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ORIGINAL ARTICLE

Can visual inspection with acetic acid be used as an alternative to Pap smear in screening cervical cancer?



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KEYWORDS

Cervical cancer;
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Abstract Objective: To evaluate the value of visual inspection with acetic acid (VIA) in screening cervical cancer in comparison to Pap smear.

Material and methods: 200 women attending the obstetric and gynecology Department in Zagazig University hospital from December 2011 to November 2012 were included. They were screened using Pap smear and VIA. Colposcopy was done for all women. Positive cases on any screening test were subjected to cervical biopsy.

Results: Acetic acid (VIA) was positive in 24/200 (12%) patients and Pap smear was abnormal in 8 (4%). There were 5 LSIL, 2 HSIL and one with cells suspicious of malignancy. Colposcopy was recorded abnormal in 35 cases (17.5%). 18 cases (51.4%) had a Reid score of 0–2 and considered negative. 17 cases (48.6%) had a positive colposcopy (Reid 3–8). Cervical biopsy was done on all 35 cases. 44% biopsies were positive and 56% were negative. 15 positive biopsies incorporated 11 mild dysplasia, 2 moderate dysplasia, 1 severe dysplasia and one carcinoma in situ. The Pap smear had a sensitivity of 50.1%, specificity of 93.1%, and positive predictive value of 89.3% and negative predictive value of 65.6%. VIA had a sensitivity of 90%, specificity of 37%, and positive predictive value of 52% and negative predictive value of 81%.

Conclusion: VIA a good screening, simple test, has low cost and high sensitivity in comparison to Pap smear. So, it can be used as alternative screening modality for cervical cancer in low resource locations.

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1. Introduction

With the change in the life styles and demographic profiles of developing countries, non communicable diseases are emerging to be important health problems that demand appropriate control program before they assume epidemic proportion. One of these is the problem of cancer (1). Cervical cancer is the second most common gynecologic cancer worldwide,

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accounting for 13% of all female cancer in developing countries (2). The important reasons for higher cervical cancer incidence in developing countries are lack of resources, lack of effective screening programs and poorly organized health system aimed for detecting precancerous condition before they progress to invasive cancer. So, there is a need of low cost approach for effective cervical cancer screening programs (3). Cervical cancer is a disease that can be prevented through both primary prevention and early detection. So in developed countries the incidence of cervical cancer has decreased due to screening, early detection and treatment. However in developing countries, 80% of cervical cancers are incurable at the time of detection due to their advanced stage (4). Several screening modalities are now available for early detection of cervical cancer and its precursor lesions. They all differ with regard to their test characteristic, feasibility and economic considerations. The different screening modalities have been cytology or Pap smear, visual inspection, using acetic acid (VIA) or Lugols iodine, VIA with magnification (VIAM) and high risk human papilloma virus (HPV) screening (5). Cytologic methods of screening for cervical cancer, precursors have become the main stay of population based prevention programs resulting in substantial reduction of disease in developed countries where mass screen is systemic rather than opportunistic (6).

The Papanicolaous (PAP) smear is a simple, safe, non invasive and effective method for detection of precancerous, cancerous and noncancerous changes in the cervix and vagina (7). Although this effectiveness of PAP smear, sustaining high-quality cytology based program is difficult in low -resource setting due to its complex process of collection, sample, preparation, staining, reading, reporting and the delay between screening and PROVISION of test results. So, in these areas it should be directed toward cost-effective strategies that are more inexpensive and their qualities can be trusted (8). An alternative test is visual inspection of the cervix with acetic acid (VIA). It has been advocated as an alternative screening method to PAP smears in developing countries (9). The attractive features of VIA include low cost, simple administration, real-time screening of results and accuracy comparable to good quality PAP smears. In developing nations, resources are limited so, VIA as a visual screening test does not depend on laboratory services would be a possible and promising alternative screening tool for early detection of cervical cancer (10,11). This study was designed to evaluate the clinical performance of visual inspection with acetic acid (VIA) as a simple test and if it is a suitable alternative to PAP smear for early detection of cervical cancer.

2. Material and methods

In this prospective clinical comparative study 200 women of age group between 22 and 50 years attending the obstetric and gynecology Department in Zagazig University hospital from December 2011 to November 2012 were included. All women enrolled in the study gave informed consent. They came presenting with history of any or all of the following; discharge per vagina, intermenstrual bleeding, post coital bleeding, clinically suspicious looking cervix, pregnant patients, patients with active bleeding per vagina, patients with frank growth on the cervix, patients with history of total hysterectomy, allergy to acetic acid or previous history of treatment of cancerous lesions. After obtaining a detailed history, all

patients were subjected to a general and local examination. Vulva was examined for any warts, ulcer or infection. Cusco's speculum was inserted for examination of vagina and cervix. The color and smell of any discharge was noted, any discharge, blood or mucus from cervix was removed by cotton swabs. A PAP smear was taken using Ayre's spatula by scrapping the squamocolumnar junction gently throughout its circumference with hooked end of Ayre's spatula. The PAP smear was prepared by transferring the materials obtained on Ayres's spatula on glass slides. Two such smears were immediately fixed in 95% alcohol to stain them by papanicolau stain after that. The PAP was reported in the following 4 categories: Negative for neoplastic cellular changes, atypical squamous cells for undetermined significance, low-grade (LSIL) and high-grade intraepithelial lesion or worse (HSIL+) (12). A solution of 5% acetic acid was then applied to cervix using a cotton swab and after 1 min visual inspection of cervix was done for the development of any acetowhite area near squamocolumnar junction or close to the external os or presence of aceto-white growth. The VIA results were interpreted as positive with detection of any distinct, opaque, dense or well defined aceto-white area but if no aceto-white area was recorded or if a whitish appearance was doubtful, the test result was considered negative as when there is more nuclear material in proliferating cells of dysplastic epithelium, acetic acid coagulates these proteins obliterating the color of the stroma and the abnormal areas appear as aceto-white areas (13). The sites and characteristics of the lesions were mapped. All women then underwent colposcopy on the same day and if a colposcopically suspected or abnormal lesions was identified punch biopsies were masked with respect to the screening results. The histopathological diagnosis was used as gold standard for women for whom biopsies were taken. Results were compiled and analyzed. Sensitivity, specificity, positive predictive value and negative predictive value were then calculated for PAP smear, visual inspection with acetic acid, colposcopy or colposcopy with histopathology results as the gold standard. The statistical test used was the Chi-square test and results were computed using statistical package for social sciences (SPSS) version 12.

3. Results

200 women were included in this study. The mean age of the subjects was 36.2 and the mean of parity was 1.6 (Table 1). The most common presenting symptom was vaginal discharge (80%) (Table 2) and the most common finding on speculum examination was chronic cervicitis (38%) (Table 3). Pap smear was recorded as normal or inflammation in 192 (96%) and abnormal in 8 (4%) these 8 abnormal smears included 5 LSIL, 2 HSIL and one with cells suspicious of malignancy (Table 4). VIA reported positive in 24 subjects (12%) and 88% were VIA negative. Colposcopy was done in all 200 patients and scored to Reid's colposcopic index. A score of 3–8 was considered positive with regard to dysplasia (Table 5). Colposcopy was

Table 1 Demographic criteria of the patients.

Age of the subjects	Range (20–50) mean 36.2 + -10.3 years
Parity of the subjects	Range (0–7) mean 2.61 + _1.4

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