cases.

Most of the patient in the present study have chronic cervicitis 42%. Cervical intraepithelial lesions are seen in 41 cases. Cervical intraepithelial neoplasia (CIN I) is reported in 33 cases and CINII and CIN III reported in 18% of cases, squamous cell carcinoma (SCC) IN 4% and adenocarcinoma in 1% of cases [Table 5]. About 15% of the cases malignant in PAP smear turned to be malignant on histopathology showing a strong relation between PAP smear and histopathology ($P < 0.0001$).

Table 7 shows sensitivity, specificity, PPV, NPV. Results are similar with Malur *et al*.[7] and Joshi *et al*.[1]

PAP smear and colposcopy combined together give reliable prediction about premalignant lesions [Figures 2-4].[10-12]

CONCLUSION

Pap smear and colposcopy combined together gives reliable prediction about premalignanat lesiins.

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