



APPLICATION OF BETHESDA REPORTING SYSTEM IN CERVICAL CYTOLOGY WITH HISTOPATHOLOGICAL CORRELATION

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ABSTRACT

Introduction: Conventional Cervical Cytology is the most widely used cervical cancer screening test. The incidence of cervical carcinoma is incredibly high in developing countries due to lack of proper knowledge. The extensive use of cervical screening with Papanicolaou smears had considerably increased the detection of precancerous and cancerous lesion of uterine cervix. Study was conducted to observe the results of Papanicolaou stain screening at tertiary care centre and to correlate the findings with histopathology, wherever possible. **Materials and Methods:** A total of 695 samples reported in Pap smear for screening of high risk population and women with significant complaints. It was an observational study done for a period of 24 months from January 2019 to December 2020. Microscopic examination was done for PAP stained smears and were reported according to Bethesda system for conventional PAP smears. **Results:** Out of 695 samples, 49 (7.05%) cases were classified as unsatisfactory for evaluation, 211(30.3%) cases were negative for intraepithelial lesion or malignancy (NILM), 241 (34.7%) cases were of NILM with acute or chronic cervicitis, 39 (5.61%) cases were reported as atypia of undetermined significance, 9 (1.3%) cases of Low grade squamous intraepithelial lesion and 17 (2.44%) cases of High grade squamous cell intraepithelial lesion were reported. 13 (1.87%) cases were reported as atrophic changes. **Conclusions:** The study revealed that conventional Pap smear is a cost effective test for the early detection of precancerous and cancerous cervical lesions in premenopausal and menopausal women.

KEYWORDS :

INTRODUCTION

Cervical cancer is fourth common cancer affecting women and also fourth common cause of cancer death in women, worldwide. Seventy percent of it occurs in developing countries. The human papillomavirus (HPV) plays a central role in cervical carcinogenesis, and around it revolve various factors that directly or indirectly influence whether or not changes in the cervical squamous epithelium occurs that can evolve into cancer. Among the factors most studied are immunological factors, smoking, age, pregnancy (multiple child birth), use of hormonal contraceptives and microbiota.^[1]

Cervical cytology has been successful in reducing the incidence and mortality but several reviews of the efficacy of cervical cytology suggested a high false negative rate because of the error occurring at various stages like sampling preparation, interpretation of cervical smears.^[2] The uterine cervix, being the most exposed part of the female reproductive system, is more vulnerable to get diseased, particularly in peri- & post-menopausal age group women. The lesion may be inflammatory, pre-neoplastic and neoplastic. Neoplastic as well as preneoplastic lesions if detected in time can be treated. The treatment is effective in reducing the chance of progression to malignant disease.^[3] Pap smear is a screening test only. Positive test requires further investigation like colposcopy, cervical biopsy and fractional curettage. Pap smear can detect 70-95% of cancer of the cervix and about 70% of endometrial cancer shown in different studies.^[4] Monitoring cytologic discrepancies is a useful quality assurance tool in cytology laboratory. As a part of continuous quality improvement program, cytohistologic correlation may help laboratories to refine diagnostic criteria and improve diagnostic accuracy and reproducibility.^[5] Although high-risk Human Papillomavirus (HR-HPV) test and HPV genotyping have certain role in cervical cancer screening nowadays, these tests are not widely available in developing countries. Cervical cytology is still the principal screening method.^[6] Hence, this study was undertaken to classify lesions of abnormal Pap smear according to The Bethesda System 2014 and to study the concordance and discordance between abnormal Pap smear findings and corresponding histopathological findings.

MATERIALS AND METHODS

This is a hospital based analytical study conducted among patients attending Obstetrics/Gynaecology (OBS/GYN) outpatient department (OPD) and inpatient department (IPD) at tertiary care center in saurashtra region.

Conventional PAP smear reporting observation done over an 18 months period from January 2019 to December 2020 were conducted in patients for screening purpose and patients with significant complaint.

Cervical exfoliative cytology slides were transferred directly from alcohol-ether fixative without drying and stained with conventional Papanicolaou staining technique. Cervical biopsy specimen were fixed in formalin (10%), processed and stained with Haematoxylin and Eosin for histopathological examination. Abnormal cervical Pap smear findings were reported as per guidelines by The Bethesda System 2014 and biopsies were advised for correlation.

For the purpose of calculating concordant and discordant cases following entities were considered equivalent:

ASCUS in Pap smear was considered concordant with HPE diagnosis of CIN I/ Koilocytic atypia.

LSIL in Pap smear was considered concordant with HPE diagnosis of CIN I/ Koilocytic atypia.

HSIL in Pap smear was considered concordant with HPE diagnosis of CIN II/ CIN III.

HSIL suspicious of invasion was considered concordant with HPE diagnosis of SCC.

The study population consisted of women with abnormal Pap smear findings who underwent cervical biopsy examination excluding all the cases of Negative for Intraepithelial Lesion or Malignancy (NILM).

RESULTS

Total 695 cases were examined and classified according to the Bethesda system for cervical cytology. The patients from all age groups were presented. Unmarried females were excluded. Mostly premenopausal and menopausal females were presented amongst which age group of 31-40 years being most common. In the reporting of cervical PAP cytology out of 695 cases, 49 (7.05%) cases were classified as unsatisfactory for evaluation, 211(30.3%) cases were negative for intraepithelial lesion or malignancy (NILM), 241 (34.7%) cases were of NILM with acute or chronic cervicitis, 39 (5.61%) cases were reported as atypia of undetermined significance, 9 (1.3%) cases

of Low grade squamous intraepithelial lesion and 17 (2.44%) cases of High grade squamous cell intraepithelial lesion were reported. 13 (1.87%) cases were reported as atrophic changes. Out of these cases, in total 65 cases cervical biopsies were received and histopathologically correlated.

In the histopathological examination, total 29 (44.6%) cases were diagnosed as Cervical intraepithelial neoplasia I, 20 (30.8%) cases were diagnosed as cervical intraepithelial neoplasia II, 5 (7.7%) cases of Cervical intraepithelial neoplasia III and 3 (4.6%) cases were diagnosed as squamous cell carcinoma. 8 cases (12.3%) in which atypical squamous cells or low grade squamous intraepithelial lesions were given, histopathologically showed no any pathology and only reparative changes.

According to the above data, The sensitivity of the Bethesda system for cervical PAP smear reporting was 96.6%, specificity was 43%, the positive predictive value was 87.6% and negative predictive value was 66%.

DISCUSSION

Cancer cervix is considered to be an ideal gynecological malignancy for screening as it meets both test and disease criteria for screening. It has a long latent phase during which it can be detected as identifiable and treatable premalignant lesions which precede the invasive disease and the benefit of conducting screening for carcinoma cervix exceeds the cost involved.¹⁰

In this study, among abnormal Pap smear findings ASCUS was most common accounting for 59.1 % of cases. Similar results were seen in study by Fazia HAQ Nwaz et al^[7], Chaudhary RD et al^[8], Yeoh G et al.^[9] and Bodal V et al.^[10] where most common abnormal Pap smear finding was also ASCUS accounting for 47.08%, 50.0 %, 65.9 % and 25.67 % cases respectively.

In present study, total 13.6 % cases were diagnosed as LSIL and 25.7% cases of HSIL. Whereas in studies by Naik R et al,^[11] Jyothi R et al,^[11] Sachan PL et al.^[12], Jones B et al,^[13] Vidhyadhar S et al.,^[14] Verma I et al.^[15], Laxmi RC et al^[16], Meenai FJ et al.^[17] and Bhavani K et al.^[18] LSIL accounting for 45 %, 48.93%, 60%, 62.5%, 38.88%, 28.16%, 49.43%, 33.92% and 44.26% respectively among all pre invasive and invasive cases.

In the present study, most common HPE diagnosis among women with abnormal Pap smear diagnosis is CIN I which accounts for 39 % of cases. Similar findings with most common HPE diagnosis of CIN I in women with abnormal Pap smear were observed in studies by Vidhyadhar S et al^[14] Malpani G et al,^[19] accounting for 54.68% and 26.05 %, cases respectively. Contrary to these, SCC was most common HPE findings among women with abnormal Pap smear accounting for 69.5 % of cases in a study by Vaishali Jain et al.^[20]

In our study, 3 cases of SCC were observed in HPE accounting for 4.6 % of total cases. Similar finding was seen in a study by Laxmi RC et al.²¹ where SCC accounts for 8.98 % of cases in women with abnormal Pap smear. Whereas in a study by V. Bodal et al.^[10] and Jain V et al.^[20] SCC accounts for 35.13 % and 69.5 % cases respectively among women with abnormal Pap smear.

Table -1: Comparison of present studies with similar studies

Study	Sensitivity	Specificity	Positive Predictive value	Negative predictive value
Joshi et al[21]	65.3%	95.8%	94.4%	71.8%
Bamanikar et al[22]	89.4%	88.7%	82.9%	--
Atla et al[23]	94.1%	64.2%	82.7%	85%
Dhakal et al[24]	77.8%	100	100	97
Patil et al[25]	77.7%	84.2%	70%	88.8%
Chaudhary et al[8]	79.3%	81%	65.7%	89.5%
Present study	96.6%	43%	87.7%	66%

CONCLUSION:

Pap smear test is sensitive and cost effective modality for screening premalignant and malignant lesions of cervix. Cytological features significantly correlate with histopathological findings. Thus, screening procedures should be implemented in early age in sexually active females to detect the lesions in an early stage and appropriate management. Community should be educated about the Pap smear test, including its goal and the required frequency of screening, by widespread educational and media programs to help prevent mortality and morbidity due to cervical cancer.

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