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Evaluation of Abnormal Cervix with Visual Inspection under Acetic Acid and Colposcopy

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ABSTRACT

Background: Cervical cancer is a major public health problem especially in developing countries. It can be prevented through implementation of routine screening program. There are different screening methods but their efficacy are still questionable. So the purpose of this study is to evaluate the efficacy of visual inspection of cervix with acetic acid and colposcopy to detect precancerous lesion in women with clinically unhealthy or abnormal cervix.

Methods: Forty patients with abnormal cervix (35) and abnormal pap smear results (5) were enrolled for the study in outpatient department of Kathmandu Model Hospital. Patients were evaluated with visual inspection of cervix with acetic acid and colposcopy in the same sitting. Cervical punch biopsy were taken from suspected lesion or from four quadrant if colposcopy findings were normal and sent for histopathological examination. The finding of visual inspection of cervix with acetic acid and colposcopy were correlated with histopathological finding and compared with each other.

Results: The age of participants ranged from 24 to 68 years with mean age of 38.17 years and mean parity of 2.25. visual inspection of cervix with acetic acid and colposcopy were positive in eight (20%) and ten (25%) respectively. There were five (12.5%) cases of histopathologically proven lesion. The sensitivity of visual inspection of cervix with acetic acid and colposcopy were 80% and 100 % respectively and that of specificity were 88.5% and 85.5%.

Conclusions: visual inspection of cervix with acetic acid is an effective screening tool with comparable sensitivity and specificity. It can be used as alternative screening methods especially in low income resource countries where the burden of disease is high.

Keywords: Cervical cancer; Colposcopy; screening; VIA.

INTRODUCTION

Five million new cervical cancers are detected each year causing 266,000 deaths world-wide of which 80% occurs in developing countries like Nepal.[1] It has long precancerous phase before it develops into invasive cancer. Routine screening programme has reduced its mortality by more than 70% in developed countries.[2] Visual inspection of cervix with application of 5% acetic acid (VIA) and with lugol's iodine (VILI), papanicolaou's smear test (PAP smear), liquid based cytology (LBC), human papilloma virus deoxyribonucleic acid test (HPV DNA) and colposcopy are different methods for its screening. VIA is a simple and cost-effective test which can be performed by all level of health workers. Colposcopy and biopsy is the gold standard but is expensive and needs skilled manpower. We aimed to compare the efficacy of VIA with colposcopy in detecting precancerous lesion in patient with clinically unhealthy cervix and to correlate with histopathological findings.

METHODS

This cross sectional study was carried out in the outpatient department (OPD) of Obstetrics and Gynaecology of Kathmandu Model Hospital, Nepal during August to October, 2018. Ethical approval was obtained from the Institutional Review Committee of phect-Nepal/ Kathmandu Model Hospital. Forty married women with clinically abnormal or unhealthy cervix suspicious for cervical cancer, history of post-coital bleeding, intermenstrual bleeding and postmenopausal bleeding and women with abnormal PAP smear/ LBC result were enrolled in the study. Pregnancy and patient with frank invasive cervical cancer were excluded. Patients were explained about the purpose, risks and benefit of the

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procedure and informed consent was taken. VIA and colposcopy were conducted in the colposcopy room by principle investigator myself. Patient was placed in lithotomy position. Under good light source and aseptic precautions, self-retaining bi-valve Cusco's speculum was inserted to visualize the cervix. Cervix was then smeared with 5% acetic acid and observed after one minute. Any aceto-white lesion with distinct margin in the transformation zone touching the new squamo-columnar junction was regarded as positive and reported as VIA positive or VIA negative accordingly. In the same sitting, patient was subjected to colposcopy and cervix was visualized for aceto-white lesion under magnification. Then, cervix was smeared with Lugol's iodine solution and inspected with colposcopy. Finding of colposcopy was recorded and interpreted using Swede Score. Five parameter as aceto white lesion, margin or surface, pattern of vessel, size of lesion and iodine staining were taken in to account. Scoring was rated from 0, 1 and 2 for each finding with maximum score of 10.Swede score of 4 or less was regarded as negative colposcopy and score more than 4 was regarded as positive colposcopy for this study. So, any distinct aceto-white lesion on VIA and iodine non uptake area which appeared mustard or saffron yellow area with Swede score more than 4 was considered as positive case. Then, punch biopsy was taken from suspected lesion on colposcopy with punch biopsy forceps. And if VIA or colposcopy finding was normal (swede score 4 or less) then biopsy was taken from four quadrant of the cervix.Tissue was put into vial containing formalin solution with labelling identification for histopathological examination. Histopathological examination was performed by senior pathologists of the hospital who were unware about the VIA and colposcopy findings. Findings of VIA was compared with colposcopy and correlated with histopathological reports. Efficacy of VIA and colposcopy was calculated in terms of sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPPV).

RESULTS

Forty patients meeting the inclusion criteria were included for the study. The age of participants ranged from 24 to 68 years with mean age of 38.17 years. Majority of participants 57.5% belonged to age group 31-40 years (Table 1).

Twenty-six (65%) participants were married at the age of 20 years or below with mean age of marriage 19.22 years. Majority (42.5%) were para two with mean parity of 2.25 (Table 1).

Table 1. Age, age at marriage and parity of participants (n=40).

Variables		Number (%)
Age-group	20-30	7 (17.5%)
	31-40	23 (57.5%)
	41-50	6 (15%)
	51-60	3 (7.5%)
	61-70	1 (2.5%)
Age at marriage	15-20	26 (65%)
	21-25	12 (30%)
	26-30	2 (5%)
Parity	Zero	2 (5%)
	One	7 (17.5%)
	Two	17 (42.5%)
	Three	9 (22.5%)
	Four	4 (10%)
	Five	1 (2.5%)

Eleven (27.5%) participants were illiterate while 15 (37.5%) participants were literate i.e. those who have attended school education up to SLC and 14 (35%) had attained higher education i.e. above 12 class.

Five (12.5%) were smoker and twelve (30%) were using some form of contraception. Most common presenting complains were vaginal discharge in 17 cases(42.5%), pain in 13 cases (32.5%), followed by menstrual disorder in 7 cases(17.5%), post-menopausal bleeding and post coital bleeding in 1 case (2.5%) each.

Thirty-five (87.5%) had negative biopsy reports for malignancy out of which 31 (77.5%) had chronic cervicitis and 4 (10%) had chronic cervicitis with focal squamous metaplasia. Five (12.5%) had positive biopsy reports out of which three had CIN III, one had CIN II and the other had invasive carcinoma (Table 2). Non of them had CIN I.

Table 2.Histopathological reports.

Category	Number (%)
Chronic cervicitis	31 (77.5%)
Chronic cervicitis with focal squamous metaplasia	4 (10%)
CIN II	1 (2.5%)
CIN III	3 (7.5%)
Invasive cancer	1 (2.5%)

Eight (20%) patients were positive on screening with VIA and 4 (50%) of them had biopsy proven lesion. VIA missed a case of CIN II giving result of 80% sensitivity,

specificity of 88.5%, positive predictive value of 50% and negative predictive value of 96.87% (Table 3).

Table 3. Correlation of VIA with histopathological examination.

VIA	Biopsy positive	Biopsy negative	Total (%)
Positive	4	4	8 (20%)
Negative	1	31	32 (80%)
Total	5	35	40 (100%)

Finding of colposcopy was interpreted using Swede score. Thirty case (75%) had score of 4 or less which were considered to be negative colposcopy, 6 cases (15%) had score of 5-6 and 4 case(10%) had score 7 or more which were considered as positive colposcopy .

Table 4. Swede score on colposcopy.

Swede score	Number (%)	Interpretation
0-4	30 (75%)	Negative
5-6	6 (15%)	Positive
7-10	4 (10%)	Positive
Total	40 (100%)	

Ten (25%) participants were positive on colposcopy out of which 5 had biopsy proven lesion giving sensitivity of 100%, specificity of 85.5%, positive predictive value of 50% and negative predictive value of 100% respectively (Table 5).

Table 5. Correlation of colposcopy finding with biopsy.

Colposcopy	Biopsy positive	Biopsy negative	Total (%)
Positive	5	5	10 (25%)
Negative	0	30	30 (75%)
Total	5	35	40 (100%)

Fifteen (37.5%) participants had undergone prior screening with PAP smear out of which 3 had ASCUS, 1 had LSIL and rest were negative for cervical intraepithelial lesion. Two participants with PAP smear report as ASCUS and one as LSIL were negative both on VIA and colposcopy and on biopsy as well. One participant with ASCUS who was positive both by VIA and colposcopy had CIN III on cervical biopsy. Similarly a women who presented with post coital bleeding had CIN III on cervical biopsy.

DISCUSSION

Forty patients who had unhealthy cervix (35) on clinical examination and patient with abnormal pap smear (5) were included in the study. Majority (57.5%) belonged to age group 31-40 years which is the peak age for prevalence of cervical precancerous lesion with mean parity of 2.25 and mean age of marriage was 19.22 years. In a study done by Manisha et al,[3] most participants were from age 30- 50 years with mean age of 39.87 years with mean parity of 2.31 and mean age of marriage was 17.9 years which are comparable to my study.

Vaginal discharge (42.5%), pelvic pain (32.5%) and menstrual disorder (17.5%) were the most common presenting symptoms in our study which is comparable to study of Chaudhary et al[4] and Ramesh et al[5] where the vaginal discharge, pain abdomen and menstrual disorder were the common presentation in similar frequency. In this study most common pathology were chronic cervicitis with or without focal squamous metaplasia (87.5%). There were 5 cases of biopsy proven lesion with prevalence of 12.5% of disease among unhealthy cervix. Similar study was done by Chaudhary et al[4] in which they studied among 200 of unhealthy cervix. In their study the prevalence of positive lesion was 31.5% with 26.5% of CIN and 5% of invasive cervical cancer. Chronic cervicitis (68.5%) with or without metaplasia was the most common pathology which was comparable to our study. Ramesh et al[5] did a study of colposcopy among 80 women with unhealthy cervix. The prevalence of CIN was 30% which was high when compared to my study. Another study of Suguna et al[6] in which they did colposcopy among 200 women with unhealthy cervix, the prevalence of dysplasia was 32% which is higher when compared to our study.

In our study, VIA was positive in eight (20%) cases. This is comparable to study of Goyal et al[7] and Talathi et al[8] in which VIA was positive in 23.67 % and 27.5 % respectively. There were four cases of biopsy proven lesion and VIA missed a case of CIN II giving sensitivity, specificity of 80 and 88.5% with PPV and NPV of 50 and 96.87%. These findings are comparable to study by Manisha et al[3] and others (Table 6).

Table 6. Comparison of Efficacy of VIA with other studies.

Study name	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Present study	80	88.5%	50	96.87
Manisha et al[3]	95.24	44.49	45.45	95
Goyal et al[7]	86	40.4	66.18	68.18
Deodhar et al[9]	64.9	68.25	25	99
Ardahan et al[10]	85.2	68.25	85.29	68.79
Savita et al[11]	85	83.75		
Huy et al[12]	88.8	43.8	51.2	83.3

Colposcopy guided biopsy is considered as gold standard for diagnosis of cervical pre-cancerous and cancerous lesion. So in this study colposcopy guided biopsy was taken from suspected lesion or four quadrant biopsy if colposcopy finding were normal. Ten (25%) of the participants were positive on colposcopy out of which five had biopsy positive. The sensitivity, specificity, positive predictive value and negative predictive value were 100%, 85.5%, 50% and 100% respectively. Specificity and positive predictive value in this study were comparable but sensitivity and negative predictive value were high when compared to other studies (Table 7).

Table 7. Comparison of efficacy of colposcopy with other studies.

Study name	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Present study	100	85.5	50	100
Manisha et al[3]	90.49	67.44	57.58	93.55
Chaudhary et al[4]	69.37	81.02	65.79	89.52
Ramesh et al[5]	83.33	46.42	40	88.67
Suguna et al[6]	95.53	60.75	39.21	97.95
Krishnegowda et al[13]	94	91		

CONCLUSIONS

The prevalence of cervical lesion was 20% among unhealthy cervix. VIA is an effective screening tool with comparable sensitivity and specificity. It can be used as alternative screening methods especially in low income resource countries where the burden of disease is high.

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