

Original article

Early detection of cervical intraepithelial lesions by simple visual inspection after acetic acid among women in Rajshahi medical college hospital

Yusuf N¹, Islam F², Akhter H³, Ali MA⁴, Khanam JA⁵

Abstract

Aim: To evaluate the performance of visual inspection of acetic acid (VIA) in the detection of precancerous and early cancerous lesions of cervix. **Materials and methods:** Total 5593 eligible women who randomly came to the Gynaecology out patient department (OPD) of RMCH (Rajshahi Medical College Hospital) were examined by VIA. Detection of well defined, opaque, acetowhite lesions close to the squamocolumnar junction or in transitional zone or dense acetowhitening of ulceroproliferative growth on the cervix constituted a positive VIA. Those who had abnormal results in screening test & those who had clinically suspicious lesions were sent for colposcopic evaluation (n= 442) & directed biopsy were taken from colposcopically suspected areas (n=214). The final diagnosis was based on histology. **Results:** Out of 5593 patients, 442 (7.20%) were VIA positive. 442 patients were colposcopically evaluated. Among them, 228 (51.58%) were normal and 202(45.70%) had different stages of cervical intraepithelial lesions (CIN) and 12 (2.71 %) had carcinoma of cervix. Out of 214 patients biopsied, 23.36 % patients had a final diagnosis of CIN lesions, 5 (2.33%) had carcinoma in-situ & 17 cases (7.94%) had invasive carcinoma. Besides to find out the predictable factors of cervical lesions data have been collected from VIA positive patients regarding age of first coitus and first delivery, history of extra marital exposure and STI, use of contraceptive methods and family history of cancer. Age of first coitus between 12 to 15 years and 16 to 20 years were observed among 203 (46 %) and 40 % (177) women respectively. More than half of the patients (62%) were experienced with their first delivery within the age 15-20 years which was below 15 years of 12 % (53) patients. Fifty four percent patients used OCP and barrier methods used were only 10 %. Family history of cancer was observed among 09 % women. 58% patients were belonged to lower middle class and upper group were only 9% (table 1) **Conclusion:** In our study detection of different grades of intraepithelial lesions (CIN-I, CIN-II, CIN-III, invasive carcinoma) of cervix by VIA was comparable to that of colposcopy. So VIA is suitable for detection of precursor lesions of cervical cancer in low resource settings and also for diagnosis, follow up treatment and epidemiological studies of cervical cancer.

Key words: Visual inspection, VIA, cervical carcinoma, colposcopy, screening, epidemiological studies.

Introduction

Cervical cancer is the most important cause of malignant deaths in females of Bangladesh & has annual incidence about 11956¹. The scenario is alike that of other developing countries where effective screening program is not established. Among the total global cancer cervix (4, 68000) 80% occurs in developing countries². Despite its public health importance, there is no effective prevention program in most developing countries & hence the risk of disease & death from cervical cancer remains largely uncontrolled. Cervical cancer is usually preceded by a long phase of cytological changes, known as Cervical Intraepithelial Neoplasia (CIN) & takes a long period of 10-15 years before the invasive cancer develops³. Thus cervical cancer can be prevented if cellular changes are detected & treated in early

stage. In the Western countries cervical cancer incidence & deaths have been brought under control using organized cytology based screening programs^{4,7}. Cytology based screening (Pap's) is effective but costly, needs technical supports & good number of cytopathologists⁸, so by no means it could be a screening method in low resource settings. Hence, in search of easy, low cost & effective method of early detection of cervical cancer, investigators have developed a novel affordable diagnostic tool such as VIA based on the concept that the majority of pre-invasive and invasive cervical lesions are visible by naked eye observations⁹. Several recent studies testing VIA suggest that it closely matches the pap smear¹⁰ and others reported that it is comparable to both VIA and pap smear¹¹ or several weakness have been revealed¹². Particularly high rate of false posi-

1. Dr. Nahid Yusuf, Assistant Professor, Department of Obs & Gynae, Rajshahi Medical College, Rajshahi.

2. Md. Farhadul Islam, Lecturer, Department of Biochemistry and Molecular Biology, University of Rajshahi, Bangladesh.

3. Dr. Hasina Akhter, Assistant Professor, Department of Obs & Gynae, Rajshahi Medical College, Rajshahi.

4. Dr. M. Ahmed Ali, Assistant Professor, Department of Neurology, Rajshahi Medical College, Rajshahi.

5. *Dr. Jahan Ara Khanam, Professor, Dept. of Biochemistry and Molecular Biology, University of Rajshahi, Bangladesh.

***Corresponds to:** Professor Dr. Jahan Ara Khanam, Dept. of Biochemistry and Molecular Biology, University of Rajshahi, Rajshahi-6205, Bangladesh. **Email:** jahanara_khanam@yahoo.com.

tive findings which may lead to substantial number of colposcopies¹³⁻¹⁴. Importantly more work is needed to evaluate the performance of VIA under field conditions and in countries with different cancer incidence and in screening settings.

In Bangladesh screening of cervical cancer has recently been started at national level from 2004. The GOB (Government of Bangladesh) with the support of UNFPA has taken initiatives to develop cervical cancer screening program based on VIA. As a part of this work on cervical cancer screening has been started in Rajshahi Medical college Hospital since 2005. The present communication reports the performance of VIA as a stand alone test and combined with others tests in detecting significant cervical pathology in our settings.

Ethical Clearance: This research work was approved by Ethical Review Committee of Research cell of Rajshahi Medical College, Bangladesh (ref. RMC/ER/2010-2013/01)

Materials & Methods

This prospective study was done in Gynae out patient department (OPD) of Rajshahi Medical College Hospital from January '06 to December '08. Married women above 30 years or women having marital life more than 10 years attending Gynae out patient department (OPD) for any Gynecological problems were referred to VIA Centre. Unmarried women and women who were taken currently pregnant, who had a history of abnormal cytology, previous treatment for CIN or cancer, were excluded from the study.

Study patients had a detailed history & after proper counseling, the patients were placed in lithotomy position. Cervices were exposed by Cusco's vaginal speculum. Any evidence of infection, ectopy, tumor, ulcer etc were checked. Then 5% acetic acid was applied to the cervix for 1 minute & inspection was done to see any acetowhite area around squamocolumnar junction (SCJ) or in transitional zone (TZ). A normal cervix had no white lesions. A low-grade CIN showed pale white lesions that might or might not abut the SCJ. Well defined, dense, acetowhite areas with regular or irregular margins close to SCJ or in TZ were regarded as high grade CIN.

VIA positive cases were selected for colposcopic evaluation & biopsy were taken from suspected area & sent for histopathology.

The results of the test were discussed with the

women & appropriate treatment offered after proper counseling.

Results

Cases had been chosen from non virgin women who came to the Gynae Out-patient Department (OPD) of Rajshahi Medical College Hospital. Out of 5593 patients studied, 442(7.2 %) were found to have VIA positive. Among the study patients, 671 (12 %) had no symptoms, only they came for screening purpose. Intermenstrual bleeding, post coital bleeding, heavy irregular vaginal bleeding were found in 1958 (35%), 783 (14 %), 336 (06 %) women respectively. Dirty brown or white excessive vaginal discharge were the complaints in more than half of the cases 3020 (54%), lower abdominal pain was the second highest complaints 2460(44%), and other symptoms.

On speculum examination apparently healthy cervix was observed in 2908 (52 %) of cases. Cervical lesions such as erosion or ectropion, polyp, cauliflower like growth and nodular/ nabothian cysts were observed in women.

Besides to find out the probable causes of cervical cancer, we have collected data regarding age of first coitus and first delivery, history of extramarital exposure and sexually transmitted infection (STI), use of contraceptive methods, family history of cancer and socioeconomic status from 442 VIA positive patients (Table 1). 203(46%) women had first coitus between 12 to 15 years and second highest were 177(40%) between 16 to 20 years. More than half of the patients, 274 (62%) delivered their first baby between 15-20 years, age below 15 years were 12%(53), 88(20 %) were between 21-25 years and 06%(27) patients were delivered first above 25 years. Regarding history of exposure, 75 (17 %) had extramarital exposure. Previous history of STI (Sexually Transmitted Infection) was present only in 09(2%) cases. The OCP, Injectable contraceptive and barrier methods used were 239(54%), 75 (17%), 44(10%) respectively. 84(19%) patients did not use any contraceptives. Regarding socioeconomic status, most of the patients 256(58%) belonged to lower middle group and second highest, 111(25%) was middle group (Table 1).

VIA positive patients were examined by colposcopy which showed normal appearance with no evidence of dysplastic lesions in 228 patients among the 442 VIA positive patients. Remaining 214 VIA positive patients with abnormal appearance on colposcopy were subjected to directed biopsy. Both results are shown in Table 2.

Table 1: Findings regarding the risk factors of cervical cancer in VIA positive cases (n= 442)

Variables	Number	Percent
Age of first coitus		
< 12 years	22	05%
12-15 years	203	46%
16-20 years	177	40%
21-24 years	27	6%
25 or above years	13	3%
Age of first delivery		
< 15 years	53	12%
15-20 years	274	62%
21-25 years	88	20%
> 25 years	27	06%
History of extramarital exposure		
No	367	83%
Yes	75	17%
History of STI		
Yes	09	02%
No	433	98%
Use of Contraceptive Methods		
Oral contraceptive pill	239	54%
Injectable	75	17%
Barrier	44	10%
No	84	19%
Family history of cancer		
Yes	40	09%
No	402	91%
Socio Economics Status		
Lower (income <3000/- per month)	35	8%
Lower middle (income 3000/- 6000/- per month)	256	58%
Middle (income > 6000/- 10,000/- per month)	111	25%
Upper >10,000 per month	40	9%

These data were collected in Gynae OPD attending for VIA before performing VIA test

Table 2: Percentage detection of different lesions by VIA, Colposcopy & Histopathology.

	VIA (n=5593)	Colposcopy (n=442)	Histopathology (n=214)
Negative/Normal	5151 (92.10%)	228(51.58%)	
Positive	442 (7.90%)	214(48.42%)	72 (33.64%)
² CIN-I	405 (91.23)	176 (39.82%)	29 (13.55%)
³ CIN-II	20 (4.52%)	17 (3.85%)	16 (7.48%)
⁴ CIN-III	07 (2.04%)	09 (2.02%)	05 (2.33%)
Invasive carcinoma	10 (2.21%)	12 (2.71%)	17 (7.94%)
Carcinoma-in-situ			05 (2.34%)
Chronic cervicitis			122 (57.02%)
Metaplasia			20(9.35%)

CIN means Cervical Intraepithelial Neoplasia.

CIN I -basal one third of cervical epithelium is replaced by atypical cells.

CIN II - basal one third to two thirds of cervical epithelium is replaced by atypical cells.

CIN III - whole thickness of cervical epithelium is r eplaced by atypical cells.

Discussion

The study was initiated with the main objective to consider whether the aided visual inspection could be used as an alternative modality to detect cervical cancerous & precancerous lesions.

Earlier, several studies showed that, visual inspection without acetic acid could not detect early cancers properly. The cancer indicators were cervical ectopy that bleeds on touch, small growths & suspicious unhealthy cervix⁵. The major drawback was that it missed most of the precancerous conditions. The use of acetic acid remarkably increased the sensitivity of detecting not only invasive cancer but also the precancerous conditions⁶.

Detection of cervical cancer by conventional cytology has been overcome in developed countries by using liquid based thin layer cytology and use of highly specific HPV (Human Papiloma Virus) DNA testing. But these two modalities are highly cost effective for screening¹⁶. VIA is a low cost objective method which does not require any extra equipment or laboratory back up. It can also be practiced by paramedical working and nurses after proper training and can be used in any rural clinic.

Researches with VIA is running world wide to increase the sensitivity and detection rate of precancerous lesion of cervix. In our study, among 5593 patients, 442(7.2%) were found to have positive findings on VIA. Of them, 214(48.42%) cases were abnormal on colposcopic evaluation. Of the 214, 140 (33%) were negative on biopsy, CIN-I, CINII and CIN-III were picked up in 29 (13.55%),¹⁶ 16 (7.8%) and 05 (2.33%) patients respectively and pre-clinical invasive carcinoma were in 17 (7.09%) cases (Table 2). These results were found to be closely related with observations done by Oltavaiano and Torre¹⁷.

VIA & biopsy correlation is poor for low grade CIN[12]. This discrepancy between VIA, colposcopy & histopathology are mostly due to presence of inflammation, metaplasia, ectropion, leukoplakia etc, all of which show acetowhite areas but histopathologically negative for malignancy. In our study, acetowhitening due to inflammation and immature metaplasia was thin, translucent, & patchily distributed in the cervix, without well defined margin and changes quickly disappeared, usually within 30-60 seconds. In CIN I, appearance of acetowhitening was delayed and less intense, epithelium was shiny or semitransparent, the borders were not sharp, & the changes lasted for 1- 2 minute. On colposcopy, sometimes fine punctuation and/ or fine

mosaic pattern of blood vessel were present but there was absence of atypical blood vessels.

In CIN II & III, dense acetowhite or grey opaque epithelium was sharply bordered. On colposcopy, there were coarse punctuation and/ or mosaicism of blood vessel within the acetowhite lesion. The acetowhitening persisted more than two minutes.

In preclinical invasive carcinoma, there was an atypical blood vessel (irregular & bizarre pattern) within the acetowhite lesion which was strikingly thick, chalky white with raised & rolled out margin and bled on touch.

Several variables affect the performance of visual inspection¹². These are small lesions, inflammation, infection and metaplasia¹³⁻¹⁵ etc. In our study, we have observed these variables and which are seem to be responsible for a large number of false positive results (87%) (Table1).

Colposcopic magnification is a complementary method to VIA and not essential to identifying a cervix with higher grade lesions. VIA can also guide a practicing gynecological regarding the site of biopsical. Although colposcope accurately identifies the most abnormal area for biopsy. VIA will demarcated the site precisely and give better results than blind biopsy of ectocervix in absence of facilitating for colposcopy¹⁸. Experimental results in our study on 5593 patients with VIA and colposcopic evaluation of VIA patients also agree with this remark.

WHO recommends that a woman can be screened her cervix only once in her life, the best age in between 35 and 45 years¹⁹. In our study, the peak age were within 30-39 years, (49 %) of women with abnormal cervix. Previous studies correspond well with study that CIN is more prone to sexually active women.

Besides we have collected data on ages of first coitus, first delivery and family history of cervical cancer and socioeconomic status of VIA positive patients. Early epidemiological studies revealed that oral contraceptives pills, first birth at early age and low socioeconomic status are the risk factor of cervical cancer²⁰. In our study, these finding were also found to be exist among VIA positive patients.

Finally we can conclude from our observations that VIA can be used in poor settings of both urban and rural areas, for screening of early detection of cervical lesions. If it is practiced by gynecologist which can prevent the false hysterectomy. VIA is suitable

for early diagnosis, follow up, treatment and epidemiological studies of cervical cancer.

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