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Original Research Article

Prospective study of colposcopic screening of unhealthy cervix

Pushpa Kannoujiya¹, Arpita Shrivastava², Tariq Ahmed Mala^{3*}

¹Department of Obstetrics and Gynecology, Sri Venkateshwara Institute of Medical College, Gajraula, Uttar Pradesh, India

²Department of Obstetrics and Gynecology, World College of Medical Science Research and Hospital, Gurawar, Jhajjhar, Haryana, India

³Department of Surgery, GMC Srinagar, Jammu Kashmir, India

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***Correspondence:**

Dr. Tariq Ahmed Mala,

E-mail: drtariq_6481mala@rediffmail.com

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ABSTRACT

Background: The study was conducted to screen women who have abnormal vaginal discharge with Pap smear to do histopathological analysis of colposcopically directed biopsies.

Methods: A prospective analytical study carried out in the department of obstetrics and gynaecology. The patients were randomly selected who fulfilled the selection criteria and was carried out to study the correlation of Pap smear and colposcopy in women with unhealthy cervix.

Results: Among all patients 13% were between 20-29 years, 38% were between 30- 39%, 31% belonging to 40-49 years group and 18% was between 50-59%. Among 100 Women studied, 33% were illiterates, 55% had primary/high school education and 12% had Higher education Majority of the patients (68.7%) of CIN occurred in the age group of 30-49years, 41.7% with CIN were paragrvida 2, 43.8% with CIN were paragrvida 3 and 18.6% were greater than paragrvida 4 showing high incidence of CIN in multiparity. The incidence of CIN was found to be high among the lower income group 87.5%. The major presenting complains in the study patients were white discharge per vagina.

Conclusions: Colposcopy was found to be useful in understanding the morphology of the cervical lesion, both of the neoplastic and nonneoplastic ones and was very helpful in planning their management. Cytology is an accepted method for screening for cervical cancer and the value of colposcopy has been recognized. Hence it may be better to utilize cervical cytology smear with colposcopy should be offered as a diagnostic method in all patients with unhealthy cervix.

Keywords: Colposcopy, Cytology, Premalignant lesion

INTRODUCTION

Carcinoma of the cervix continues to be the most common genital cancer encountered in India accounting for 80% of all female genital cancers. Worldwide cervical cancer continues to be a significant health care problem. In developing countries, where health care resources are limited cervical cancer is the second most frequent cause of cancer death in women. Clinical examination of abnormal growth, ulcer, or presence of vasculature is

diagnostic of unhealthy cervix as unhealthy.¹ Because cervical cancer is preventable so colposcopic screening is one of the very important tools in early detection and prompt treatment. Precursor lesions of cervix usually appear 10-15 years before the invasive carcinoma. Previously rarely diagnosed in sexually active young women, these changes now have an incidence of 70.8 in 1,000 women less than 20 years of age.² The Papanicolaous (pap) smear is the primary screening tool for cervical intra epithelial neoplasia (CIN) and for

invasive cancer of the uterine cervix screening programme is limited in the far-flung areas of India wherein females are illiterate and limited infrastructure.³ Recently, the assumed accuracy was found to be 80% to 90% for detecting CIN and early invasive cancer was questioned. The simultaneous use of cytological studies and screening colposcopy has been shown to increase the rate of the cervical cancer detection. Hence there is an obvious need to subject the women with clinically unhealthy cervix to colposcopy and directed biopsy.

METHODS

This study was conducted in the department of obstetrics and Gynaecology at Rajkiya Mahila Chikitsalaya, Jawahar Lal Nehru Medical College and Associated Group of Hospitals, Ajmer (Rajasthan) for a period of one year. The patients were selected on certain factors.

Inclusion criteria

- Age: 20-60 years.
- Patients with abnormal symptoms like profuse white discharge, post coital bleeding, intermenstrual bleeding or post-menopausal bleeding.
- Patients with clinically unhealthy cervix diagnosed by speculum examination like cervical erosion, cervico vaginitis, cervical polyp, condylomas etc.
- Patients with pap smears showing dysplasia.

Exclusion criteria

- Women with age > 60 years and < 20 years
- Patients with bleeding at the time of examination.
- Women with frank invasive cancer
- Women who underwent total hysterectomy
- Pregnant women.

RESULTS

Among 100 women, 13% were between 20-29 years, 38% were between 30-39%, 31% belonging to 40-49 years group and 18% was between 50-59%. Incidence of CIN was 6% in 20-29 years, 38% in 30-39 age group, 31% in 40- 49 age group, and 25% in 50-59 age group. Incidence of CIN was found to increase as age increases. In present study incidence of CIN was found to be high in 30-49 age group. Among 100 Women studied, 33% were illiterates, 55% had primary/high school education and 12% had Higher education. Among the illiterates 69% had CIN, but among those who studied up to high school had incidence of CIN up to 25% and among those with Higher education incidence was only 6%. This showed that a higher incidence of CIN among the illiterates than literates. Majority (67%) of women belonged to low income group (<5000 per month) women with monthly income of less than 2000 had incidence of 21%, but among women of Rs 5001-10000 monthly income, incidence was 8% and amongst those with higher income

it was nil. Among 100 women studied 13% were married for <5 years, 35 were married for 5-10years, 32% were married for 11-20 years.

The incidence of CIN was 7.7% in women with 5 years of married life 8.6% for those with 5-10 years of marriage, 21.9% for those with 11-20 years of married life. It is 25% for those with >20 years of marriage life. There was higher incidence of CIN, when the duration of exposure of sexual intercourse.

Among the 100 women studied, 5% practiced barrier method and among them none had CIN. 9% were taking ocp's, among them 11% (2/9) had CIN.17% of women had IUCD inserted, among them 5% (1/17) had CIN. 39% had permanently sterilized, among them 59% (10/39) had CIN.30% of women did not practice any form of contraception, among them 16.6% had CIN. Among the study group 8% were para 1; among them 12.5% had CIN. 34% were para 2, out them 14.7% had CIN. 38 were para 3; among them 18.4% had CIN. 20 women were para 4 or more among them 15% had CIN.

The common complaints were white discharge & bleeding per vagina which was either post coital, intermenstrual or of post-menopausal type. Out of them 59% of women who complained of white discharge, 16.9% had CIN. Of the 8% who complaint of post coital bleeding 37.5% had CIN. 12% had intermenstrual bleeding, among them 8.3% had CIN. 7% had post-menopausal bleeding out of them 28.6% had CIN. Other complaints included loss of weight, loss of appetite, UTI, lower abdominal pain (Table 1).

Table 1: Symptoms in patients.

Complaints	Total cases	CIN case	S%
	N=100	N=16	
White discharge	59	10	16.9
Postcoital bleeding	8	3	37.5
Intermenstrual bleeding	12	1	8.3
Postmenstrual bleeding	7	2	28.6
Loss of weight	3	-	-
Others	11	-	-
Total	100	16	

Among them none had cervical intraepithelial neoplasia. PAP smear was taken for all patients. 3% of smear were found to be normal, 81% showed inflammatory atypia, 8% showed mild dysplasia 3% showed moderate dysplasia ,3% showed severe dysplasia and 2% showed invasive cancer (Table 2).

When cervix was visualized using a speculum, the appearance was atrophy in 2%, hypertrophy with erosion in 14%, hypertrophy with congestion in 7% and erosion cervix was found in majority 56% of patients. Polyp was found among 2% of cases. Among women with erosion cervix 16.1 % (9/56) had CIN.

Table 2: Pap smear findings.

Findings	Total cases N=100
Normal	3
Inflammatory atypia	81
Mild dysplasia	8
Moderate dysplasia	3
Severe dysplasia	3
Invasive cancer	2

Among those with congestion alone 10.5% (2/19) had CIN. Among those with hypertrophy and congestion, 28.6% (2/7) were found to have CIN, and in those who had hypertrophy with erosion 21.4% (3/14) had CIN. All polyps were benign. Mature squamous epithelium stained deep brown with lugol's iodine, called Iodine positivity was found in 27% of cases. Among them none had CIN. Iodine partial positivity was found to be 42% speckled or variegated appearance within an area of slight AW area change might be due to Immature metaplasia, regenerating epithelium, or CIN 1. Yellow colour within an area of dense AW was highly suggestive of CIN 2/CIN 3. Iodine negativity was found in 31% representing columnar epithelium, atrophy, inflammation or CIN. Among them 38.7% (12/31) had CIN. Flat AW areas

with sharp margins within the transformation zone indicated immature metaplasia or low grade CIN. Among those with flat AW areas, 29.4% (5/17) had CIN. Among those with dense opaque AW area, 91.6.3% (11/12) had CIN.

Table 3: Histological changes.

Histopathology	No. of cases N=100
Chronic cervicitis	48
Chronic cervicitis, erosion	26
Erosion cervix	4
Epithelial hyperplasia	4
Polyp (benign)	2
Mild dysplasia	8
Moderate dysplasia	3
Severe dysplasia	3
Invasive cancer	2

Among the 100 cases studied, 29% (29/100) were diagnosed as colposcopically abnormal. Among the abnormal cases, AW areas were diagnosed in 17%. Punctate pattern of vessels was seen in 8% of women. And mosaic pattern of vessels was diagnosed in 4% of women.

Table 4: Comparison of pap smear with histopathology.

Pap smears	No. Normal		HPE								
	No.	%	Mild dysplasia		Moderate dysplasia		Severe dysplasia		Total		
			No.	%	No.	%	No.	%	No.	%	
Normal/inflammatory atypia	84	72	85.7	5	6	4	4.8	3	3.6	12	14.5
Mild dysplasia	8	7	87.5	1	12.5	-	-	-	-	1	12.5
Moderate dysplasia	3	1	33.3	-	-	2	66.7	-	-	2	66.7
Severe dysplasia	5	2	40	-	-	-	-	3	60	3	60
Total dysplastic smears	16	10	62.5	1	6.25	2	12.5	3	18.8	6	37.5

Table 5: Comparison of colposcopy with histopathology.

Abnormal colposcopy findings	No. of cases	Percentage	Histopathology			
			CIN I	CIN II	CIN III	Invasive carcinoma
Acetowhite epithelium	15	55.5	5	1	-	-
Punctate	8	29.6	3	3	1	-
Mosaic	4	14.8	-	1	3	-
Atypical vessels	-	-	-	-	-	-
Total	27	100	8	5	3	-

Normal findings were present in 3%, erosion cervix in 33%, inflammatory changes were seen in 18% and polyps were diagnosed in 2%, leucoplakia was found in 2% and unsatisfactory colposcopy finding was seen in 13%.

cervix. 4% had epithelial hyperplasia, 2% had polyp, 8% had mild dysplasia, 3% had moderate dysplasia, 3% had severe dysplasia and 2% had invasive cancer (Table 3).

All 100 cases were subjected to colposcopically directed biopsy. Majority of cases, 48% had chronic cervicitis, 26% had chronic cervicitis with erosion, 4% had erosion

Comparison of pap smear and colposcopy was done with histopathological changes (Table 4, 5 and 6).

Table 6: Predictive value of colposcopy with histopathology.

Colposcopy	HPE		Total
	Positive	Negative	
Positive-29	TP-14	FP – 15	29
Negative-71	FN-2	TN-69	73
Total	16	84	100

DISCUSSION

Cervical cancer is the second most frequent cancer worldwide, in women after breast carcinoma. However invasive cancer of the cervix was considered to be a preventable condition as it associated with a long pre invasive stage (CIN) making it amenable to screening and treatment. In the present study screening was done in 100 women with abnormal symptoms like excessive white discharge post coital bleeding, post-menopausal bleeding and women with dysplastic smears, with colposcopy and its result were correlated with pap smear and biopsy to determine the sensitivity and specificity of these methods in detecting CIN. Regarding age distribution, high incidence of CIN was found among the age group of 30-49 years with mean age 41 years which was seen 19% of cases. Kushtagi P et al and Fernands P et al, in their study showed the prevalence of CIN was higher in women over 30 year, while Vaidya showed in his study that CIN was more prevalent in the age group of >35 years.^{4,5} Shalini et al, showed the mean age patients with cancer cervix was 41 versus 32 in patients with benign pathology in cervix.⁶ Regarding parity, present study showed, increased incidence of CIN among multiparous women. 14.7% were para 2, 18.4% were para 3 and 15% were para 4 or more. Similar study by Shalini et al, showed the mean parity was 4.2 in patients with invasive cancer.⁶ Kushtagi P et al and Fernandez P et al, showed the prevalence of CIN was significantly higher in parity of more than 2, while Vaidya showed more positive cases of CIN were found with parity more than 4.^{4,5} This might be attributed to hormonal and nutritional changes that occur in pregnancy, immuno suppression during pregnancy, and cervical trauma during vaginal delivery by Adadevoh SW et al.⁷

Socio economic status had always been playing an epidemiological role in genesis of dysplasia. In present study, the incidence of CIN was found to be higher among the low-income group (21%) Vaidya A et al, had showed that low socio-economic status had a definite role on the development of dyskaryosis. In his study 80% of CIN I and 50% of CIN II were from the low-income group. Poor personal hygiene, poor living conditions, unstable marriages, and early age at first intercourse are factors associated with both low socio-economic conditions and cervical cancer.⁵

Regarding the literacy, CIN was more prevalent among the illiterates, in present study, 69% (11 out of 33) of CIN was found among the illiterates. This was attributed to

lack of awareness of symptoms and failure to seek medical care. Duration of marriage and duration of exposure to sexual intercourse had a distinct role in genesis of cervical dysplasia. In present study, the incidence of CIN was 22 % in women were married for 11-20 years, and 25% among women who were married for > 20 years. Kushtagi P et al, had demonstrated the severity of underlying CIN increased with increase in the duration of marital life and hence the increase in the duration of sexual intercourse.⁴ Among the complaints, majority of women (59%) complaint of excessive white discharge per vagina. Among them CIN was found in 16.9% (10/59) Excessive vaginal discharge playing a role in contributing to the development of CIN was also proved to be a risk factor in the study conducted by Vaidya et al, in their study, 24% had vaginal discharge.⁵

Neerja B et al, studied evaluation of adjunctive tests for cervical screening in low resource settings and found presenting complaint was vaginal discharge in 80 women, irregular vaginal bleeding in 13 women and post coital bleeding in one woman. Unhealthy cervix was seen on speculum examination in 38 women and prevalence of biopsy-confirmed high-grade and low-grade SIL did not differ within the different age groups: three cases of HSIL and one of LSIL were found in the age group of < 40 year and the majority (9/15) of HPV positive women belonged to the age group of < 40 years.⁸ Post coital bleeding was found in 8% (8/100) of cases. Among them CIN was found in 37.5% (3/8), Shalini R et al, in their study showed the relationship of post coital bleeding and CIN.⁶ In their study, among the women who had post coital bleeding, 85.5% had benign findings, 5.6% had HPV and CIN I, 3.6% had CIN II and III and 55% had invasive cancer. There was no correlation between the duration of bleeding and pathology. Among those with intermenstrual bleeding, 8.3 % (1/12) had CIN. Among those with post-menopausal bleeding 28.6% (2/7) had CIN. Pimple SA et al, studied evaluation of colposcopy versus cytology test.⁹ A total of 8863 healthy women in the age group of 35-65 years participated in the cervical cancer early detection program. The colposcopic impression was benign in 977 (50.6%) women, condylomatous changes in 82 (4.2%), CIN1 changes in 653 (34%), CIN2-3 in 166 (8.6%), and invasive carcinoma in 53 (2.7%). Conventional cytology was found to be normal in 1762 (91.2%) women, ASCUS were seen in 31 (1.6%), low-grade squamous intraepithelial lesion (LGSIL) in 32 (1.6%), HGSIL in 72 (3.7%), and invasive cancer in 32 (1.6%). Histopathology findings were reported as benign in 1576 (81.6%), atypia or HPV changes in 80 (4.1%), CIN1 in 113 (5.8%), CIN2 in 56 (2.9%), CIN3 in 50 (2.6%), and invasive carcinoma in 56 (2.9%).

Regarding the clinical appearances of cervix, the most common finding was erosion cervix where the squamous epithelium of ectocervix was replaced by the columnar epithelium of endocervix. Erosion was seen in 56% (56/100), rest of patients showed congestion in 19%

Hypertrophy with congestion seen in 7% Hypertrophy with erosion was seen in 14% and polyp was found in 2% of cases. CIN was found in 12.5% (2/16) in women who showed congestion, 16.1 (9/56) in women who showed erosion and 28.6% in women with hypertrophy+ congestion and 21% in women with hypertrophy+ erosion.

A 5% acetic acid application produces suspicious areas in 29% (29/100) cases. Among them, acetowhite areas without any vascular pattern were found in 17. %, punctuate pattern was seen in 8% and 4% showed mosaic pattern. Among those with acetowhite areas, 37.5% (6/16) were found to be CIN positive. Among those with dense opaque acetowhite areas, 91% (11/12) had CIN. Londhe M et al, in their study showed VIAM had a sensitivity of 72.4% and a specificity of 54% and a false negative rate of 15.2%.¹⁰ Lugol's iodine application produced iodine positivity in 27%. Among them, none had CIN. CIN was found in 25% (4/16) in partial iodine positivity and 75% (12/16) in iodine negativity. Pap smear was taken for all cases. It showed mild dysplasia in 10%, moderate dysplasia in 3% and severe dysplasia in 3%. Pap smear correctly estimated CIN in 78% and underestimated in 10% and overestimated in 12% (false positivity). Sensitivity of pap smear was found to be very low-29% compared to its specificity which was 88%. This was attribution to the high number of false negative smears. Sensitivity and specificity of pap smear by various authors. This data suggested that with colposcopy as a screened tool, the rate of false negative cytology could be significantly reduced. Colposcopy enhanced cervical screening particularly in women with otherwise negative smears,

Correlation between cytology and HPE was poor as far as mild dysplasias were concerned. But the correlation was good for moderate and severe dysplastic lesions.

Correlation between colposcopic findings and biopsy showed a good correlation for higher grade lesions (CIN II and CIN III). Sensitivity was found to be 83% and specificity was 81%. This showed a high sensitivity and a low specificity when compared to Pap smear. Low specificity when compares to pap smear was due to the high incidence of unsuspected acetowhite epithelium which might be to inflammation, immature metaplasia, and latent HPV infections. Out of 17 cases which showed AW areas without any vascular pattern only 5 were confirmed by biopsy.

Sensitivity and specificity of colposcopy by various authors colposcopy and biopsy were positive in 14 out of 16 (87.5%) cases while pap smear and biopsy were positive were positive in only 6 out of 16 (29.4%) cases. This indicated the usefulness of colposcopy in diagnosing lesions missed by pap smear. Sukhpreet LS et al, studied comparison of colposcopy and papanicolaou smear and found that, colposcopy was more sensitive (95%) than the Papanicolaou smear (20%), whereas its specificity was

only 63.75% compared to 91.25% of the Papanicolaou smear.¹¹ The predictive value of both the tests were comparable, i.e., 36% for Pap smear and 39.58% for colposcopy. The false negative rate for colposcopy was only 1.92% compared to 17.98% for Pap smear, whereas the false positive rates were almost the same for both the tests in this study. Olaniyan OB et al, did meta-analysis of eight longitudinal studies and compared the correlation of colposcopy impression with biopsy results.¹² Colposcopy accuracy was found to be 89% which agreed exactly with histology in 61% of cases. In the present study, the accuracy colposcopic impression was found to be 82%. Massad LS et al, reported an accuracy of 80%.¹³

CONCLUSION

Colposcopy was found to be useful in understanding the morphology of the cervical lesion, both of the neoplastic and nonneoplastic ones and was very helpful in planning their management. Cytology is an accepted method for screening for cervical cancer and the value of colposcopy has been recognised, mainly in the evaluation of patients with abnormal cervical smears, because of the low sensitive and the false negative cytology and poor compliance for follow up. So, it has been felt that apart from cervical smear evaluation, colposcopy should be offered as a diagnostic method in all patients with unhealthy cervix.

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