International Journal of Recent Trends in Science And Technology, ISSN 2277-2812 E-ISSN 2249-8109, Volume 8, Issue 2, 2013 pp 103-105

Visualization of the Cervix with Acetic Acid is an Alternative to Colposcopy in Evaluation of Cervical Cancer and Its Precursors

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Research Article

Abstract: **Background:** Cervical Cancer is the leading cause of morbidity and mortality among women worldwide. There are over 500,000 cases of Cervical Cancer found worldwide, and more than 280,000 women die of it every year. 85% live in developing countries. Cervical Cancer is the leading cause of years-of-life lost in women in South Central Asia, Latin America and Sub-Saharan Africa, resulting in a greater reduction in a women's life expectancy even when compared with AID's, TB, or maternal conditions in Latin America and Europe. (Yang, International Journal of Cancer 2004.) **Objective(s)**: To evaluate visual inspection of cervix with acetic acid (VIA) in picking up pre-invasive and invasive Cancers in abnormal cervix. **Method(s):** VIA was carried out in 380 symptomatic women as a pre-colposcopy procedure. Hundred patients with positive findings were then subjected to colposcopy. Directed biopsy was taken from those with abnormal appearances on colposcopy. **Results:** Out of 100 patients with positive findings on VIA, 70 were found to have abnormal findings on colposcopy. Cervical biopsy of these 70 patients revealed 20 cases as having low grade squamous intra-epithelial lesions, nine as high grade squamous intra epithelial lesions, and six as pre-clinical invasive Cancers. Thirty five showed no abnormality in their Cervical biopsy. **Conclusion(s):** VIA is a simple method to pick up high grade squamous intra-epithelial lesions or early invasive Cancer of the cervix. Colposcopy is complimentary and not essential in identifying the true Cancer precursors. Hence VIA can be practiced by clinicians on wider scale to evaluate the cervix at risk.

Key words: visual inspection of cervix with acetic acid, colposcopy, Cervical intraepithelial lesions, Cancer cervix.

Introduction

Cancer cervix, a preventable disease, continues to be a cause of great concern to women's health in resource poor countries, being associated with agonizing morbidity and high mortality. Developed countries like USA have witnessed a marked decline in the incidence of invasive Cancer from 44 cases / 100,000 women in 1947 to fewer than 8/100,000 in 2002. Much of the credit for this decline goes to detection of pre-invasive disease by organized Pap smear screening programs.[1] similar screening program was introduced in India in the 1950s, but lack of political will, poor organizational back up, financial constraints, and priority given to other health issues like population explosion led to utter failure of the effort. Other more important reasons for setback were lack of trained cytopathologists, and ignorance of masses about the disease and its consequences. This led to a gloomy picture that today India bears 1 8% of the brunt of invasive Cancer cervix in the world and 80-85% of the cases are detected late in stage III or IV. Visual inspection of the cervix by 3% acetic acid (VIA) or cervicoscopy which neither requires second person for interpretation of results nor second visit by the patient to collect the report has been recommended by WHO as an alternative to cytology to pick up a patient, at risk for Cancer cervix.[2,3] The present study was undertaken to find the value of VIA in picking up pre-invasive or invasive Cancer in an abnormal cervix. All VIA positive cases were further eva1uated with a co1poscope. A directed biopsy was taken in cases with abnormal colposcopy findings.

Material and Methods

The present prospective study was conducted at KIMSDU; Karad in Department of OBGY from January 2009-Dec2010.it was approved by Ethical committee of the institution included 380 patients, who were referred to us for colposcopic evaluation of abnormal cervix during this period. VIA was performed on all patients prior to systematic colposcopic examination. After inserting disco's speculum cervix was visualized with 24V 250 Watt halogen bulb. A mental picture of columnar and squamous epithelium with squamo-columnar junction was made. The changes in surface epithelium were noted one minute after application of 3% acetic acid to the cervix with the help of a swab stick. Columnar epithelium appeared whitish with acetic acid while normal squamous epithelium showed no change. Any white patch on transformation zone, which appeared either as faint white with ill defined margins or opaque white with distinct margins was noted. The VIA findings were diagrammatically recorded. Patients were then examined by colposcope with 12x / 15x magnification as per

protocol published earlier.[3] Directed punch biopsy was taken only from those who showed abnormal colposcopic appearances. Colposcopy with or without biopsy was taken as a reference standard for statistical calculations.

Results

Patient characteristics - Out of 380 patients studied. 100 were found to have positive findings on VIA. All of them were married, parous, non-pregnant, and in the age group of 30-60 years (mean 38.38 ± 8.91 years). They were referred with complaints of white vaginal discharge (n=64), dysfunctional uterine bleeding (n=23), post-coital bleeding (n=7), and post-menopausal bleeding (n=6). Colposcopic findings - Colposcopy showed normal appearance with no evidence of dysplastic lesions in 30 patients amongst the 100 VIA positive group (Table 1). Remaining 70 VIA positive patients with abnormal appearance on colposcopy (Table 2) were subjected to directed biopsy.

Table 1: VIA positive patients with normal colposcopy (n=30)

Colposcopic findings	**No. of patients**
Tnchomoniasis	3
Senile changes in the cervix and vagina	9
Evidence of squamous metaplasia	3
Gland openings	7
Nabothian follicles	8

Table 2: VIA positive patients with abnormal colposcopy (n=70)

Colposcopic findings	No. of patients
While epithelium	34
Mosaic	23
Punctations	7
Invasive Cancer	6

Biopsy findings - The biopsy findings are given in Table 3. Of the 34 patients with white epithelium on colposcopy, 23 turned out to be negative on histology, and 7 of them gave history of cryocautery in the past for benign lesions on the cervix. Their histology revealed hyperplastic epithelium without atypia. The remaining 13 showed immature metaplastic epithelium on histology. Amongst those found to have invasive Cancers, one had adenocarcinoma and five had squamous cell carcinoma on histology. Of the six invasive Cancers, five were picked up in stage IB and the remaining one in stage IIA.

Table 3: Biopsy findings in VIA positive patients with abnormal colposcopy (n-75)

Abnormal		Biopsy result			
Colposcopic findings	No. of patients	Negative findings	LSIL	HSIL	Invasive Cancer
While epithelium	34	23	7	4	
Mosaic	23	13	10		
Punctations	7	6	1		
Invasive Cancer					6

VIA - Acetic acid visualization of the cervix

LSIL - Low grade squamous intra-epithelial lesion (Koilocytic atypia + CIN I)

HSIL - High grade squamous intra-epithelial lesions (CIN II + CIN III)

Discussion

Amongst various modalities for control of Cancer cervix, prophylactic type specific human papilloma virus (H.PV) vaccine is undergoing phase III clinical trials and it may become available in the next 5 years. It will definitely help to control the disease that kills about 2, 25,000 women every year.[4] Till then, the diagnosis of preinvasive lesions remains the only means to curb the disease. widespread use of Pap smear has achieved drastic reduction in incidence and mortality of Cervical Cancer in USA, Canada and Europe[1], Poor sensitivity (29-56%) of conventional cytology has been overcome in developed countries by using liquid based thin layer cytology and use of highly specific HPV DNA testing. Both these modalities have, however, added to the cost of screening.[5] HPV DNA testing is now being used in developed countries as a method to further evaluate an abnormal Pap result.[6] The above mentioned protocol is almost non-existent in resource poor settings. 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 workers and nurses after proper training. Shankarnarayanan and Mahe[4] 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 2 and 3 lesions, and the range of sensitivity for VIA was 67-79% and specificity 49-86%. Amongst 380 patients in our study, 100 (26%) were found to be having positive findings on VIA. Of them, 30 were found to be normal on colposcopic evaluation. Out of 70 with abnormal colposcopic appearance, only 18 were found to have LSIL, and 4 HSIL on histology. The six cases of pre-clinical invasive Cancer were correctly-picked up by VIA as well as colposcopy and confirmed later by biopsy. Colposcopy with or without biopsy was taken as reference standard.[7] Thus, sensitivity of VIA in our study was 100% as there was no case with dysplastic lesion which was not picked up by VIA. The specificity was 91% and positive predictive value 75%. The higher sensitivity and specificity of our study can be explained on the basis that the study was done on a group of women in susceptible age group (mean 38.38 ± 8.93 years) with an abnormal cervix on inspection. Secondly, the VIA was performed using colposcope halogen bulb (24V 250 Watt) by a gynecologist and not by a nurse or a paramedical person. In JHPIEGO Cervical Cancer project at Zimbabwe, VIA was done by trained nurses and paramedical personnel on 10,934 women and was found to have sensitivity of 76.4% and specificity of 64% in picking up pre-invasive lesions.[8] The study also inferred

that higher test qualities of VIA are likely to be observed under better service delivery conditions like good lighting, examination tables and specula, and more standardized VIA training. They observed that in more than 75% of cases when a lesion was found on colposcopy or biopsy, it was also visible on VIA[8], Ottaviano and Torre[9], in the first study of its kind, have published results of simultaneous VIA and colposcopy on 2,400 unselected patients with normal or abnormal Cervical cytology. The evaluation was done by experienced colposcopists and post-graduate students of obstetrics and gynecology. In their study, atypical transformation zone was identified by VIA in 98.4% of the 312 colposcopically controlled cases. Of the 312, 169 (54.2%) were negative on biopsy, CIN 1 and 2 were picked up in 81 (26%), CIN 3 in 56 (17.9%), and preclinical invasive Cancer in 6 (1.9%) cases. They concluded that detection of intra-epithelial or preclinical invasive Cervical neoplasias should not depend on possessing a colposcope. However, colposcope is essential for selection of CIN that can be treated with ultra-conservative therapy like colposcopically guided conisation.[9] In our study, VIA and biopsy correlation is poor for I.SIL, which may regress in 80% of cases. LSIL resembles normal metaplastic epithelium on VIA as well as on colposcopy, but the sensitivity and specificity increase in picking up HSIL which is indeed a true Cancer precursor and early invasive Cancer.[10] Colposcopic magnification is a complimentary method to VIA and not essential to identify a cervix with higher grade lesions. VIA can also guide a practicing gynecologist regarding the site to be biopsied. Although colposcope accurately identifies the most abnormal area for biopsy, VIA will demarcate the site precisely and give better results than a blind biopsy of ectocervix, in absence of facilities for colposcopy.[11,12] VIA is a cost effective method which can differentiate a normal cervix from a preCancerous cervix with reasonable accuracy. Hence, if practiced by gynecologists routinely, it would help to avoid many panic hysterectomies. Besides, in the absence of organized cytology screening program and limited availability of colposcopy facilities, VIA can be propagated on a wider scale.

Conclusion

VIA is a simple method to pick up high grade squamous intra-epithelial lesions or early invasive Cancer of the cervix. Colposcopy is complimentary and not essential in identifying the true Cancer precursors. Hence VIA can be practiced by clinicians on wider scale to evaluate the cervix at risk.

Acknowledgement

We thank Medical Director, KIMSDU, Karad and head of our department for allowing us to use and publish the data related to patient.

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