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Original Research Article

Comparative study of pap smear and colposcopy guided biopsy in a district medical college

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ABSTRACT

Background: Cancer cervix is the second most gynaecological and in India, one in fifty women suffer with cancer cervix and hence intense screening is mandatory.
Methods: This prospective study was conducted in SVS Medical College, a district tertiary centre. 100 women who presented to gynaecology outpatient department who fulfilled all the inclusion criteria were subjected to pap smear and colposcopic guided biopsy. The data was correlated and compared to critically evaluate the sensitivity and specificity of colposcopy versus Pap smear in the early detection of dysplasia.
Results: Colposcopy has far better sensitivity than Pap smear and almost negligible difference in specificity.
Conclusions: Colposcopy is definitely more sensitive and accurate than pap smear and can be included as the primary screening in district hospitals as a primary screening tool in detecting cancer cervix.

Keywords: Cervix, Screening, Pap smear, Colposcope, Biopsy

INTRODUCTION

Cancer cervix accounts for 80% of female genital tract cancers in India. Invasive cancer cervix is considered to be a preventable condition, since it is associated with a long pre-invasive stage (cervical intraepithelial neoplasia (CIN)), making it amenable to screening and treatment. Pap smear has been playing a great role in screening women in cancer cervix. Colposcopy until today was used only as a selective screening tool and not as routine or primary screening method.[1] Use of colposcopy as a selective screening procedure has been indicated in the following conditions such as squamous or glandular abnormalities on pap, inflammatory cells despite treatment, keratinised cells, visual inspection of the cervix with acetic acid (VIA), visual inspection of the cervix with Lugol's iodine (VILI) positive status, positive screening of high risk human papillomaviruses (HPV) DNA test, post coital bleeding /postmenopausal bleeding, unhealthy cervix or vagina suspicious of malignancy, treatment of women with CIN, monitoring of women treated for CIN, anogenital condylomas and subclinical HPV infection, St IA or B CaCx to know vaginal involvement and vulvar intraepithelial neoplasia (VIN) or vaginal intraepithelial neoplasia (VAIN).

This study was conducted to see the efficacy of colposcopy in comparison to the routine pap smear in routine gynaecological set up in district hospitals.

METHODS

Colposcope is the material used. Simple colposcope with magnifications 5X, 10X and 20X with inbuilt green filter and focal distance of 25 cm to 30 cm was preferred along with the cotton swabs, 3-5% acetic acid, Lugol's iodine,

equal quantity of 95% ethanol and ether for pap smear and other routine instruments of gynaecology outpatient department (OPD) were kept ready.

Inclusion criteria

Patients whose ageis between 20-70 year, 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, cervicovaginitis, cervical polyp, condylomas etc. and atients with pap smears showing dysplasia.

Exclusion criteria

Women with age >70 years and <20 years, patients with frank bleeding P/V at the time of examination and reviewed after the bleeding stopped, women with frank invasive cancer, women who underwent total hysterectomy for benign indications and pregnant women.

After obtaining informed consent and counselling 100 women who came to OPD and were fitting into the inclusion criteria were selected and after local examination and colposcopic examination, pap smear was obtained and smeared onto slide and transferred into Koplik's jar, followed by examination of cervix with colposcopy using NS first followed by 3-5% acetic acid and green filter and Lugol's iodine. The findings were recorded in Odel'sdiagram, Reid's score was given and was followed by colposcopic guided biopsy from abnormal area and sent for HPE.[3] In this process of undergoing the study, patients were counselled and due Ethical standards were maintained as to the information, procedure and secrecy.

RESULTS

Among 100 women, 13% were between 20-29 years, 38% were between 30-39%, 31% belonging to 40-49 years group and 18% were between 50-59%.

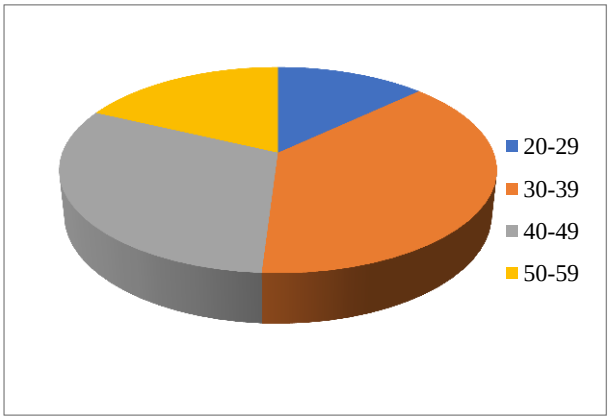

Figure 1: Age distribution.

Table 1: Complaints.

Complaints	Total cases (n=100)	CIN cases (n=17)	
		N	%
White discharge	56	12	21.4
Post coital bleeding	7	2	28.5
Intermenstrual bleeding	11	1	9.09
Post-menopausal bleeding	5	2	40.00
Loss of weight	5	-	-
Others	16	-	-

The incidence of CIN was 6% in para 1 and low when compared to multipara where there was incidence from 30–40%.

The common complaints were white discharge and bleeding per vagina which was either post coital, intermenstrual or of postmenopausal type. Out of them 56% of women who complained of white discharge, 21.4% had CIN. Of the 7% who c/o post coital bleeding 28.5% had CIN. 11% had intermenstrual bleeding, among them 9% had CIN. 5% had postmenopausal bleeding out of them 40% had CIN. 21% women also had non gynaecological complaints and among them none had CIN.

Clinical appearance of cervix

When cervix was visualized using a speculum, the appearance were atrophy in 2% hypertrophy with erosion in 12%, hypertrophy with congestion in 6% and erosion cervix was found in majority 59% of patients.[1] Polyp was found among 5% of cases. Among women with erosion cervix 12.5% (10/59) had CIN. Among those with congestion alone 16% (2/16) had CIN. Among those with hypertrophy and congestion, 33% were found to have CIN, and in those who had hypertrophy with erosion 25% (3/12) had CIN. All polyps were benign**.**

PAP smear was taken for all patients.5% of smear were found to be normal,80%showed inflammatory atypia,10% showed mild dysplasia 3% showed moderate dysplasia and 2% showed severe dysplasia. Flat AW areas with sharp margins within the transformation zone indicated immature metaplasia or low grade CIN. Among those with flat AW areas, 35.2% (6/17) had CIN. Among those with dense opaque AW area, 91% (11/12) had CIN

Mature squamaous epithelium stained deep brown with Lugol's iodine, called Iodine positivity was found in 24% of cases. Among them none had CIN. Iodine partial positivity was found to be 46% speckled or variegated appearance within an area of slight AW area change might be due to immature metaplasia, regenerating epithelium, or CIN1. Yellow colour within an area of

dense AW was highly suggestive of CIN2/CIN3. Iodine negativity was found in 30% representing columnar epithelium, atrophy, inflammation or CIN. Among them 40% (12/30) had CIN.

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. Normal findings were present in 3%, Erosion cervix in 31% inflammatory changes were seen in 16% and polyps were diagnosed in 5%, leucoplakia was found in 2% and unsatisfactory colposcopy finding was seen in 14%.

All 100 cases were subjected to colposcopicaly directed biopsy. Majority of cases, 71% had chronic cervicitis, 4% had acute cervicitis with erosion, 3% had normal cervix. 5% had polyp, 8% had mild dysplasia, 5% had moderate dysplasia, 4% had severe dysplasia.

DISCUSSION

Cervical cancer was 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, postmenopausal bleeding etc, women with unhealthy cervix, 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 were found among the age group of 30-49 years with mean age 41 years which was seen 19% of cases. Kushtagi and Fernandes, in their study showed the prevalence of CIN was higher in women over 30 year.[4] Vaidya showed in his study that CIN was more prevalent in the age group of >35 years.[5]

Regarding parity, our study showed, increased incidence of CIN among multiparous women, 35-40%. Similar study by Shalini et al showed the mean parity was 42 in patients with invasive cancer.[6] Kushtagi and Fernandez showed the prevalence of CIN was significantly higher in parity of more than 2 Vaidya showed more positive cases of CIN were found with parity more than 4 this might be attributed to hormonal and nutritional changes that occur in pregnancy, immuno suppression during pregnancy, and cervical trauma during vaginal delivery.[5]

Among the complaints, majority of women (56%) complaint of excessive white discharge per vaginum. Among them CIN was found in 21.4% (12/56). 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.[10] In their study, 24% had vaginal discharge. Post coital bleeding was found in 7% (7/100) of cases. Among them CIN was found in 28.6% (2/7) Shalini 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 CIN2 and CIN3 and 55% had invasive cancer. There was no correlation between the duration of bleeding and pathology. Among those with intermenstrual bleeding, 9.09 % (1/11) had CIN. Among those with post-menopausal bleeding 40% (2/5) had CIN. 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 59% (59/100), rest of patients showed congestion in 16% Hypertrophy with congestion seen in 6% Hypertrophy with erosion was seen in 12% and polyp was found in 5% of cases. CIN was found in 16.9% (2/16) in women who showed congestion, 12.5% (10/59) in women who showed erosion and 33.3% in women with hypertrophy with congestion and 25% in women with hypertrophy with erosion.

Pap smear was taken for all cases. It showed mild dysplasia in 10%, moderate dysplasia in 3% and severe dysplasia in 2%. Pap smear correctly estimated CIN in 78% and underestimated in 10% and overestimated in 12% (false positivity).

Table 2: Sensitivity and specificity of pap smear by various authors.

S. no.	Authors	Sensitivity	Specificity
		N (%)	N (%)
1	Londhe et al[7]	13.2	96.3
2	Shalini et al[6]	56	90
3	Basu et al[1]	29.5	92.3
4	Pete et al[8]	47	77
5	Sukhpreet et al[9]	20	91.25
6	Present study	29.4	87.9

Sensitivity of pap smear was found to be very low 29.4% compared to its specificity which was 87.9%. This was attribution to the high number of false negative smear.

This data suggested that with colposcopy as a screened tool, the rate of false negative cytology could be significantly reduced with 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 compared to pap smear was due to the high incidence of unsuspected AW 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.

Colposcopy and biopsy were positive in 14 out of 17 (82.4%) cases while pap smear and biopsy were positive were positive in only 5 out of 17 (29.4%) cases. This indicated the usefulness of colposcopy in diagnosing lesions missed by pap smear. Olaniyan et al, did a meta-analysis of eight longitudinal studies and compared the correlation of colposcopy impression with biopsy results. 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%. Despite pap smear being an easy procedure colposcopy and guided procedures still has a better sensitivity and specificity. It is also a one stop screening in district hospitals in India, where women need not be called for a follow up visit just for procedure to confirm any abnormal pap screening.

CONCLUSION

This study was a prospective study conducted in the Department of Obstetrics and Gynaecology during the period from October 2016 to September 2018 in 100 women who fulfilled the inclusion criteria. 100 randomly women attending the Gynaecology OP were selected. Colposcopy, Pap smear and biopsy were done for all the cases after proper counselling. The result was tabulated and analysed. Majority 70.5% i.e., (12/17) of CIN occurred in the age group of 30-49 years. Pap smear had a sensitivity of 29% and a specificity of 88% which was attributed to the high number of false negative smears. Colposcopy showed a sensitivity of 82% and a specificity of 81% Sensitivity was more than pap smear but specificity was less than pap smear. Accuracy of colposcopy was found to be 82% which was comparatively more accurate than pap smear (78%).

Early diagnosis of CIN in adult women is a desirable goal. CIN lesions and early invasive cancers should be diagnosed in an earlier stage for instituting appropriate management. Invasive cancer of cervix is considered to be preventable since it is associated with a long pre-invasive stage (CIN) making it amenable to screening and treatment. From the results of this study, it is evident that colposcopy is definitely more sensitive and accurate than pap smear. By combining pap smear with colposcopy, we can maximise the sensitivity and specificity of cancer cervix screening.

Hence, primary colposcopy may be incorporated into genito urinary tract screening at first visit.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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