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Role of colposcopy and paps smear in cervical carcinoma screening

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Abstract

Background: Cervical carcinoma is a formidable threat to the health of women and it is prevented with adequate screening. Routine screening of cervical cytology with the Papanicolaou/Pap smear has been deeply ingrained in clinical practice since past century. Cervical cytology screening has contributed to a 50% reduction in the incidence of cervical cancer.

Objective of study: To study screening of cervical carcinoma by paps smear and colposcopy. The study constituted 100 women as subjects who attended the Gynaecology OPD as well as ones admitted in gynaecology wards at NIMS hospital Jaipur and fulfilling the inclusion and exclusion criteria.

Results: The mean age of patients in this study was 39.05 ± 8.587 years and mostly belonging to upper lower socioeconomic status. It was found that early sexual activity had greater risk for development of dysplasia. In this study Mean age at first coitus was 17.13 ± 1.5351 . Pap smear had sensitivity of 26.67%, specificity of 100%, and accuracy of 78%. Colposcopy had sensitivity of 100%, specificity of 74.28%, and accuracy of 82%. Women with abnormal white discharge and symptoms to be screened with Pap smear and colposcopy.

Conclusion: Colposcopic directed biopsies of abnormal area help in early detection of CIN. Colposcopy has 100% sensitivity, 74.28% specificity, 82% accuracy in diagnosing dysplasias, CIN and invasive cancers. Pap smear had low sensitivity 26.67%, high specificity 100% and accuracy of 78% for diagnosing dysplasias, CIN, and invasive cancers.

Keywords: colposcopy, dysplasia, cervical cancer

1. Introduction

Cancer of cervix remains a major concern for cause of death in developing countries among the middle aged women even after prompt consideration and knowledge on prevention, screening, early diagnosis and treatment. In the 1940s this was Originating and by the 1960s recognized as the standard of gynecologic care, annual cervical cytology screening has been an integral part of the well-woman exam since long time.

The estimated new cases to be diagnosed in US for 2017 are 12,820 and estimated 4,210 deaths will occur in 2017 (as per CDC). In India, every year 1, 22,844 women diagnosed with cervical cancer and 67,477 died from disease. It ranks 2nd most frequent cancer among women in India (as per ICO HPV Information Centre and NICPR). Its mortality steeply in equity with socio-economic status i, e lower the socio-economic status, higher the mortality^[1].

The screening programmes and its implication has shown reduction in incidence and mortality of cervical cancer, though with increase in incidence affecting successive generations as a result of change in sexual behaviour with increased transmission of oncogenic HPV types. Hence, in recent developments prophylactic vaccination for girls and young women against the oncogenic HPV has been put forth in addition with screening and treatment of premalignant lesions.

Even after high false negative rate, Pap smear is considered as an ideal screening method over the period of time. Limitations with cytology based screening programme are:

- Need for frequent repetitive testing at short intervals for improving sensitivity.
- Reproduced poorly with poorly agreements even experts
- Needs intensive labour and cytology of high quality is expensive and not a cost effective option as a screening test.

Colposcopy, first time described by Hinselmann from Germany (1925) is an optional method for the visualisation of lower genital tract of female under the stereoscopic vision with varying magnification of 4-40 folds. It allows detection of pre-cancerous and cancerous lesions despite the normal morphological appearance of uterine cervix. Though for high grade cytology it's universally accepted but for management of low grade abnormalities its been argued upon since

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long. Evidence based upon clinical trials indicates testing for high risk HPV can usually triage women for immediate colposcopy or any further cytological surveillance.

The cytology and colposcopy study compliments each other for complete diagnosis and treatment of cervical cancers in early stages. In upcoming times, also HPV testing might be considered but is expensive for low socioeconomic group of population in India [2].

2. Material and Methods

This study was conducted in Department of Obstetrics and Gynecology at NIMS hospital, Jaipur from July 2016 to July 2017.

Material

The study constituted 100 women as subjects who attended the Gynecology OPD as well as ones admitted in gynecology ward at NIMS hospital Jaipur, fulfilling the inclusion and exclusion criteria.

Sample Size

It is calculated by 95% confidence level. About 50% women with abnormal symptoms and unhealthy cervix along with relative error of 20%, sample size of 100 women was required.

Inclusion Criteria

- a) Age between 18-65years
- b) Patient with complaints of profuse white discharge, post coital bleeding, inter-menstrual bleeding and postmenopausal bleeding.
- c) On per speculum diagnosed clinically with cervical erosion or polyp, condyloma, vaginitis, cervicitis and unhealthy cervix, etc

Exclusion Criteria

- a) Patients with presence of bleeding on per speculum
- b) Patients diagnosed clinically with invasive carcinoma (ulceration, obvious growth, or eaten up cervix.
- c) Patient unwilling to give consent

Method

100 women fulfilling inclusion criteria were studied by taking detailed history followed by complete physical examination with per speculum and per vagina examination. They are then subjected to Pap smear on mandatory basis. Firstly cervix inspected under good illumination and then excess cervical mucus mopped out with saline soaked cotton wool topped

applicator. 3-5% acetic acid was applied, followed by observation through colposcope and changes noted by free hand drawing method.

For all suspected lesions, punch biopsy taken and tissue sent for histo-pathological examination. All lesions were graded by Reid and Scalzi colposcopic index. The above was then subjected to statistical analysis.

3. Results

Table 1

Age in years	Number of patients	%
20-30	17	17.00
31-40	55	55.00
41-50	17	17.00
51-60	11	11.00
Total	100	100.00

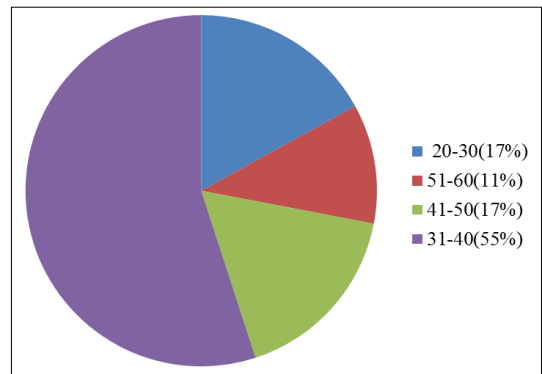


Fig 1: Distribution of cases according to age

Table no. 1 & Figure no.1 depicts Distribution of patients according to age. Among 100 patients, 17.0% belongs to age group of 20-30years, 55% among 31-40years, 17% among 41-50years, 11% among 51-60 years age group. The maximum number of cases belong to 31-40years age group (55%) with mean age 39.05years.

Table 2: Distribution of cases in relation to religion

Religion	Number of patients	Percentage
Hindu	89	89.00
Muslim	11	11.00
Total	100	100.00

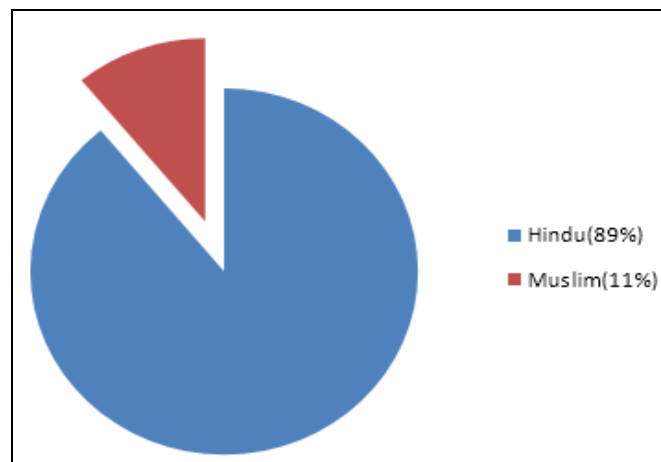


Fig 2: Distribution of patients according to religion

Table no 2 and Figure no.2 depicts characteristics of patients based on religion. Majority (89%) of the women were Hindu by religion and minority (11%) of women were Muslim by religion.

Table 3: Distribution of cases in relation to socio-economic status

Socio-economic status	Number of patients	%
Lower	18	18.00
Lower-Middle	24	24.00
Upper-Lower	58	58.00
Total	100	100.00

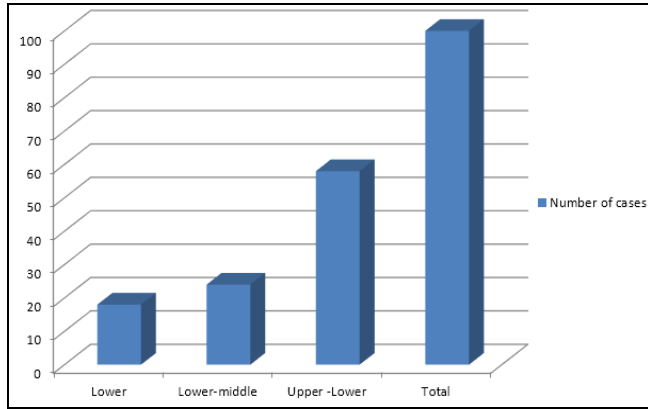


Fig 3: Distribution of cases in relation to socio-economic status

Table no 3 and figure no 3 depicts Distribution of patients according to socioeconomic status. According to Modified Kuppu-swamy classification, 58% of women were of Upper-lower class, 24% were of Lower-middle class and 18% were of Lower class.

Table 4: Correlation between benign, premalignant and malignant lesions in relation to age at 1st coitus.

Age at 1st coitus classification	≤18years	≥18years	Total
Benign	32	38	70
Premalignant	17	09	26
Malignant	00	04	04
	49	51	100

*Chi square 6.393, P value 0.031

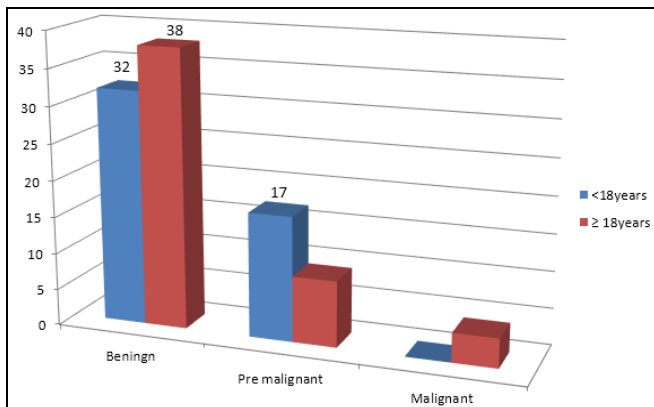


Fig 4: Correlation between benign, premalignant, and malignant lesions in relation to age at 1st coitus

Table no 4 and figure no 4 depicts Correlation between benign, premalignant and malignant lesions in relations to age at 1st coitus. Significant differences noted between different classifications and age at 1st coitus, therefore, premalignant lesions are commonly associated with 1st coital history at an

early age of life.

4. Discussion

The cytological diagnosis is important screening test but needs frequent repetitions though has low sensitivity. The present study conducted for knowing diagnostic accuracy for detecting early dysplasia with colposcopy. In study conducted by Wati S *et al*, the incidence of dysplastic smears was highest in 35-40years of age group. whereas in study of Ancutua Boicea *et al*. was 30-49 year age group and study of Arya SB *et al*. was with mean of 36.3years. In the study of Vijay Manohar Bhagat *et al*. the mean age group among patients 37.54 years with intraepithelial lesions [3].

The age group in present study is comparable to age group of these study.

The mean age group is 39.05years in the present study with patients belonged to 31-40year age group may be the reason being early marriages with early family completion leading to seek health care as soon as they have time.

The distribution of patients based upon the religion in present study showed 89% belonged to Hindu constituting majority and 11% to Muslim constituting minority. Its comparable with study of Cerqueira EM *et al*. where Hindu were 25 having premalignant lesions and 1 among Muslim. Based on study by Vijay Manohar Bhagat *et al*, Hindus with cervical neoplasia was 13.73% and 13.25% were muslim [4].

In present study, Hindu religion constitutes the majority as the patients visited the hospital were majorly Hindus.

Socio-economic status had an important role in epidemiology in genesis of dysplasia. In the present study, Upper-lower socioeconomic constitutes 58%, lower-middle constituted 24%, lower socio-economic status constituted 18%. Majority cases detected with CIN (62.06%) belonged to upper-lower class, 65.38% of premalignant lesions belong to upper-lower class. they are not in comparison with Saha *et al*. and EL Moss *et al*. [5].

In the study of Saha R *et al*, 100% belong to socio-economic status and in El Moss *et al*, 85% belong to middle socioeconomic class. The factors associated with cervical cancer were poor personal hygiene, poor living condition, marriage with un stability, early age at 1st intercourse.

In present study cases with majority were >18years. CIN was majority (61.53%) detected had age <18years at 1st coitus. Premalignant lesions constituted 65.38% patients with 1st coitus <18years and 34.61% patients with 1st coitus >18years, which is contradictory to Maziam AM *et al*. study wherein 44% were <19years at 1st coitus but 20-29years constituted 50%.

The patients with CIN in the study had early onset of sexual activity may be due to early marriages as prevalent in Rajasthan.

On comparison, histopathology and cytology on basis of benign, premalignant and malignant lesions was found 100%cases with benign lesions upon histopathology also had benign lesion on cytology. Cytology was 72.86% sensitive, 26.67% specificity and 81.5% accuracy to detect benign. Cytology had 19.23% sensitivity, 95.94% specificity and 81% accuracy to detect premalignant lesions. However, it had 100% specificity and 96% accuracy to detect malignant lesions.

On comparison of various diagnostic indicators between colposcopy and cytology, a significant relationship exists in relation to the sensitivity, specificity, positive predictive value ($p<0.001$) in detecting benign lesions [6].

Even significant relationship occurs in relation to the sensitivity, specificity, and negative predictive value ($p<0.001$) for diagnosing premalignant lesions.

The sensitivity and diagnostic accuracies has not reached statistical significance in detection of malignant lesions. However, interpretation of results makes colposcopy a better tool than cytology for detecting premalignant lesions^[7,8].

5. Summary

This prospective study was designed to compare accuracy of diagnostic colposcopy and Pap smear among women with abnormal symptoms. There were 100 patients who got enrolled and were comparable in all aspect. These patients were subjected to Pap smear followed with colposcopic examination and directed biopsies.

The mean age of patients in this study was 39.05±8.587years and mostly belonging to upper lower socioeconomic status.

It was found that early sexual activity had greater risk for development of dysplasia. In this study Mean age at first coitus was 17.13±1.5351.

Among the 100 patient, 92% had inflammatory smears of which 20% were CIN and 1% had squamous cell carcinoma biopsy. On comparison with biopsy, Pap smear had sensitivity of 26.67%, specificity of 100%, and accuracy of 78%. Colposcopy had sensitivity of 100%, specificity of 74.28%, and accuracy of 82%. Therefore Colposcopy was more specific, sensitive and accurate in comparison with Pap smear in detecting dysplasia earlier with statistically significant difference found on analysis.

Patients having inflammatory/squamous metaplasia /erosion on colposcopy had negative histopathology. However, abnormal findings on colposcopy with directed biopsies yielded CIN and invasive cancer on histo-pathological evaluation.

6. Conclusion

1. Women with abnormal white discharge and symptoms to be screened with Pap smear and colposcopy.
2. Colposcopic directed biopsies of abnormal area help in early detection of CIN
3. Colposcopy has 100% sensitivity, 74.28% specificity, 82% accuracy in diagnosing dysplasias, CIN and invasive cancers.
4. Pap smear had low sensitivity 26.67%, high specificity 100% and accuracy of 78% for diagnosing dysplasias, CIN, and invasive cancers.
5. All inflammatory smears to be viewed suspiciously followed by colposcopy to detect early changes leading to dysplasias.
6. Colposcopy was more specific, sensitive and accurate in comparison to Pap smear in early detection of dysplasias.

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