



A COMPARATIVE STUDY OF PAP SMEAR CYTOLOGY AND HISTOPATHOLOGY OF CERVIX BIOPSY

Pathology

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ABSTRACT

Introduction: Carcinoma cervix is one of the leading causes of death of the female population in developing countries. By virtue of its accessibility, cancer of the cervix can be readily diagnosed even in its preinvasive stage. If treated in the earlier stages the patient can often be cured of the disease. Carcinoma of the cervix is the fourth most frequent cancer in women worldwide and the leading cause of death from cancer in several developing countries including India. The use of cervical smear (Papanicolaou/Pap) as a screening tool has significantly reduced the incidence of cervical cancer. **Materials and Methods:** Out of 100,000 Pap smears, a total number of 75 eligible women with atypical glandular cells (AGCs) referred to gynaecology clinics in Isfahan, Iran, and seventy women were selected to undergo Pap smear test, colposcopic examination and ECC. EMC was performed in women older than 35. Pap smear test results were classified as normal, inflammation, AGCs and necrosis. Colposcopy, ECC and EMC findings were classified as normal, benign and malignant pathologic lesions. **Results:** Majority of the women were between 31-40 years (59.6%). On PAP smear, ASC-US was found in 5.8% of women, ASC-H in 1.4% of women, LSIL in 6.7% of women and HSIL in 6.2% of women. On colposcopy, LSIL was seen in 26.4% of women and HSIL in 17.8% of women. On histopathological examination, CIN I was seen in 16.8% of women followed by CIN II (8.2%) and CIN III (5.8%). Sensitivity and specificity of PAP smear was 29.7% and 94.4%. Sensitivity and specificity of colposcopy was 85.9% and 74.3%. **Conclusion:** Pap smear had a poor sensitivity compared to colposcopy but a better specificity than colposcopy. Hence, it may be better to utilise both tests in screening of premalignant lesions of cervix as they complement each other.

KEYWORDS

Carcinoma cervix, cervical smear and Pap smear cytology

INTRODUCTION

Cervical cancer (CC) is the third most common cancer in the world, and Romania has the highest incidence of cervical cancer in Europe¹. Programs designed to reduce cervical cancer morbidity and mortality are based on the early detection of premalignant lesions. Improved cervical cytology and human papillomavirus (HPV) screening methods have decreased cervical cancer incidence. A recent report indicated the high reliability of novel droplet digital PCR in molecularly characterizing premalignant uterine cervical lesions by detecting viral DNA belonging to different HPV genotypes². However, in Romania, many patients are still diagnosed with late-stage cervical cancer despite the consistent introduction of national health programs for early detection that have been implemented in recent years³.

In Romania, procedures such as HPV testing, colposcopy, and biopsy are used to diagnose abnormally classified cervical lesions, as proposed by the American Society for Colposcopy and Cervical Pathology (ASCCP)⁴. Although most practitioners follow these guidelines, there are no standardized guidelines or audit processes for performing colposcopies in our country. Only gynecologists who are trained and certified are legally allowed to perform colposcopies, but there is a wide variability in interpretation and management, leading to under- or overdiagnosis and treatment.

The present study aimed to evaluate (representing an internal audit) the performance of colposcopic examination in our unit by examining the correlation between cytology (Bethesda 2001 terminology, colposcopy appraisal, and biopsy histology for the early detection of premalignant and malignant cervical lesions).

Carcinoma cervix is one of the leading causes of death of the female population in developing countries. According to Global cancer statistics 2018, cervical cancer is the fourth most frequent cancer in women with an estimated 570,000 new cases representing 6.6% of all female cancers. Approximately 90% of deaths from cervical cancer occurred in low- and middle-income countries. Cervical cancer ranks fourth for both incidence (6.6%) and mortality (7.5%)⁵.

By virtue of its accessibility, malignancy of the cervix can be readily diagnosed even in its preinvasive stage. If treated in the earlier stages the patient can often be cured of the disease. The introduction of

cytological screening by George Papanicolaou in the late 1940s was a great public health success story in cervical cancer prevention⁶.

MATERIALS AND METHODS

This study was conducted in a tertiary care hospital, over a period of two years after ethical committee permission was obtained. In the two year study period, 2168 pap smears were received. Among these, 194 abnormal smears were identified and they were categorized under The Bethesda System 2014. The system broadly divides lesions into those negative for intraepithelial neoplasia and epithelial cell abnormalities (ECA) that include squamous and glandular cells.

Smears were stained with Haematoxylin, OG6, and EA36. Tissue material for HPE was fixed in 10% neutral buffered formalin solution and processed routinely and stained with hematoxylin and eosin (H and E).

Study Type: Prospective Cross-Sectional study

Inclusion Criteria

- Sexually active women were taken for the study
- Study designs eligible for inclusion in the present study were randomized controlled trials, nonrandomized controlled trials, cross-sectional studies conducted to evaluate the performance of the screening tests for detection of cervical cancer

Exclusion Criteria

- Pregnant women
- Studies in which data on sensitivity and specificity of the screening test were not provided were excluded from the study.
- Limitations of the study: The sample size is small compared to the population percentage.

RESULT AND DISCUSSION

Cervical carcinoma is the second most frequent cancer worldwide, in females. But the invasive cervical carcinoma is considered to be a preventable condition due to its association with a long pre invasive stage (CIN) making it amenable to screening. Since 1947, Pap smear has become the main screening tool for the detection of cervical pathology.⁷ The American Cancer Society, National Cancer Institute, American College of Obstetrics and Gynecologists recommend that all sexually active women above the age of 18 years should have annual

Pap smear for three consecutive years. In case of three consecutive negative pap smears, the test can be extended for 3- 5 years.^{11,12} This is a prospective cross sectional study carried out in a Department of Pathology, KPC Medical college from a period of December 16, 2021 to December 26, 2022. A total of 1492 patients were included in a study whose age ranged from 21 to 68 years. Later, 118 patient's cervical biopsies were received for histological evaluation, whose cytological findings were correlated. In our study, maximum patients were in between the age group 31 to 40 year (38.14%) which was similar to the study done by Dhakal et al (35.4%)⁸ and Boicea et al (32.6%).⁹ In our study, normal smear (59.51%) was the most common observation in cytological study, followed by inflammatory smear (39.12%). 67.9% were normal and 27.9% were inflammatory smears. In our study, LSIL and HSIL cases were 3.75% and 0.49% respectively which was similar to the study done by Dhakal et al⁸, but it was very high (17% and 12 %) in the study done by Chandrakala et al.¹⁰ In our study, 9/15(normal pap smear)biopsies revealed features of chronic Cervicitis whereas 2 cases of inflammatory smears in biopsy revealed adenocarcinoma which was same as the study done by Dhakal et al.⁸ In a study done by Vijay et al¹¹, a total of 12 cases which were diagnosed as LSIL in pap smear revealed features of carcinoma, in our study none of the cases diagnosed as LSIL revealed features of carcinoma In the study cases diagnosed as HSIL revealed features of CIN III in a biopsy. Rest 2 cases showed features of Squamous cell carcinoma. In our study, out of the 7 HSIL diagnosis of pap smear, 3 showed features of CIN III, 3 showed features of squamous cell carcinoma and 1 showed features of CIN II. In both studies, Pap smear was statistically significant in identification of high grade dysplasia and above. A total of 2 cases of squamous cell carcinoma were identified in Pap smear whose diagnosed wasn't changed in a biopsy. Two cases of adenocarcinoma were diagnosed in a biopsy, which was missed in a pap smear. In the study done one case of adenocarcinoma was identified in a biopsy, which was also missed in a pap smear.

CONCLUSION

Cervical Pap smear is a very economical and reliable screening test to identify high grade squamous cell lesions and carcinoma, but it fails to localize the lesion and adenocarcinoma is hard to identify in a pap smear. Hence, it should always be done as a routine outpatient screening test as per guideline. But cervical biopsy is the gold standard for its confirmation which should be carried out to confirm the findings of Pap smear and in case of strong clinical suspicion.

Table: Distribution of Pap smear

Pap smear	Number	Percentage (%)
Ascus	20	20%
Hsil	23	23%
Lsil	15	15%
Inflammation	25	25%
Normal	17	17%
Total	100	100%

Table: Distribution of Cervical biopsy

Cervical biopsy	Number	Percentage (%)
Normal	15	15%
Cervicitis	56	56%
Cin1	12	12%
Cin2	4	4%
Cin 3	5	5%
Scc	6	6%
Adenocarinoma	2	2%
Total	100	100%

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