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Correlation of colposcopic findings with biopsy in cervical cancer screening

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Abstract
Aim: to correlate the colposcopic findings with biopsy in cases of abnormal cervical cytology
Materials and Methods: This was a prospective clinical study conducted among 300 women who fulfilled the selection criteria were conducted in the Department of Obstetrics and Gynaecology at Muzaffarnagar Medical College & Mahesh hospital from the November 2017 to November 2019. Patients who had pathological cervical appearance or Pap smear results of ASCUS, AGUS, LSIL or HSIL were referred to colposcopy.
Results: Majority (40.0%) women were between 30-39 years of age group. Histopathology confirmed chronic cervicitis in 5 (9.1%) cases, 35 (63.6%) women with CIN I, 12 (21.8%) with CIN II, 3 (5.5%) with CIN III. The colposcopy and histopathology findings correlated in 90.9% cases.
Conclusion: study demonstrated correlation between colposcopy and histology. Women with clinical diagnosis of unhealthy cervix should be evaluated by cytology to detect any premalignant or malignant lesions.

Keywords: Cervix, Cancer, Colposcopy, Biopsy, HPV

Introduction
According to the World Health Organization Cervical cancer ranks as the fourth most frequently diagnosed cancer and the fourth leading cause of cancer death in women. The GLOBOCAN 2018 estimates 570,000 cases and 311,000 deaths in 2018 worldwide, with this disease. The incidence is considerably higher in developing countries, where more than 87% of cases can be found. The highest estimated incidence rates for cervical cancer are in sub-Saharan Africa, Melanesia, Latin America and the Caribbean, south-central Asia and south-east Asia. About 96,922 new cervical cancer cases are diagnosed annually in India (estimates for 2018). Cervical cancer is the second most common female cancer in women aged 15 to 44 years in India. Rural women are at higher risk of developing cervical cancer as compared to their urban counterparts [1].

Persistent infection of the cervix with high-risk types of human papillomavirus (HPV) has been established as a necessary (but not sufficient) cause for the development of cervical cancer [2].

The initiating lesion of cervical cancer is cervical dysplasia. In most patients, it spontaneously regresses back but in some patients over a period of 10 to 20 years, it has the potential to convert into cervical cancer. 9 Cervical dysplasia, also referred as cervical intraepithelial neoplasia (CIN) often arises in an area of metaplasia in the transformation zone at the advancing squamo-columnar junction. CIN is most likely to begin either during menarche or after pregnancy when metaplasia is most active. Cervical dysplasia a precursor of cervical cancer is a treatable condition. After menopause, metaplasia is less active and women have a lower risk of developing CIN [3].

Colposcopy is a worldwide accepted method for detection of early carcinoma cervix, as it gives faster result and guides the site of biopsy which can be done in a single visit proving itself as a better screening modality for premalignant lesion. The diagnostic algorithm of various organized screening programme consists of cytology & colposcopy which helps in detecting the abnormality and which can be established by histological grade of lesion [4, 5]. Hence the present study was conducted with the aim to correlate the colposcopic findings with biopsy/cytology.

Materials and Method
This study was conducted in the Department of Obstetrics and Gynaecology at Muzaffarnagar medical college & Mahesh hospital from the November 2017 to November 2019.

This was a prospective clinical study conducted among 300 women who fulfilled the selection criteria.

Inclusion criteria

1. Age range of the study population was 21-65 years
2. Patients with abnormal symptoms like profuse white discharge, post coital bleeding, intermenstrual bleeding or post-menopausal bleeding
   a) Patients with clinically unhealthy cervix diagnosed by speculum examination like, cervical erosion, cervicovaginitis, cervical polyp, condyloma etc.
3. Patients with pap smears showing dysplasia

Exclusion criteria

1. Women with age less than 21 years and more than 60 years
2. Patients with bleeding at the time of examination
3. Women with frank invasive cancer
4. Profuse cervical and vaginal discharge
5. Obvious cervical growth
6. Patient who had undergone recent endometrial curettage, hysterosalpingography, cervical biopsy or total hysterectomy
7. Pregnant women

Patient selection

The average number of women attending Department of Obstetrics and Gynaecology at Muzaffarnagar medical college & Mahesh hospital is about 75-100/day. Among them women who fulfilled selection criteria were randomly selected. A total of 300 women, who applied to the outpatient clinic between November 2017 to November 2019.

Methodology

All patients underwent pelvic examination and Pap smear sampling. Patients who had pathological cervical appearance or Pap smear results of ASCUS, AGUS, LSIL or HSIL were referred to colposcopy.

Statistical analysis

The data was entered into the Microsoft excel and the statistical analysis was performed by statistical software SPSS version 20.0. The Quantitative or Numerical variables were presented as mean and SD and the Qualitative or Categorical variables were presented as number and percentage. The student t-test was applied to find out the significant difference between the groups for continuous variables whereas chi-square test was applied for categorical variables. The repeated measures ANOVA test with post-hoc bonferroni test was applied for the comparison of the continuous variables over the time interval. The P-value less than 0.05 were considered to be statistically significant.

Results

Table 1: demographic profile of the study population

Variables		Number	Percentage
Age in years	18-29 years	76	25.3%
	30-39 years	120	40.0%
	40-49 years	69	23.0%
	50-65 years	35	11.7%
Religion	Hindu	79	26.3%
	Muslim	176	58.7%
	Others	45	15.0%
Residence	Urban	90	30.0%
	Rural	210	70.0%
Socio-economic class (Kuppuswamy classification)	I	5	1.7%
	II	46	15.3%
	III	65	21.7%
	IV	92	30.7%
	V	92	30.7%

Table 2: Distribution of the study population according to complaints reported

Complaints	Total cases (n=300)		CIN 1		CIN 2		CIN 3	
White discharge	169	56.3%	69	40.8%	14	8.3%	0	0.0%
Post coital bleeding	21	7.0%	9	42.9%	5	23.8%	0	0.0%
Intermenstrual bleeding	32	10.7%	3	9.4%	2	6.3%	5	15.6%
Post-menopausal bleeding	16	5.3%	0	0.0%	7	43.8%	2	12.5%
Pain abdomen	14	100.0%	0	0.0%	0	0.0%	0	0.0%
Others	48	16.0%	0	0.0%	0	0.0%	0	0.0%
Total	300	100.0%	81	100.0%	28	100.0%	7	100.0%
p-value	0.004*							

Table 3: Distribution of the study population according to Clinical appearance of cervix

Clinical appearance of cervix	Total cases (n=300)		CIN 1		CIN 2		CIN 3	
Atrophy	7	2.3%	0	0.0%	0	0.0%	0	0.0%
Congestion	46	15.3%	9	19.6%	5	10.9%	0	0.0%
Erosion cervix	159	53.0%	58	36.5%	11	6.9%	0	0.0%
Hypertrophy + congestion	32	10.7%	7	21.9%	5	15.6%	2	6.3%
Hypertrophy + erosion	40	13.3%	7	17.5%	7	17.5%	5	12.5%
Polyps	16	5.3%	0	0.0%	0	0.0%	0	0.0%
Total	300	100.0%	81	100.0%	28	100.0%	7	100.0%
p-value	0.012*							

Table 4: Distribution of the study population according to Colposcopic appearance of cervix

Colposcopy findings	No.	%
Normal	164	54.7%
0-2	83	27.7%
3-4	32	10.7%
5-8	12	4.0%
Unsatisfactory	9	3.0%
Total	300	100.0%

Table 5: Distribution of the study population according to Biopsy findings

Biopsy findings	No.	%
Chronic cervicitis	11	8.7%
CIN-1	81	63.8%
CIN-2	28	22.0%
CIN-3	7	5.5%
Total	127	100.0%

Table 6: Correlation of colposcopy findings and Biopsy findings

Colposcopy findings	Biopsy findings
Normal (n=164)	Biopsy not taken
Condyloma (n=9)	
Score 0-2 (n=83)	Chronic cervicitis (n=11)
Likely to be CIN-1	CIN-1 (n=72)
	CIN-2 (n=0)
	CIN-3 (n-0)
Score 3-4 (n=32)	Chronic cervicitis (n=0)
Overlapping lesion: likely to be CIN-1 or CIN-2	CIN-1 (n=9)
	CIN-2 (n=23)
	CIN-3 (n=0)
Score 5-8 (n=12)	Chronic cervicitis (n=0)
Likely to be CIN-2 or CIN-3	CIN-1 (n=0)
	CIN-2 (n=5)
	CIN-3 (n=7)

Discussion

Cervical cancer was the second most frequent cancer world-wide, in women after breast carcinoma. However, invasive cancer of the cervix was considered to be a preventable condition as it was associated with a long pre invasive stage (CIN) making it amenable to screening and treatment.

Effective screening programme can lead to earlier detection of cancer and its precursor lesions, thus leading to decline in mortality. We screened women who came to the hospital with various symptoms and unhealthy cervix and hence would belong to a high risk group. That would be a contributory factor to the high incidence of biopsy-confirmed dysplasia in our study.

Frequently repeated cytology screening programs have led to a large decline in cervical cancer incidence and mortality in developed countries. Cytology based screening programs have achieved very limited success in developing countries like India due to lack of trained personnel, laboratory facilities, equipments, high cost of services and poor follow-up. It has become necessary to and out alternative screening procedure to cytology which has high sensitivity and specificity [6].

The colposcopic diagnosis of CIN requires an understanding and recognition of four main features: Color tone, intensity of acetowhitening, margins and surface contour of acetowhite area, vascular pattern, and iodine staining. Variations in quality and quantity of these atypical appearances help in differentiating CIN from other lesions and between grades of CIN [7].

In our study, 25.4% were between 20-29 years, 40.0% women were between 30-39 years, 23.1% women belonged to the age group of 40-49 years and 11.5% were between 50-60 years. This was similar to the study by Kasem *et al*. [8] the peak age group (47.42%) of VIA-positive cases was 26 to 35 years with a mean age of 30.74 years. Almost two-thirds of the cases were within 26 to 45 years. As the age advanced, the percent of age group reduced according to this study. Tofazzal *et al*. [9] found highest incidence of years in age group closely followed by 30 to 40 years, where the age of occurrence of invasive cervical cancer was 40 to 45 years. Jahan's findings [10] correspond well with this study and it is indicative that CIN is more prone to occur in sexually active women. World Health Organization [11] also suggested the priority age group as 35 to 45 years for the screening of CIN.

In the study by Garg *et al*., [12] commonest complaint was white discharge (58.5%) followed by pelvic pain (24%) amongst all symptomatic women, 16% had complaint of Inter menstrual bleeding, 10% had menorrhagia, 6% had post-coital bleeding and rest 6% had complaint of itching vulva. Malur PR *et al*. [13] in his study on sequential screening with cytology and colposcopy in detection of cervical neoplasia on 190 symptomatic women and women with unhealthy cervix, also observed the similar results with white discharge being the most common complaint i.e. 61.05% [14].

In our study, out of 130 patients, 71 (54.6%) showed normal colposcopic findings, 55 (42.3%) had abnormal findings and 4 (3.07%) had unsatisfactory findings and biopsy was taken in cases with abnormal colposcopy.

Histopathology confirmed chronic cervicitis in 5 (9.1%) cases, 35 (63.6%) women with CIN I, 12 (21.8%) with CIN II, 3 (5.5%) with CIN III. The colposcopy and histopathology findings correlated in 90.9% cases. In a study by Patil *et al*. [15], colposcopy was done in 120 women with cervical erosion. Histopathology findings correlated in 44 (88%) women anddid not correlate in 6 (12%) women.

Conclusion

This study demonstrated correlation between colposcopy and histology. Women with clinical diagnosis of unhealthy cervix should be evaluated by cytology to detect any premalignant or malignant lesions. It was concluded that colposcopy, and histopathology should be collectively evaluated in regions with low socio-economic status in evaluation of abnormal cervical findings.

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