

Correlation of Cervical Pap Smear with Histopathological Diagnosis in Cervical Lesions

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I. Introduction

Cervical cancer is common worldwide and ranks fourth common cancer affecting women. Seventy percent of cancer cervix are seen in developing countries.¹ However, it is the most common cancer among Nepalese women. Factors like lack of effective screening programs, lack of awareness and low resources are important reasons for high incidence of cervical cancer in developing countries.² The most important risk factor for cervical cancer is infection with Human Papillomavirus (HPV). Other risk factors are immune system deficiency, smoking, age, socioeconomic factors, herpes infection, multiple sex partners, use of oral contraceptives.³ Pap test is accepted as the most appropriate test for early detection of cancer and precancerous states of uterine cervix.⁴ It is simple, safe, non-invasive, outdoor and effective method for detection of lesions of the cervix. On the other hand, cervical biopsy is a gold standard but invasive technique.⁵ Cervical atypia in a cytological smear is categorized as low grade squamous intraepithelial lesions (LSIL) and high grade intraepithelial lesions (HSIL). LSIL in cytology corresponds with low grade CIN I (cervical intraepithelial neoplasia) where as HSIL corresponds to moderate and severe dysplasia (CIN II and CIN III) in histopathology.⁶ A Pap screening done in association with an HPV DNA test increases the sensitivity for early detection of precancerous lesions.⁷ This study was done to evaluate the patterns of cervical pap smear cytology and to correlate with histopathological diagnosis and to access efficacy of pap smears in diagnosing cervical lesions.

II. Materials And Methods

This was a retrospective study conducted in the Department of Pathology, Dr Lal Path Labs, over a period of one years from March 2020 to March 2021. A total conventional pap smear were received for cytological evaluation. Cases underwent both pap test as well as biopsy. Detailed clinical history including age, socioeconomic status, age of marriage, parity, contraceptive use, complaints like pain in lower abdomen, discharge through vagina, post coital bleeding, post menopausal bleeding, etc was taken from the requisition forms send along the samples. The smears for cervical smears were taken with Ayer's spatula on a clean glass slide from endocervical canal. The smears were made by scrapping the cervix from the squamo-columnar junction. Smears were fixed immediately in 95% ethanol and ether equal parts. Slides were stained by conventional pap staining.

The reporting of pap smear was done according to Bethesda 2014 classification. The cervical biopsies or hysterectomy specimens received from the same patient were fixed in 10% neutral buffered formalin solution and processed routinely and stained with hematoxylin and eosin (H and E) stain. The histopathological findings were correlated with pap smear findings.

III. Results

A total of 200 pap smear cases were studied which had also undergone biopsy or hysterectomy during the period from March 2020 to March 2021 retrospectively. Most of the patients (42%) were in age group of 41-50 yrs. White vaginal discharge was the most common symptom found in 47%, abdominal pain in 35%, an irregular menstrual cycle in 13%, postcoital bleeding in 3% and postmenopausal bleeding in 2%.

Table 1: Correlation of Pap smear with Histopathology(HPE)

Cytological diagnosis	No. of cases on Pap smear	Chronic cervicitis	Chronic cervicitis with squamous metaplasia	CIN I	CIN II	CIN III	Adenocarcinoma	Squamous cell carcinoma
NILM	150(75%)	107	39	4	-	-	-	-
ASCUS	19(9.5%)	2	7	10	-	-	-	-
LSIL	17(8.5%)	-	2	15	-	-	-	-
HSIL	10(5%)	-	-	1	7	2	-	-
SCC	03(1.5%)	-	-	-	-	-	-	3
Adeno Ca	01(0.5%)	-	-	-	-	-	1	-
Total (%)	200(100%)	109(54.5%)	48(24%)	30(15%)	7(3.5%)	2(1%)	1 (0.5%)	3(1.5%)

According to the pap smear findings out of 200 cases, maximum number of cases 150 (75%) were categorized as Negative for Intraepithelial lesion or Malignancy (NILM). Epithelial cell abnormalities (ECA) were found in 50 (25%) cases. Most common epithelial cell abnormality was Atypical Squamous Cells of Undetermined Significance (ASCUS) seen in 19 (9.5%) cases followed by low grade squamous intraepithelial lesion (LSIL) in 17 (8.5%) cases and high grade squamous intraepithelial lesion in 10 (5%) cases. 4(2%) cases of malignancy were reported which included 3 (1.5%) cases of squamous cell carcinoma and 1(0.5%) cases of adenocarcinoma.

According to histopathological diagnosis of biopsies or hysterectomy specimens, out of 200 cases, 109 (54.5%) cases were diagnosed as chronic cervicitis, followed by chronic cervicitis with squamous metaplasia in 48 (24%) cases, CIN I in 30 (15%) cases, CIN II in 7 (3.5%) cases and CIN III in 2 (1%)cases. 4 cases showed malignancy among which 1 (0.5%) case was diagnosed as adenocarcinoma and 3 (1.5%) was diagnosed as squamous cell carcinoma.

Table 2: Concordance and discordance cases between Pap smear and histopathological findings

Pap smear diagnosis	Concordant cases	Discordant cases	Total cases
NILM	146	4	150
ASCUS	10	9	19
LSIL	15	2	17
HSIL	9	1	10
SCC	3	0	03
Adeno Ca	1	0	01

When the cyto-histological diagnosis were correlated, it was found that out of 150 cases of NILM, 107 cases were diagnosed as chronic cervicitis followed by 39 cases of chronic cervicitis with squamous metaplasia (Table 1). Out of 19 cases of ASCUS, 9 were diagnosed as chronic cervicitis followed by 10 cases of CIN I (Table 1). Among 17 cases of LSIL, 2 were diagnosed as chronic cervicitis with squamous metaplasia followed by 15 cases of CIN I. Ten cases of HSIL was diagnosed as 7 cases of CIN II, 2 cases of CIN III and 1 case of CIN I. It was found that all 4 cases of carcinoma were concordant with histopathological diagnosis. When discrepant cases were analyzed it was found that 4 cases of NILM were upgraded as CIN I, 2 cases of ASCUS were downgraded as chronic cervicitis and 7 cases were downgraded as chronic cervicitis with squamous metaplasia on biopsy. Similarly, 2 cases of LSIL were downgraded as chronic cervicitis with squamous metaplasia and 1 case of HSIL was downgraded as CIN I on histopathology.

IV. Discussion

According to World Cancer statistics, >80% of cervical cancer cases occur in less developed countries due to lack of awareness and difficulty in conducting cytology based screening.⁸Prevention programs and screening programs using pap smear test is effective way to prevent development of cervical cancer. Cervical cancer has a long latent period during which it can be identified and treated as premalignant lesions.⁹

In our study, maximum patients were in between the age group 41 to 50 years (42%) which was similar to studies done by Rao et al¹⁰, Bindroo et al¹¹, Joshi et al¹² and Bamanikar et al¹³. Well established risk factor of cervical cancer is multiparity. In present study, majority of patients belong to para 2 (43%) which was comparable to other studies done by Atla¹⁴ et al and Rathod et al¹⁵. The commonest complain was whitish discharge per vaginum (47%) which was similar to studies done by Bindroo et al¹¹, Wrape et al¹⁶, Rao et al¹⁰.

In our study, Negative for Intraepithelial lesion or malignancy (NILM)(75%) was the most common finding which was similar to studies done by Bindroo et al¹¹ (59.6%), Selhi PK et al¹⁷, Wrape et al¹⁶. In our study, among pap smear findings ASCUS was most common finding. Ten cases of ASCUS correlated on histopathology which revealed CIN I on biopsy while 9 cases revealed chronic cervicitis with or without squamous metaplasia similar to studies by Alkananda et al¹⁸, Bindroo et al¹¹. The reason for this discrepancy in cytology and histopathology was due to some cases which has cervical erosions or ulcers on biopsy presented

with inflammatory atypia in Pap smear and these cells were considered as atypical squamous cells on cytology. Whereas, in studies done by Jones et al¹⁹, Joshi et al²⁰ most common epithelial cell abnormality was LSIL accounting for 38.88%, 49.43%.

In our study, 88.23% cases of LSIL on pap smear correlated on histopathology which was similar to study done by Atla et al²¹. Two cases (11.76%) of LSIL were downgraded as chronic cervicitis with squamous metaplasia on cervical biopsy similar to study done by Poudel et al²². Nine cases of HSIL on pap smear correlated on histopathology which was comparable to diagnosis made by Atla et al²¹. On pap smear 3 cases and 1 case were diagnosed as squamous cell carcinoma and adenocarcinoma respectively which showed 100% correlations on histopathology. As per our study, maximum number of cases 184/200 (92%), diagnosed on Pap smears correlated on histopathology. Therefore, pap smears have important role in screening cervical lesions. (Table 2)

V. Conclusion

Cervical pap smear is a very simple, economical and sensitive test to diagnose premalignant and malignant lesion of cervix. Every women above the age of 30 years should undergo routine cervical cancer screening, even into the postmenopausal period. However, it is necessary to undergo cervical biopsy if any epithelial abnormalities are detected in pap smear for confirmation. Cytological features significantly correlate with histopathological findings.

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