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Screening of cervical cancer by VIA among women in Rajshahi Medical College Hospital

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ABSTRACT

Objective: To find out different grades of cervical intraepithelial lesions of cervix with visual inspection of cervix with acetic acid (VIA). **Methods:** VIA was carried out in 540 eligible women attending Gynaecology Outpatient Department for gynecological problems. The women underwent a complete clinical evaluation. All screened women (540) were evaluated by colposcopy and biopsies which were taken from different quadrants of the cervix. The final diagnosis was based on histology, which allowed direct estimation of sensitivity, specificity, and predictive values of VIA and colposcopy. Those with abnormal lesions diagnosed by histology were considered as true positive. **Results:** Out of 540 patients screened, 212 (39.27%) were VIA positive. More patients with cervical lesions were detected by VIA than colposcopy. There were 63 (11.67%) women with histologic cervical intraepithelial neoplasia (CIN I), which was found in 150 (27.78%) by VIA and 138 (25.56%) by colposcopy. VIA and colposcopy yielded high grade CIN II in the same number of patients. Biopsy proven cancer was found in 24 (4.45%) which was detected in 18 (3.33%) by VIA and colposcopy. Sensitivity and specificity of VIA were 68.50% and 70.45% respectively. Positive predictive value was 41.04% and negative predictive value was 90.85%. **Conclusions:** VIA can differentiate a normal cervix from a precancerous cervix with reasonable accuracy. The sensitivity and specificity of VIA are comparable to the other studies. So VIA may reduce the cervical intraepithelial lesions both in urban and rural areas.

1. Introduction

Cervical cancer is the second most prevalent cancer among women world wide, accounting for nearly 452 000 new cases per year and responsible for over 250 000 deaths in 2005, approximately 80% of which occurred in developing countries[1]. Though no reliable statistical data about cancer are available, it is proved that cervical cancer is the most common cancer among women in Bangladesh and it has a population of 50.19 millions women aged 15 years and older who are at risk of developing cervical cancer. Current estimates indicate that every year 17 686 women are diagnosed with cervical cancer and 10 364 die from the disease[2]. All the tertiary level hospitals and institutes of this country are carrying a large load of cervical cancer patients. This problem can be minimized by setting screening program in all these institutes.

Cervical cancer is usually preceded by a long phase of cytological changes, known as cervical intraepithelial neoplasia (CIN) and takes a long period of 15-20 years before the invasive cancer develops[3]. Thus cervical cancer can be prevented if cellular changes are detected and treated in early stage. In Western countries, cervical cancer incidence and deaths have been brought under control using organized cytology based a screening program (Paps)[4]. The infrastructure and financial involvement required to develop and maintain such a cytologic screening program are beyond the capability of most developing countries. Alternative non cytologic methods such as visual inspection of cervix with acetic acid (VIA), colposcopy and detection of human papilloma virus *etc*. for screening have already been used in fairly large number of studies[5]. Sensitivity and specificity of these methods have also been evaluated in these studies. Among such alternative non cytologic methods, VIA has become very well-known for its potentiality, simplicity and low cost[6]. So such technique can be set up in clinics, health care centers, hospitals of

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both rural and urban areas. This technique needs massive training and practice of medical personnel especially doctors and nurses to pick up actual cervical cancer patients. In the present study, emphasis has been given to find out different grades of cervical intraepithelial lesions of cervix more accurately with VIA.

2. Materials and methods

In Bangladesh, the Department of Obstetrics and Gynaecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka with the support of United Nations Population Fund (UNFPA) has started cervical cancer screening training program based on VIA since 2004. VIA training has taken as a part of this pilot program.

This prospective study was done in Gynaecology Outpatient Department (OPD) of Rajshahi Medical College Hospital (RMCH) from July, 2008 to December, 2009. The study protocol was reviewed and approved by Ethical Review Committee of Research Cell of Rajshahi Medical College, Bangladesh (ref. RMC/ER/2010-2013/01) and informed consent was obtained from each woman. Married women above 30 years of age or women having marital life more than 10 years attending Gynaecology OPD for any gynecological problems were referred to VIA Centre. Unmarried women, women who were currently pregnant or who had a history of abnormal cytology, previous treatment for CIN or cancer, were excluded from the study.

A detailed history was obtained from each patient and after proper counseling, the patients were placed in lithotomy position. Cervices were exposed by Cuscos vaginal speculum. Any evidence of infection, ectopy, any visible tumor, ulcer, *etc.* were checked. Then 5% acetic acid was applied to the cervix for 1 minute and inspection was done to see any acetowhite area around squamocolumnar junction or in transitional zone.

The criterion standard for our study was cervical biopsy. Colposcopic evaluation and biopsy were done on all subjects. Standard colposcopic criteria were used with the exception that when there was a question of metaplasia versus low grade CIN lesions[7]. If colposcopy showed no abnormality, biopsies were taken from different quadrants of the cervix. If there were abnormalities, biopsies were taken from those suspected areas.

The results of the test were discussed with the women and appropriate treatment was started after proper counseling.

3. Results

During the study period from July, 2008 to December 2009, we have evaluated 540 women who fulfilled the legibility criteria and provided informed consent. Mean age of the screened patients was 36.17 years old. Among 540 patients screened, 25 had biopsy proven CIN II and 24 had carcinoma. Visual inspection was done on all 540 women in the study. The visual inspection results were normal in 328 women (60.74%), low grade CIN I in 150 (27.78%), high grade CIN II and CIN III in 44 women (8.15%) (Table 1). With abnormal visual inspection defined as low grade or worse, the sensitivity of VIA was 68.50% (87/127) and specificity was 70.45% (298/423). The positive predictive value was 41.04% (87/212) and negative predictive value was 90.85% (298/328). Whereas colposcopy had a sensitivity of 87.18% (102/117) and specificity of 76.83% (325/423). Positive and negative predictive values were 51.00% (102/200) and 95.59% (325/340), respectively.

VIA had correctly identified 41% of the subjects and colposcopy had identified 50% of the subjects.

Table 1
Percentage detection of different lesions by VIA, colposcopy and histopathology [*n* (%)].

Findings	VIA (*n*=540)	Colposcopy (*n*=540)	Histopathology (*n*=540)	
Negative	328 (60.74)	340 (62.96)		
Positive	212 (39.27)	200 (37.04)		
CIN I	150 (27.78)	138 (25.56)	63 (11.67)	117 (21.67)
CIN II	36 (6.67)	36 (6.67)	25 (4.62)	
CIN III	8 (1.48)	8 (1.48)	5 (0.93)	
Carcinoma cervix	18 (3.33)	18 (3.33)	21 (3.89)	
Carcinoma-*in-situ*			3 (0.56)	
Chronic cervicitis			310 (57.40)	423 (78.33)
Metaplasia			113 (20.93)	

4. Discussion

The peak age of the patients was found within 30-39 years and 287 (53.1%) of the total number of patients (540). This observation agrees with the studies of Yisrat[8]. Previous studies correspond well with this study that CIN is more prone to sexually active women. Earlier, several studies showed, unaided visual inspection could detect about 60% of women with early cancers. The cancer indicators were cervical ectopy that bleeds on touch, small growths and suspicious unhealthy cervix. The major drawback was that it missed most of the precancerous conditions. We have also observed some complaints which were intermenstrual bleeding, post coital bleeding, irregular vaginal bleeding, excessive dirty brown or whitish discharge and lower abdominal pain. The use of acetic acid remarkably increased the sensitivity of detecting not only invasive cancer but also the precancerous conditions[9,10].

Out of 540 patients screened, 328 (60.74%) were VIA negative and 212 (39.27%) were VIA positive. Findings of VIA were evaluated against colposcopic findings and histological reports. Colposcopy yielded normal results in 340 (62.96%) women, low grade CIN in 138 (25.56%) cases, high grade CIN in 44 (8.15%) cases and cancer in 18 (3.33%) cases. There were

biopsy proven chronic cervicitis and metaplastic changes in 423 (78.33%) cases, CIN I in 63 (11.67%) cases, CIN II and CIN III in 30 (5.55%) cases. Three cases (0.56%) of carcinoma *in situ* and twenty one cases (3.89%) of invasive carcinoma were correctly picked up by VIA as well as colposcopy and confirmed by biopsy. Since we screened a hospital-based symptomatic population, our VIA positivity rate was higher than that found in other studies[11]. If this test had done among general population, we may have obtained lower positive rates.

It has been found that, VIA and biopsy correlation is poor for low grade intraepithelial lesion (LSIL) which may be due to inflammation and infection[12]. LSIL resembles normal metaplastic epithelium on VIA as well as on colposcopy, but the sensitivity and specificity increase in picking up high grade intraepithelial lesion (HSIL) which is indeed a true cancer precursor and early invasive cancer[13,14].

The sensitivity of VIA to detect mild dysplasia or worse, as shown in various studies ranged from 63% to 77%[11]. Sensitivity and specificity of VIA in this study were 68.50% and 70.45%, respectively. Positive predictive value was 41.04% and negative predictive value was 90.85%. Our results were comparable to those of The University of Zimbabwe and Johns Hopkins study (76.7% and 64.1%, respectively)[15]. Using similar criteria, a sensitivity of 64% was reported. Le *et al*[16] found that 15% more abnormal cases were detected by visual inspection compared to conventional cytology. Shankaranarayanan and Mahe[17] have published results from a randomized intervention trial in India comparing VIA to cytology and to HPV DNA testing and found that all three had similar detection rates of CIN-II and CIN-III lesions and the range of sensitivity for VIA was 67%-79% and specificity 49%-86% which also correlates our study.

It has been observed from our study that VIA can identify most true cases of cervical pre-cancer and cancer. VIA could be a readily available, potentially sustainable means of testing that, when coupled effectively with treatment, could reduce the burden of disease in populations in which the incidence of cervical cancer is high. It is likely that standardized training, development of quality control procedures, and uniform definitions of VIA test outcomes may contribute to some improvement of the specificity of visual inspection based screening approaches without substantially lowering sensitivity. Long term efficacy of VIA based screening in reducing the cervical cancer burden remains to be demonstrated. Results from ongoing studies will further clarify the role of VIA and related strategies.

In conclusion, we hope, our gynecologists, pathologists, administrators, supporting agencies and concerned peoples should take the challenge to cut down the sufferings of our females and families from cervical cancer and to have a steady step towards millennium of good health.

Conflict of interest statement

We declare that we have no conflict of interest.

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