

Prevalence and Management of CIN by Colposcopy among VIA Positive Cases in a Tertiary Level Hospital of Bangladesh

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ABSTRACT

Background: Cervical cancer is the second most common cancer among women in Bangladesh where CIN is the forerunner. Visual inspection of cervix with acetic acid (VIA) is adopted as national cervical cancer screening programme in Bangladesh. All positive VIA cases are evaluated by colposcopy.

Objective: This population-based study was conducted in Faridpur Medical College Hospital for 6 years (2013 - 2018) to evaluate the prevalence and performance of the clinic for colposcopic management of CIN.

Materials and Methods: A total of 2102 VIA positive cases were evaluated by colposcopy during the study period. International Federation of Cervical Pathology and Colposcopy (IFCPC) 2011 nomenclature was used for colposcopic diagnosis. Diagnosed CIN were treated accordingly.

Results: During the study period, 548 (26.1%) cases were colposcopically diagnosed as CIN. Among them, 370 (65.5%) were low grade squamous intraepithelial lesion (CIN-I) and 178 (32.5%) were high grade squamous intraepithelial lesion (CIN-II and III). Colposcopically diagnosed 237 (64.1%) of low grade squamous intraepithelial lesion (LSIL) and 132 (74.2 %) of high grade squamous intraepithelial lesion (HSIL) cases received treatment and histopathological confirmation. Treatment produces were used like thermocoagulation, Loop

Electrosurgical Excision Procedure (LEEP), biopsy, hysterectomy and post treatment follow up.

Conclusion: From this study, we got information about the demography and prevalence of CIN among VIA positive cases at the same time management of CIN to prevent invasive cervical cancer. We adopted 'See and treat' protocol for management, which is well accepted, feasible and useful in Bangladesh.

Keywords: Cervical Intraepithelial Neoplasia (CIN), Visual Inspection with Acetic Acid (VIA), Colposcopy, Loop Electrosurgical Excision Procedure (LEEP).

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INTRODUCTION

Cervical cancer is the second most common female cancer and the first one is the breast. It accounts for 25% of all female cancer causing 8% of total cancer deaths of women.¹ Approximately 70% of the cervical cancers occur in developing countries.² In Bangladesh, the yearly burden of cancer cervix is about 67,686.³ Every year an estimated 17,686 women are diagnosed as carcinoma cervix and 10,364 dies from the disease.⁴ Population-based cervical cancer screening was initiated in Bangladesh in 2004 as a pilot project and in 2005 as a national programme.⁵ 80% of cervical cancers are diagnosed in an advanced and

inoperable state.⁶ It can be prevented by effective screening programme. Visual inspection with acetic acid (VIA) is a simple and affordable screening test with acceptable sensitivity and specificity in the range of 56-77% and 64-86% respectively.⁶ Bangladesh is one of the first countries in the world where VIA has been adopted nationally to screen cervical cancer.⁷

Cervical cancer screening by VIA for its own advantages is adopted in low resource settings where there is limited access to HPV DNA testing or cytology screening.⁸ Risk factors for the development of cervical cancer are well known. Among them,

Human Papillomavirus (HPV) is the single most important causative factor. After that, socioeconomic status is important. In developed countries, population based screening has already been established by cervical cytology. Also, they have opportunity for primary prevention by vaccination against common high oncogenic HPV 16, 18 between 9-26 years of age.⁹ In developing countries like Bangladesh, due to the high cost of vaccine and other positive high risk socio-economic factors, primary prevention is still far away. So, emphasis has been given on secondary prevention by early detection and treatment of CIN.¹⁰

All sexually active women aging above 30 years or married for more than 10 years or having suspicious cervix on naked eye examination should have VIA for cervical cancer screening in Bangladesh. A VIA positive women should have colposcopic evaluation and biopsy followed by histopathology. The usual approach for treatment of CIN needs at least two visits, known as 'Select and treat' protocol. In developing countries due to more visits, 'failure to take treatment' is high, at the same time, increases the rate of dropout. On the other hand, 'See and treat protocol' is established, which is evaluated from several studies throughout the world and specially at Bangabandhu Sheikh Mujib Medical University (BSMMU) of Bangladesh.¹¹ BSMMU is the national coordinating centre responsible for treating, setting up new facilities and maintaining liaison between national health services and the major funding agency, UNFPA³, at the same time monitoring of all VIA and colposcopy centres.

Faridpur Medical College Hospital (FMCH) is a tertiary level hospital having a well organised and well-equipped VIA and colposcopy centre. VIA positive cases are referred from other VIA centres of the district and nearby other districts. Like other peripheral medical colleges of Bangladesh, Faridpur Medical College is also lacking expertise for histopathology, which is the main constraint of this study and for the treatment.

The primary objective of this study is to assess the prevalence of CIN among the VIA positive cases at the same time evaluating the performance of this colposcopy clinic in the prevention of carcinoma cervix. It is an audit to update clinical efficacy of colposcopy based diagnosis, treatment and follow up of CIN cases.

MATERIALS AND METHODS

This population-based study was conducted in Faridpur Medical College Hospital of Bangladesh. Study period was 06 (six) years from 2013-2018. All VIA positive cases were evaluated by colposcopy according to colposcopy method. Severity of CIN was assessed on the intensity of acetowhitening of epithelium, margins and surface contour of acetowhite areas, vascular features (punctatum, mosaic) and colour changes after application of iodine. IFCPC 2011 nomenclature was used for colposcopic diagnosis.

In this study period total 2102 VIA positive cases had their management by colposcopy. First of all, a brief history was taken from the patient and the procedure was explained. Every case was registered in 'Colposcopy register' supplied by BSMMU. Demography related to cervical cancer was well documented. The note of the lesson was described by a diagram with its colposcopic diagnosis like CIN I, II and III, or suspicion for invasive cancer, unsatisfactory (inconclusive) or normal (no lesion found). Modified Reid colposcopic index (RCI) was followed for

management. LSIL cases were treated by thermocoagulation, LEEP, biopsy taking and histopathological confirmation or kept for further follow up. HSIL cases were treated by LEEP or sometimes total abdominal hysterectomy due to their association with other gynaecological problems. Tissue taken by punch biopsy and by LEEP were sent for histopathology. In our set up, 'See and treat protocol' was mostly followed. Pre-procedure counseling regarding the advantages and probable complications of single visit treatment was discussed with the patient and their guardians. Those cases having suspicion for invasive cancer, biopsy was taken and later on treated accordingly.

VIA positive but colposcopically normal cases were advised for follow up after 1 year by colposcopy.

In this study, all the data were collected from 'Colposcopy register' supplied by the Government. Same information was supplied to the patient by colposcopy card.

Data were screened, grouped, and analysed by SPSS version 23. Frequency and percentage were determined for comparative purpose.

RESULTS

During the study period total 2102 VIA positive cases had their colposcopy in our clinic.

Table 1 shows demography of the VIA positive cases. Among 2102 women, 24% were <30 years, 66.7% (majority) were between 30-45 years and 9.2% (least) belonged to >45 years. Although majority of the cases belonged to the age group of 30-45 years, a large number of women (24%) were in the age group <30 years.

Majority of the women had their primary or secondary education (56.5%), 36.6% women were illiterate and the least number of women (6.9%) had higher secondary education or above.

In our study, majority (60.6%) of the cases belonged to middle class on the basis of their monthly family income. 23.3% were from lower middle class and rest of the 16.2% were from higher middle class.

Demography was also analysed separately among the CIN cases, which is almost same as VIA positive sample population.

Table 2 shows colposcopic diagnosis of the VIA positive cases. Majority of the cases (70.3%) were colposcopically diagnosed as normal. Rest of the 29.7% cases had abnormal colposcopic findings. 17.6% were diagnosed as CIN-I, 7.1% as CIN-II, 1.3% as CIN-III, 2.6% as carcinoma cervix and 1.1% colposcopic impressions were unsatisfactory. During the management, CIN-I was documented as LSIL which was 17.6% and CIN-II and CIN-III as HSIL which was 32.7%.

Table 3 shows the obstetric history and their relational significance with CIN. It shows that the mean age of CIN cases is 33.46 years where SD is 7.350 years and the correlation of CIN cases with the age is significant at the 0.01 level. Parity of the cases also shows significant correlation with CIN.

Although the legal lowest age of marriage in Bangladesh is 18 years, we found the mean age of marriage is 16.42 years with a SD of 2.826 years. Due to early age of marriage, it is expected that the age of first child delivery will be early and it is also reflected in our study that the mean age of first delivery is 18.49 years with a SD of 2.925 years. But we did not find any statistical significance with the age of marriage and age of first delivery in the diagnosis of CIN. More than half (56.8%) of the LSIL patients

were managed by LEEP (Table 4). 34.6% cases were advised for follow-up, 7.3% patient were treated by local ablative method, 0.3% were referred and the same percentage of patients failed to receive treatment. 0.8% patients were suggested for hysterectomy as they had associated other gynaecological problems.

As for the patients with HSIL, majority of them (73.6%) were managed by LEEP (Table 5). 6.2% cases were referred to higher centres, 4.5% patients failed to receive treatment, 0.6% patients were advised for follow up and 14% of them were suggested for hysterectomy for having associated other gynaecological problems.

64.1% cases with LSIL and 74.2% of the HSIL cases received their treatment form this institution (Table 6).

Histopathological reports were available in 452 (72.3%) cases. Result showed LSIL in 24.8%, HSIL in 15.7%, squamous cell carcinoma in 9.9% and inflammatory cervicitis in 21.9% cases. Reports were not available in 27.7% cases. Colposcopic diagnosis of LSIL and HSIL had a positive predictive value of 41.9% and 55.1% respectively (Table 7).

Table 1: Demography of the VIA positive cases

Characteristic	n	%
Age (years)		
<30	505	24.0
30-45	1403	66.7
>45	194	9.2
Education		
None	769	36.6
Primary and secondary	1188	56.5
Higher secondary and above	145	6.9
Monthly family income (Taka)		
<10,000 (lower middle class)	489	23.3
10,000-20,000 (middle class)	1273	60.6
>20,000 (higher middle class)	340	16.2

Table 2: Colposcopic diagnosis

Colposcopic impression	n	%
Normal	1477	70.3
CIN-I	370	17.6
CIN-II	150	7.1
CIN-III	28	1.3
Carcinoma Cervix	54	2.6
Unsatisfactory	23	1.1
Total =	2102	100%

Table 3: Obstetric history in co-relation to the colposcopic diagnosis

Characteristic	Mean	SD	P-value
Age	33.46	7.350	0.000
Para	2.35	1.14	0.003
Age of marriage	16.42	2.826	0.226
Age of first child delivery	18.49	2.925	0.241

Table 4: Management taken for the patients diagnosed as CIN-I (LSIL):

Managements	n	%
Advised for follow up	128	34.6
Local ablative method	27	7.3
LEEP done	210	56.8
Referred	1	0.3
Failure to receive treatment	1	0.3
Suggested for hysterectomy	3	0.8
Total	370	100.0

Table 5: Management taken for the patients diagnosed as CIN-II and CIN-III (HSIL):

Managements	n	%
Advised for follow up	2	1.1
Local ablative method	1	0.6
LEEP done	131	73.6
Referred	11	6.2
Failure to receive treatment	8	4.5
Suggested for hysterectomy	25	14
Total	178	100.0

Table 6: Patients received treatment

Colposcopic diagnosis	n	%	
LSIL	370	237	64.1
HSIL	178	132	74.2

Table 7: Co-relation between abnormal colposcopy findings and histopathology.

Histopathological impression	n	%	PPV
LSIL	155	24.8	41.9
HSIL	98	15.7	55.1
Squamous cell carcinoma	62	9.9	
Inflammatory/ cervicitis	137	21.9	
Reports are not available	173	27.7	

DISCUSSION

Bangladesh is one of the first countries that has introduced VIA based screening for early detection of cervical cancer. Cervical cancer accounts for about 25% of female cancers. Death due to cervical cancer is closed with that of maternal death in this country. To reduce the disease burden, effective screening programme is very important. Due to resource-constrain, it is not possible to introduce cytology based screening.

In a centre based study by BSMMU, it is found that, VIA positive is 4.8%. Which is at the lower range of the test positivity reported in other VIA studies in Asia and Africa.¹²⁻¹⁶

In our study group prevalence of CIN in VIA positive cases is 26.1% (548 out of 2102). In another study by Nessa A.et al. mentioned the colposcopic positivity was 52.3%. This study was done in the highest referral centre of Bangladesh. But other tertiary hospitals show the colposcopic positivity 22.1% by Jesmin

ZF, Khanam A et al. and 28% by Jesmin S, Paul SN et al. which is comparable to our study. Our study reveals the performance characteristics of colposcopy in a non-cytology based screening centre. The accuracy of colposcopy reported in different study varies widely depending on the clinical setting, indications for the referral, the prevalence of HSIL and histopathological facilities and skill.²⁰ Colposcopy is inaccurate in perfectly categorising the grade of CIN. In our study, histopathological correlation is 46%. Massad LS, Collins YC et al. observed perfect agreement between colposcopic impression and biopsy is only 37%.²¹ Ghosh I, Mittal Set al. described the histopathology correlation to be 40.3%.²⁰ In this study among 548 CIN cases, 67.5% were LSIL and 32.5% HSIL. Another study by Jesmin ZF, Khanam A et al. shows CIN-I 60.6% and CIN-II and III 39.4% which is almost same to our study. 64.1% of LSIL and 74.2 % of HSIL patients received treatment from this centre. Positive predictive value of LSIL is 41.9% and for HSIL was 55.1% in our study which is comparable to other study such as 53% in LSIL and 63% in HSIL by Jesmin ZF, Khanam A et al. Another study 70% for LSIL and 62% for HSIL by Shahida SM, Mirza TT et al. LSIL is reversible but HSIL is true cancer precursor. So, we should give more emphasis to treat high grade lesion. Though VIA and colposcopy is not a method to diagnose invasive cancer, opportunistic diagnosis of invasive cancer was 54 (2.6%).

This result is comparable to other studies of our country as 1.4% by Jesmin ZF, Khanam A et al. and 1% by Jesmin S, Paul SN et al. This indicates that many of the patients having carcinoma cervix are still not diagnosed, which indirectly points to the burden of the disease.

Cervical cancer screening program is for the sexually active women aging above 30 years. Lowest legal age of marriage is 18 years in our country. From this study, it is observed that the mean age of marriage of CIN cases is 16.42 years having their first child at mean the age of 18.49 years. It is alarming that 27.4% of the CIN cases are aging below 30 years. Two colposcopic views are added where one woman is only 19 years old, married for 2 years, nulliparous and colposcopically diagnosed as CIN-II (Figure 1). Another woman, 22 years old, married for 3 years in her early pregnancy colposcopically diagnosed as CIN-II (Figure 2). So, during the screening and treatment, individualization of the cases is important.

This study showed 25 (14%) of the patient having HSIL were suggested for hysterectomy as they had other associated gynaecological causes. A significant number of HSIL 8 (4.5%) failed to receive treatment. Which indicates lack of pre-procedure counselling by some colposcopist, lack of awareness and fear of developing cancer. They defer taking local treatment rather interested for total abdominal hysterectomy.



Figure 1: 19 years old nulliparous women colposcopically diagnosed as CIN-II

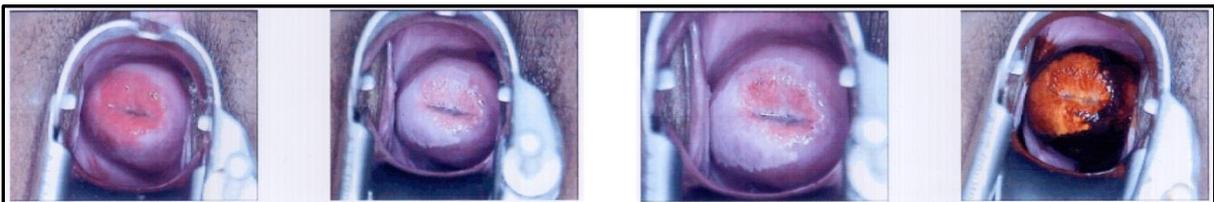


Figure 2: 22 years old pregnant women colposcopically diagnosed as CIN-II.

CONCLUSION

In developing countries like Bangladesh, adequate coverage of the total female population by cervical cytology is not feasible at present. Also, women are not complaint for follow up visits. In such situation, VIA is suitable for primary screening and all VIA positive cases should have secondary screening by colposcopy and biopsy. Colposcopy is the gold standard for diagnosis of CIN and colposcopy based management can reduce the incidence of carcinoma cervix by 75%. We should extend our screening program and that should be population-based.

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