Performance of VIA (Visual Inspection With Acetic Acid) and Colposcopic Biopsy as a Method of Screening in Detecting Preinvasion and Early Cancerous Lesion of The Cervix

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ABSTRACT

This was a prospective study carried out from January 2007 to June 2007 on 100 patients of which 50 patients were VIA positive as cases and 50 were VIA negative taken as control attending Gynae outdoor Department of Bangabandhu Sheikh Mujib Medical University (BSMMU). The aim of this study was to evaluate the role of VIA as a method of screening for early detection of cervical preinvasive disease. Another aim was to find out the correlation between the VIA and colposcopy findings. The cervix of the patient was visualized before and after application of 5% acetic acid soaked cotton ball. Well defined acetowhiteness or dense opaque lesion near to the squamo-columner junction was considered as a VIA positive case. Absence of these findings after 5 % acetic acid application was considered as VIA negative. Both the groups were subjected to colposcopy and directed biopsy. . The final diagnosis was based on histopathological findings. CIN-I, CIN-II, CIN-III was considered as true positive disease for the calculation of sensitivity, specificity and predictive values for screening test. The result of this study showed that in both VIA positive and VIA negative groups highest number of patients were in the age group of 36-45 years, most of the patients 90% were house wife, 56% of VIA positive cases had intermenstrual bleeding. Thirty two percent patient were married at their 16-20 years of age in VIA positive cases. Colposcopic directed biopsy were done in 46 patients from VIA positive and 10 patients from VIA negative group among them premalignant and malignant lesion was found in 64% patients in VIA positive cases and 10% patients in VIA negative group. Finally while calculating the accuracy of VIA, its sensitivity was found 88.88%, specificity was 71.87% and positive and negative predictive value was 64% and 92% respectively.

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Introduction

Cervical cancer is the most common form of cancer in women in developing countries and the second most common form of cancer in the world as a whole[1].

Almost 80% of cervical cancer occur in the developing countries[2]. Bangladesh and India have annual incidence of cervical cancer of 11956 and 12595 respectively[3].

According to the World Health Organisation (WHO) statistics, incidence of cervical cancer cases in Bangladesh have been estimated at 167 per 1,00,000 populations[4]. Cancer poses serious health problem both in the developed and developing countries. The prevention and control of cancer in developing countries deserve urgent attention. The problem of cancer in Bangladesh is particularly acute because of poverty, early age marriage, multiple marriages, high parity, illiteracy and other diseases associated with poor nutrition. Therefore, understanding the etiological factors is important for the successful prevention of the disease. World Health Organization considers cervical cancer as a preventable diseases[5]. This is because cervix is an internal genital organ, easily accessible and the disease has a long pre-malignant phase and can be diagnosed in its precancerous phase[6].

In Bangladesh, where prevalence of cancer is high and cytological screening is not available, down staging screening may be useful[7]. This approach must be coupled with cytological screening. But cytology also cannot determine the extent or location of abnormality though it is highly accurate in predicting the presence of cervical neoplasia[8].

A number of cervical cancer screening approaches as alternative to cytology are described. Among them visual inspection with acetic acid, which is rational for low resources setting as it is inexpensive, only requires which usually locally available, and can be competently performed by physicians with proper training[9].

The aim of this study is to find out the role of Colposcopy and VIA for the detection of precancerous and early cancerous lesions of the cervix with the ultimate objective is to assess whether VIA could be used as a mass screening test with limited resources.

Materials and Methods

It is a prospective study done in Gynae Oncology Division of the Department of Obstetrics and Gynaecology of Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh during the period January 2007 to June 2007. Total 100 cases who were referred patient for VIA and colposcopy were included in the study. Among them 50 were VIA positive and was taken as case and 50 were VIA negative and taken as control. The inclusion criteria were sexually active women, age of the patients between 18 to 60 years, abnormal vaginal discharge, post coital or irregular P/V bleeding. The exclusion criteria were menstruating women obvious growth or mass at the cervix, fibroid, polyp or adenomyosis, clinically diagnosed carcinoma of cervix and pregnancy.

Results

All information about the hundred VIA positive and VIA negative cases were compiled. Relevant data were analyzed and shown in tabulated form.

The mean age of the patients was 35.2 years, range 18-60 years with 40% in the age group between 36-45 years. Among all the subjects, majority (88%) was housewife and 56% had satisfactory personal hygiene. The subjects hailed from urban area in 78% cases and 36% had brick build house. The occupation of the husbands were mainly private job and rickshaw pulling.

Table-I : Demographic characteristics of the subjects.

Demographic character-istics	VIA-positive		VIA negative	
	No	%	No	%
Age in years				
18-25	5	10	6	12
26-35	16	32	15	30
36-45	20	40	19	38
46-55	6	12	8	16
56-60	3	6	2	4
Occupation				
House wife	44	88	45	90
Office job	2	4	2	4
Garment worker	4	10	3	6
Personal Hygiene				
Satisfactory	28	56	33	66
Unsatisfactory	22	44	27	54
Husband's occupation				
Farmer	5	10	5	10
Businessman	8	16	5	10
Govt. service	9	18	12	24
Private job	17	34	20	40
Rickshaw puller	11	22	8	16
Residence				
Rural	11	22	12	24
Urban	39	78	38	76
No. of children				
2	8	16	10	20
3-4	40	80	37	74
>4	2	4	3	6

The mean parity of the respondents was 3.2. About 50% had menarche at the age of 13 years. 80% were menstruating women. Among them 32% had irregular menstruation in VIA positive group which was only 6% in VIA negative group. Use of hormonal contraceptive was more in VIA positive group (40%) than VIA negative group (14%). In sign symptoms, abnormal intermittent bleeding, excessive vaginal discharge, dyspareunia, post coital bleeding and backache was the principal findings.(Table-III) Speculum examination revealed 64% apparently healthy cervix in VIA positive group and 88% in VIA negative group.

Table-II: Findings regarding risk factors.

Variables	VIA-positive		VIA negative	
	Number	Percentage	Number	Percentage
a) Married				
< 10 year	5	10	9	18
10-15 year	12	24	16	32
16-20 year	16	32	14	28
21-25 years	3f	22	9	18
26-30 years	4	8	2	4
31-35 years and above	2	4	-	-
b)Use of con-traception				
Used	35	70	40	80
Not used	15	30	10	20
c)Type of contraception				
Barrier	10	20	20	40
Hormonal	20	40	7	14
Both	5	10	13	26
d) Age of 1st coitus				
<15 years	5	10	4	8
15-20 years	30	40	28	56
>20 years	15	30	18	36
e)History of exposure				
No	46	92	59	98
Yes	4	8	1	2
f) Family history of malignancy				
Yes	5	10	1	2
No	45	90	49	98

Cervical erosion and nodule was found in 20% and 16% in VIA positive case which was 8% and 4% in VIA negative group respectively.

In colposcopy, abnormal squamo-columner junction was well visualized in 46 cases of VIA positive group and in 10 case in VIA negative group from where colposcopic directed biopsy was taken. In colposcopy directed biopsy, it revealed that 64% patients had precancerous lesion un VIA positive case in which CIN-1 as 8% CIN-II 12% CIA-III 36% and invasive carcinoma 8% where in VIA negative cases, precancerous

lesion was found only in 10% cases in which CIN-I was 6% and CIN-II 4%. This suggests the significant role of VIA and colposcopy in the evaluation of CIN and cervical disease's (Table- III & IV).

Table-III: Colposcopic findings in VIA cases.

Colposcopic findings	VIA positive	Percentage	VIA negative	Percentage
Squamo-columner junction				
Well visual-ized	42	84	45	90
Not well visualized	8	16	5	10
Acetowhite (AW) lesion				
Upper lip	20	40	7	14
Lower lip	22	44	7	14
Findings proper				
Normal	3	6	38	76
Inflammation	7	14	6	12
CIN-I	7	14	3	6
CIN-II	12	24	3	6
CIN-III	18	36	-	-
Invasive	3	6	-	-

Table-IV: Colposcopy directed biopsy (CDB) findings

CDB	Histopathology	No	No of pre-malignant and malignant lesion	Percentage
VIA-positive 46	Normal	3		
	Inflammatory	11		
	CIN=I	4		
	CIN-II	6	32	64
	CIN-III	18		
	Invasive	6		
VIA-negative 10	Normal	24		
	Inflammatory	3		
	CIN=I	3		
	CIN-II	2	5	10
	CIN-III			
	Invasive			

DISCUSSION

This prospective study was carried out to determine the use of VIA as a method of screening in detecting pre-invasive and early cancerous lesion among the women from 18-60 years of age attending Gynae Outdoor Department of BSMMU and from other referred patient for VIA and colposcopy during six months period from January 2007 to June 2007.

In this study total 100 cases were included, of which 50 were VIA positive as cases and 50 were VIA negative as control. In this series demographic data did not significantly differ between VIA-positive and negative group which is consistent with the study of Zahara Eftekar[10] The peak age group of this study was within 3 6-45 years of age (40%) and 2nd highest age group was 26-35 years (32%), Almost two thirds of the cases were within 26-45 years age group. As the age advanced, the percent of this patient group reduced according to this study. This study correlates with the study done by Sanker Narayan[11], Syeeda S12 in her study found about 32% patients in 36-45% years and 38.46% in the age group of 26-35 years; Tafazzal N15 found 40-50 years age group was highest followed by 30-40 years where the age incidence of occurrence of invasive cervical cancer was 40-48 years. Sayeda[12] findings corresponds well with this study and it indicates that CIN is more prone in sexually active women. Hence, WHO suggested the priority age group 35-45 years for screening[13].

The occupational status expressed that housewives affected predominantly followed by the female who engaged with garments works. About half of the cases had satisfactory personal hygiene among the study subjects. Most of the cases were from urban area. This may be because of the awareness among the urban population about the problem and also due to study based in urban location.

The respondent's husbands engaged in private job were more than one third of cases. Rickshaw puller. govt. service, businessman and farmers were in the list of descending order. About 80% respondent had 2-4 children in VIA positive groups which indicate multiprity is a related risk factor for premalignancy of the cervix. This study correlates with the study of Schiffman MH[14].

In this study almost 50% had experienced menarche at the age of 13 years. 34% of VIA positive patient had irregular menstruation whereas it was only 6% in VIA negative group. Excessive bleeding was more (30%) in V IA positive group than VIA negative group (10%) which signifies as the risk factor for malignancy. This result is consistent with the study done by Symond P4,[15]. The use of hormonal contraceptive was more in VIA positive (400/o) than VIA negative (14%). This justifies the role of hormone for the development of cervical malignancy. This study supports the work of Murthy NS[16] of cervical malignancy. More than 50% of the patients experienced first coitus in 15-20 years which corresponds with the study of Syeeda S[12]. Only 10% of patient in VIA positive group had family history of malignancy which is only 2% in VIA negative group. In this 100 patients, more than one third of the patient had no sign symptoms. The presentation was mainly excessive vaginal discharge, backache & dysparuenia. All these were non-specific which indicates the need of screening test for CIN.

Speculum examination revealed that 88% patient had apparently normal healthy cervix in VIA negative cases. 36% patients had erosion and nodular cervix in VIA positive group which is only 12% in negative group.

In colposcopy, changes were found in 94% of VIA positive cases which was only 25% in VIA negative group, acetowhite lesion was found in 84% of VIA positive and 24% of VIA negative group of patients. White epithelium is a basic clinical appearance of the osmolar change as a result of acetic acid application that causes water to leave from the cell after which the cell membrane collapse around the abnormal and enlarged nucleus[17]. In 50 cases of VIA positive group colposcopy directed biopsy was done in 46 patients in which 6% was normal, 22% was inflammatory lesion and 64% was CIN and invasive lesion. This has shown the similar result done by Yisrat Jahan[18], where as in VIA negative group after having CDB in 10(20%) patient, only 5(10%) has shown precancerous lesion which corresponds with the result of Iftekhar[10] (Table-IV).

Finally while calculating the accuracy of VIA, its Sensitivity was found 88.88%, Specificity was 71.87% and Positive and Negative Predictive value was 64% and 92% respectively.

This findings are similar to other many standard study[19,20,21]. So VIA can be used as screening tool for detection precancerous lesion[22].

Conclusion

Cervical cancer is the most common cancer among women and the most common cause of death in middle aged women. Despite its public health importance, there are no effective prevention programmes in most developing countries like Bangladesh and hence the risk of disease and death from cervical cancers remains largely uncontrolled. Invasive cervical cancers are preceded by a long phase of precancerous lesion that can be detected early by screening and treated effectively by simple treatment.

Cytology based screening is effective but beyond the capacity of the health services in many countries like us. Hence other methods of early detection of cervical neoplasia, particularly those based on visual inspection are being investigated.

This study concludes that the diagnostic accuracy in the evaluation of cervical premalignancy with VIA and colposcopy is quite satisfactory. VIA is an important method in low resource settings and simple and easy to perform. VIA may be a tool for screening at the low resources and may be associated with a referral procedure for further methods. Colposcopy is an indispensable procedure in the evaluation of unhealthy cervix for which considerable training and experience would be required.

In Bangladesh, cervical cancer is the commonest genital tract cancer in female Though it is preventable and almost curable when diagnosed early in a pre-invasive stage, there is still no national programme for cervical cancer screening Cytology is only done in hospital of medical college and in some diagnostic centers. These are insufficient to address the morbidity of the killer disease. VIA can be uses as a primary screening tool with a satisfactory low biopsy rate in low resource settings where cytological services are subnormal.

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