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Cytohistological correlation of conventional Papanicolaou smears at a tertiary care Centre

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Abstract

Background: Cervical cancer is the fourth most common cancer among females worldwide. Papanicolaou cytology (Pap smear) is widely used as a cervical cytology screening method for reasons such as the ability to detect precursor lesions of cervical cancer at high rates, low cost and feasibility of applicability.

Aim & Objective: To evaluate women for precancerous and cancerous lesions using the Pap smear test and correlate the cytological findings with histopathological diagnosis.

Methodology: An observational cross-sectional study was conducted in the Department of Pathology at Maharajah's Institute of Medical Sciences, Vizianagaram during April 2021 to March 2022 among 100 study participants. All females of above 20 to 70 years who had their Pap smears performed during study period were included in the study. Unsatisfactory Pap smears and repeated smears after short intervals with the same diagnosis were excluded. Personal details and clinical history like age, parity, religion, use of tobacco, chief complaints, HIV status, and any previous treatment were taken. The samples for cervical smears were collected from endo cervical canal. Comparison of cytological findings with histological counterpart was done considering histology as the gold standard. Data analysis was done by using SPSS software (trial version 21) and Microsoft Excel worksheet 2013. Categorical variables were represented as proportions/percentages and quantitative variables were represented as means and standard deviation.

Results: A total of 700 PAP smear were done during study period, among which 100 study participants had abnormal PAP smear. In the present study majority in the age group 41 to 50 years i.e., 44% and majority (77%) of the study population were multiparous and majority (77%) of the study population were multiparous. On histopathological examination the most common finding was chronic cervicitis found in 47% study population. In this study on PAP smear examination 63 study

participants were negative for intraepithelial lesion or malignancy. On correlation between PAP smear and Histopathological examination found that sensitivity of 67.3%, specificity is 92.1%, Positive predictive value is 89.1%, Negative predictive value is 74.6% with accuracy of 80%.

Conclusion: Screening of Pap smear has increased the detection of early stage preinvasive lesions and cancers that are curable. All asymtopmatic patients must be screened for cervical cytology.

Keywords: Correlation, Cytology, Histopathology, Pap smear, tertiary care Centre

Introduction

Cervical cancer is the fourth most common cancer among females worldwide with an estimated 570,000 new cases in 2018 representing 6.6% of all female cancers (GLOBOCAN, 2018),[1] with the vast majority occurring in developing countries (Abudukadeer et al., 2015).[2] To detect this widely prevalent cancer at an early stage, the simplest test has been a pap smear. Reporting of pap smears is done by the Bethesda System 2001 prior to which many classification systems were developed. [3-6]

The main cause of cervical cancer is a sexually transmitted infection by human papillomaviruses.[7] The worldwide human papilloma virus prevalence in cervical cancer is 99.7%.[8]

Cancer cervix has been considered preventable because it has a long pre-invasive state and availability of screening programs and treatment of pre invasive lesion is effective.[9] It has been well-established that well-organized screening by conventional cytology has substantially reduced the incidence of morbidity and mortality from cervical cancer in developed countries.[9]

Screening methods aim to detect precancerous changes in which high risk HPV plays a primary role in the etiology, which may turn into cancer if left untreated. Follow-up and treatment of a woman with abnormal changes in screening can prevent cancer development or treat cancer at an early stage.

In this scale, screening methods recommended by the World Health Organization are cervical cytology, visual inspection of cervix uteri and HPV test mostly based on molecular methods.[10]

Papanicolaou cytology (Pap smear) is widely used as a cervical cytology screening method for reasons such as the ability to detect precursor lesions of cervical cancer at high rates, low cost and feasibility of applicability.[11]

Aim & Objective

To evaluate women for precancerous and cancerous lesions using the Pap smear test and correlate the cytological findings with histopathological diagnosis.

Methodology

Study design: An observational cross-sectional study

Study setting: The present study was conducted in the Department of Pathology at Maharajah's Institute of Medical Sciences, Vizianagaram.

Study period: April 2021 to March 2022

Sample size: 100

Study population: All females above 20 years to 70 years who had their Pap smears performed during study period were included in the study.

Inclusion criteria

All females of above 20 to 70 years who had their Pap smears performed during study period were included in the study.

Exclusion criteria

Unsatisfactory Pap smears and repeated smears after short intervals with the same diagnosis were excluded.

Study variables

Personal details and clinical history like age, parity, religion, use of tobacco, chief complaints, HIV status, and any previous treatment were taken.

Method of data collection

The samples for cervical smears were collected from endo cervical canal. The smears were made by scrapping the cervix from the squamo columnar junction with the help of cotton swab stick. The endo cervical smears were made by rotating the swab stick in clockwise direction in squamo-columnar junction and stained by PAP stain. The smears showing epithelial abnormality and the follow up biopsy were studied. Comparison of cytological findings with histological counterpart was done considering histology as the gold standard. The reporting of PAP smears was done according to Bethesda 2001 classification and for histology WHO classification was used.

Statistical analysis

Data analysis was done by using SPSS software (trial version 21) and Microsoft Excel worksheet 2013. Categorical variables were represented as proportions/percentages and quantitative variables were represented as means and standard deviation.

Results

A total of 700 PAP smear were done during study period, among which 100 study participants had abnormal PAP smear. Analysis was done those 100 study participants.

Table 1 : Distribution of study participants based on age group

Age group (years)	Frequency	Percentage
21-30	11	11%
31-40	15	15%
41-50	44	44%
51-60	23	23%
61-70	7	7%
Total	100	100%

In the present study majority in the age group 41 to 50 years i.e. 44% followed by 51to 60 years (23%).

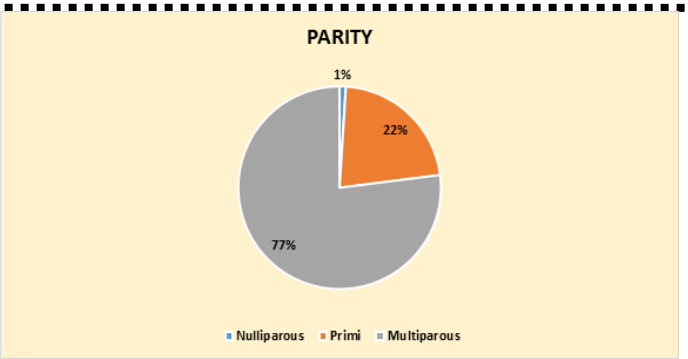

Figure 1: Distribution of study participants based on parity

From the above figure it showed that majority (77%) of the study population were multiparous.

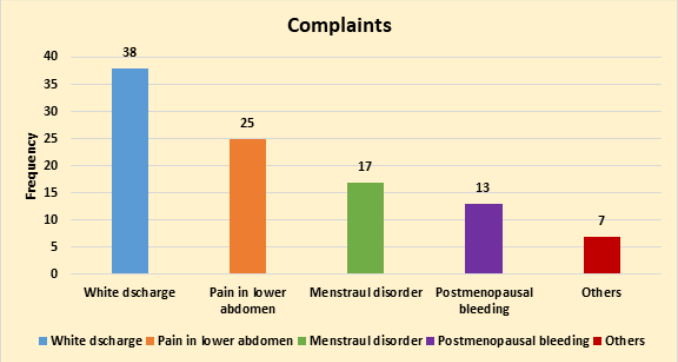

Figure 2: Distribution of study participants based on complaints

The most common presenting complaint was white discharge (38%) followed by pain in lower abdomen (25%)

Table 2: Distribution of study participants based on histopathology

Histopathology	Frequency	Percentage
Chronic cervicitis	47	47%
CIN I	29	29%
CIN II	14	14%
CIN III	5	5%
CCS	1	1%
SCC	3	3%
Adenocarcinoma	1	1%
Total	100	100%

On histopathological examination the most common finding was chronic cervicitis found in 47% study population.

Table 3: Distribution of study participants based on PAP smear

PAP smear	Frequency	Percentage
NILM	63	63%
ASCUS	4	4%
ASGUS-U	1	1%
ASGUS-H	1	1%
LSIL	16	16%
HSIL	13	13%
SCC	2	2%
Total	100	100%

In this study on PAP smear examination 63 study participants were negative for intraepithelial lesion or malignancy.

Table 4: Correlation of PAP smear and histopathological examination

PAP smear	Histopathology		Total
	Positive	Negative	
Positive	33	4	37
Negative	16	47	63
Total	49	51	100

Sensitivity = true positives/ true positives + false negatives

= 33/33+16

= 33/49 = 0.673, Sensitivity in percentage = 0.673×100 = **67.3%.**

Specificity = true negatives/ true negatives + false positives

= 47/47+4

= 47/51 = 0.940, Specificity in percentage = 0.921×100 = **92.1%**

Positive predicitive value = true positives/ true positives + false positives

= 33/33+4

= 33/37= 0.891, in percentage = 0.891×100 = 89.1%

Negative predictive value = true negatives/ true negatives+ false negatives

= 47/47+16

= 47/63 = 0.746, in percentage = 0.746×100 = 74.6%

Accuracy: 80%

On correlation between PAP smear and Histo pathological examination 37% were found to be positive and 63% were found to be negative.

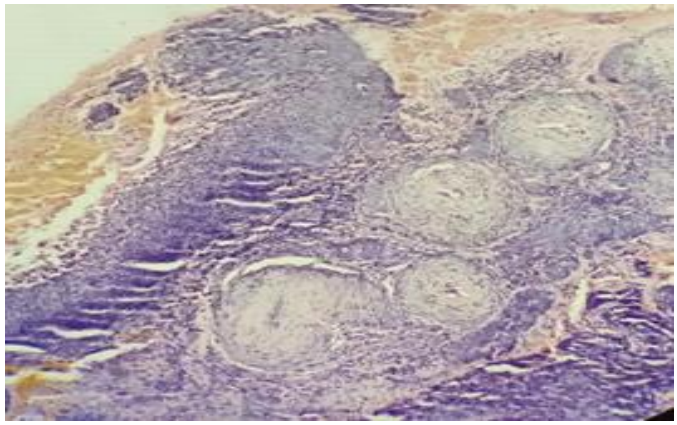

Fig 3:Squamous cell carcinoma.

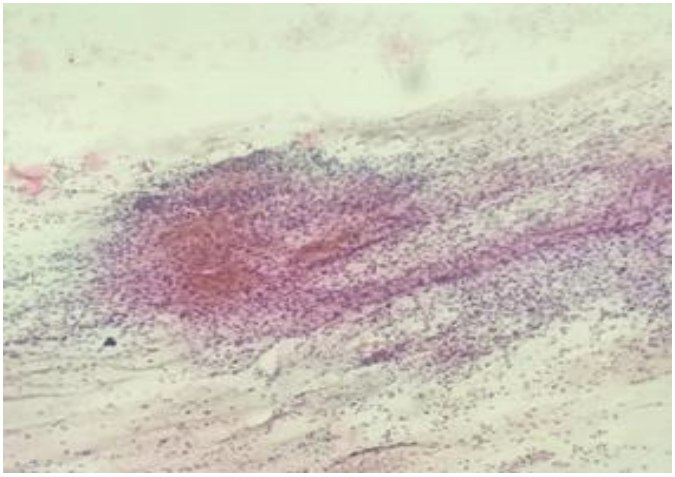

Fig 4: Inflammatory lesion.

Discussion

In the present study majority in the age group 41 to 50 years i.e., 44% followed by 51to 60 years (23%). Similar study findings were observed in a study done by Rathod

GB et al., who reported that majority of the population were in the age group 41 to 50 years. In this study majority (77%) of the study population were multiparous. Similar study findings were observed in a study done by Rathod GB et al., [12] who reported that majority of the population were multiparous. In the present study the most common presenting complaint was white discharge (38%) followed by pain in lower abdomen (25%). Similar study findings were observed in a study done by Joshi C et al., [13] who reported that most common presenting complaint was white discharge.

On histopathological examination the most common finding was chronic cervicitis found in 47% study population. In this study on PAP smear examination 63 study participants were negative for intraepithelial lesion or malignancy. On correlation between PAP smear and Histopathological examination 37% were found to be positive and 63% were found to be negative. Similar study findings were observed in a study done by Joshi C et al., [13] and Simridhi Bindroo et al., [14].

Conclusion

Screening of Pap smear has increased the detection of early stage preinvasive lesions and cancers that are curable. All asymtopmatic patients must be screened for cervical cytology. The present study assessed correlation between cytology and histopathology. An organized cervical cytology screening programme is the mainstay for the control of cervical cancer.

References

1. GLOBOCAN (2018). Estimated cancer incidence, mortality and prevalence worldwide in 2018. 2018. http:// gco. iarc.fr/ today/ data/ factsheets/ cancers/ 23-Cervix-uteri-fact-sheet.pdf2.

2. Abudukadeer A, Azam S, Mutailipu AZ, et al (2015). Knowledge and attitude of Uyghur women in Xinjiang province of China related to the prevention and early detection of cervical cancer. World J Surg Oncol, 13, 110.

3. Papanicolaou GN. New cancer diagnosis proc 3rd Race Betterment conference Battle Greek, Michigan, 1928; 528-530.

4. Dehner LP. Cervicovaginal cytology, false negative result and standard of practice. Am J Clin Pathol, 1993; 99: 45-47.

5. National cancer institute workshop report. The 1988 Bethesda system for reporting cervical/vaginal cytological diagnosis. JAMA, 1989; 262: 931-934.

6. Broder S. From the National Institutes of Health. JAMA, 1992; 267: 1892.

7. Vinay K, Abbas AK, Aster JC. Robbins and Cotran Pathologic Basis of Disease. 9th ed. Chicago: Elsevier Science Health Science Division; 2015.

8. Walboomers JM, Jacobs MV, Manos MM, Bosch FX, Kummer JA, Shah KV, et al. Human papillomavirus is a necessary cause of invasive cervical cancer worldwide. J Pathol 1999;189:12-9.

9. Patil S, Patil A, Solanke P. Cytological screening for early diagnosis of cervical intraepithelial neoplasia (CIN) and early carcinoma of cervix. Int J Sci Res Publ 2015;5:1-6.

10. Cervical cancer early diagnosis and screening 2019, World Health Organization, https:// www. who. int/ cancer/ prevention/ diagnosis- screening/ cervical-cancer/ en/ (Accessed January 06, 2022).

11. Feyza Demir, Remzi Erten, İbrahim Aras, İrfan Bayram. Correlation of Cervical Smear Cytology and Histopathology Findings From Van Yüzüncü Yıl University Dursun Odabaş Medical Center İn Turkey. East J Med 25 (2): 305-311, 2020 DOI: 10. 5505/ ejm. 2020.01886.

12. Rathod GB, Singla D. Histopathological vs cytological findings in cervical lesions (Bethesda system) – A comparative study. IAIM, 2015; 2(8): 13-16.

13. Joshi C, Kujur P, Thakur N. Correlation of Pap Smear and Colposcopy in Relation to Histopathological Findings in Detection of Premalignant Lesions of Cervix in A Tertiary Care Centre. Int J Sci Stud 2015;3(8):55-60.

14. Simridhi Bindroo, Monika Garg, Gitika. Correlation of cervical Pap smear with histopathological diagnosis in cervical lesions: a 2 years retrospective study. International Journal of Contemporary Medical Research 2019 ;6 (7): G17-G20.