Incidence of Positive Visual Inspection of Acetic Acid in Dr Cipto Mangunkusumo General Hospital Followed by Liquid Based Cytology, HPV testing and Colposcopy: A Cross Sectional Study

Junita Indarti,* Heru Prasetyo, Kristian Alda****

**Social Obstetrics and Gynecology Consultant, Faculty of Medicine Universitas Indonesia, Cipto Mangunkusumo General Hospital.*
***Obstetrics and Gynecology Resident, Faculty of Medicine Universitas Indonesia, Cipto Mangunkusumo General Hospital*

Abstract

Introduction : *Cervical cancer is most common cancer in women in Asia Oceania and worldwide. VIA(Visual Inspection after Acetic acid) is being used as an alternative in low- and middle-income countries due to the minimal equipment required. Data from recent systematic reviews and multicentre trials show that VIA to be moderately sensitive for precancerous lesions, as compared with Pap testing. This study aim to determine the incidence of positive VIA, LBC, HPV DNA testing and colposcopy findings obtained from positive VIA cases in Dr. Cipto Mangunkusumo General Hospital.*
Methods: *This was a cross-sectional study. Data was collected from cervical cancer screening by VIA examination at Dr. Cipto Mangunkusumo General Hospital, Jakarta, Indonesia in 2017. Age, VIA results were recorded. The results showed abnormal and predictive cancer lesions (acetowhite lesion) were defined as a "positive test." The positive VIA result followed by LBC, HPV DNA testing, and Colposcopy. Only 25 performed LBC and HPV DNA test, and 30 of the VIA positive were performed Colposcopy.*
Results: *A total of 1.960 subjects were recruited for this study. The mean age of the subjects was 34.5 years, and 908 (46 %) subjects belong to the 30-40 years age group. Negative VIA result were found in 1893 subjects (96,58%) and 67 subjects (3,42%) had positive results. From 25 VIA positive subject whose gone through LBC and HPV test, 9 subjects (36%) had abnormal LBC, 3 subjects (12%) had positive HPV DNA test. From 30 positive VIA whose got colposcopy examination 17 subjects (56,6 %) had abnormal colposcopy.*
Conclusions: *The number of VIA screening participants in RSCM, Jakarta, Indonesia with positive VIA results is low. Further studies regarding the validation of VIA are required to evaluate its diagnostic value.*

Keywords: *Cervical cancer, screening, visual inspection after acetic acid, VIA, colposcopy*

Korespondensi: **Junita Indarti**
E-mail: *junita_indarti@yahoo.com*

Insidensi Inspeksi Visual Asam Asetat Positif di RSUP Dr Cipto Mangunkusumo Dilanjutkan dengan Pemeriksaan Sitologi, Tes HPV DNA dan Kolposkopi: Sebuah Studi Cross Sectional

Junita Indarti, Heru Prasetyo,***
*Kristian Alda***

**Divisi Obstetri dan Ginekologi Sosial , Departemen Obsteri dan Ginekologi Fakultas Kedokteran Universitas Indonesia*
***Departemen Obsteri dan Ginekologi Fakultas Kedokteran Universitas Indonesia*

Abstrak

Pendahuluan : *Kanker serviks merupakan kanker terbanyak pada wanita di Asia Oseania dan di seluruh dunia. Inspeksi Visual dengan Asam Asetat (IVA) sudah digunakan sebagai alternatif di negara-negara berkembang karena peralatan yang dibutuhkan minimal. Data dari tinjauan sistematis terbaru dan penelitian multisenter menunjukkan bahwa IVA cukup sensitif untuk lesi prakanker, dibandingkan dengan tes Pap. Penelitian ini bertujuan untuk menentukan kejadian IVA positif, LBC, tes DNA HPV dan temuan kolposkopi pada kasus IVA positif di RS Dr. Cipto Mangunkusumo.*
Metode: *Penelitian ini adalah studi cross-sectional. Data dikumpulkan dari skrining kanker serviks dengan pemeriksaan IVA di Rumah Sakit Dr. Cipto Mangunkusumo, Jakarta, Indonesia pada tahun 2017. Usia, hasil pemeriksaan IVA, LBC, tes DNA HPV, dan kolposkopi dicatat. Dari hasil IVA positif dilakukan pemeriksaan LBC dan tes DNA HPV pada 25 kasus. Sedangkan pemeriksaan Kolposkopi dilakukan pada 30 kasus dengan hasil IVA positif.*
Hasil: *Sebanyak 1.960 subjek direkrut untuk penelitian ini. Usia rata-rata subjek adalah 34,5 tahun, dan 908 (46%) subjek termasuk dalam kelompok usia 30-40 tahun. 1893 subjek (96,58%) memiliki hasil IVA negatif dan 67 subjek (3,42%) memiliki hasil positif. 9 subjek (36%) memiliki LBC abnormal, 3 subjek (12%) memiliki tes HPV positif dan didapatkan hasil kolposkopi abnormal pada 17 subjek (56,6 %) dari 30 subjek dengan IVA positif yang dilakukan pemeriksaan kolposkopi.*
Kesimpulan: *Angka kejadian IVA positif di RSCM, Jakarta, rendah. Penelitian lebih lanjut diperlukan untuk menilai akurasi dari pemeriksaan IVA.*

Kata kunci: *Kanker serviks, inspeksi visual asam asetat, skrining, kolposkopi, IVA*

Introduction

Cervical cancer is ranked the 2nd most common cancer in women in Asia Oceania and the 4th most common cancer in women worldwide. More than 500.000 new cases worldwide per year, with around 50% of mortality rate, which is around 266,000/year; 85% occur in developing countries and over 70% of cases are diagnosed at an advanced stage.[1] One of the strategies to reduce cervical cancer is to do early detection with VIA(Visual Inspection after Acetic acid). VIA has been developed as an alternative to cytology screening. Several studies confirmed the advantages of VIA, including its low cost, simplicity, lesser infrastructure needed, and ease of use (it can be carried out by paramedical staff), high sensitivity and instant results. The high negative predictive value (NPV) of VIA suggests that significant lesions can reliably be excluded if the test is negative. A further advantage of this technique is the ability to offer treatment the same day; the so-called see and treat policy, which improves compliance and yields reasonable screening outcome.The disadvantages of VIA is a high rate of false positive results, which may lead to over treatment if this policy is applied. The causes of high IVA false positives include immature metaplasia, cervical inflammation. With a positive VIA result, the choice according to the case the next screening that can be done are colposcopy and liquid base cytology (LBC).[2] It is being introduced in developed countries to improve the sensitivity of the Pap test. Prevalence of VIA test-positive is 4.7% in Jakarta population.[3] The objective of this study was to

assess the incidence of precancerous cervical lesion based on VIA positive result, colposcopy and LBC finding for screening in workers at Dr. Cipto Mangunkusumo Hospital, Jakarta, Indonesia.

Methods

This was a cross-sectional study. Secondary data obtained from HRD Departement of Ciptomangunkusomo Hospital (RSCM). Data from cervical cancer screening by means of VIA in workers at Dr. Cipto Mangunkusumo Hospital, Jakarta, Indonesia in 2017 were retrieved. Age, and VIA results were recorded. Data collection was conducted after ethical clearance (Ethic Number :KET-1036/UN2. F1/2018). During the VIA procedure, abnormal and predictive cancer lesions (acetowhite lesion) were defined as a "positive test." Colposcopy, HPV testing, LBC were administered to the women were suspected to have the disease. Before VIA is administered, the cervical area is washed with 3% to 5% acetic acid solution. VIA is a simple and easy-to-learn method and does not require laboratory equipment. Test results are immediate after administration. With suspicious lesions detected, women are directed to further treatment.[2]

VIA involves naked-eye inspection of the cervix, using a bright torch light or a halogen focus lamp, one minute after the application of 3-5% diluted acetic acid using a cotton swab or a spray. Most of the reported experience with VIA involves 3 or 5% acetic acid, which is well tolerated by women. The changes that occur in the cervix in relation to the squamocolumnar junction (SCJ) after acetic acid application visible to the naked eye can be categorised as negative or positive tests for cervical neoplasia. A negative test is characterised by one or more of the following: no acetowhite lesions, ill-defined, faint, translucent acetowhite lesions, acetowhitening of endocervical polyps, nabothian cysts, prominent acetowhitening of the SCJ, dot-like acetowhitening scattered all over the cervix, geographic satellite acetowhite lesions not touching the SCJ. A positive test is characterised by well-defined, opaque acetowhite lesions in the transformation zone close to the SCJ or to the external orifice or the entire cervix turning acetowhite. Invasive cancer is suspected when a cervical growth turns acetowhite.[2]

Results

A total of 1960 subjects were recruited for this study. The mean age of the subjects was 34,5 and 908 (46.33%) subjects belonged to the 30-40 years age group. 1.893 (96.58%) subjects had negative VIA results and 67 (3.42%) subjects had positive VIA results. Characteristics of the subjects are presented in Table 1.

Table 1. Characteristics of the Subjects

	N (n=1960)	%
Mean age	34.5	
Age group (y o)		
<30	562	28.67
30-40	908	46,33
41-50	487	24.85
>50	3	0.15
VIA results		
Negative	1893	96.58
Positive	67	3.42

Twenty five Positive VIA result underwent LBC, HPV and 30 positive VIA result had colposcopy examinations. From LBC examination, 9 subjects had abnormal results, while 3 subjects had positive HPV high risk, abnormal colposcopy results were found in 17 subject. From 17 subject who got Abnormal Colposcopy result, 4 of them undergo a cervical biopsy, the result were 1 CIN 1 and 3 CIN 2 The results are demonstrated in Table 2.

Table 2. LBC, HPV testing and Colposcopy Results

	N(n=25)	%
LBC		
Normal	16	64
Abnormal	9	36
HPV testing		
Negative	22	88
Positive	3	12
	N(n=30)	**%**
Colposcopy		
Normal	13	43.3
Abnormal	17	56.7

Discussion

The most important factor that determines the importance of a disease as a public health issue is its incidence and the number of deaths it causes. When these two factors are considered, cancer is one of the most important global health and socioeconomic problems. More than 20 million people in the world are living with cancer, and 12% of the deaths in the world each year are related to cancer.[1] The incidence and mortality related to cervical cancer are both declining in the developed countries because of screening programs and new treatment approaches. In underdeveloped countries, alternative, low-cost and effective early diagnosis methods are needed. The latest data shows that screen coverage in Indonesia is currently 7.3%[4] VIA is an attractive method for these reasons in underdeveloped countries. VIA is an early diagnosis method used to detect the lesions that are high indicators of cancer in women.[2]

VIA is being used as an alternative in low- and middle-income countries due to the minimal equipment required. Previous research shows the positive prevalence of VIA in Indonesia is 4.4%.[5] China has conducted a study with 3.086 subjects and showed a positive VIA rate of 1.39%.[6]

Several studies on positive IVA rates have previously been conducted in Indonesia. Previous research shows the positive prevalence of VIA in Indonesia is 4.4%.[3] Subsequent research shows the prevalence of VIA positive is 4.7% in Jakarta population, risk factors that influenced of VIA positive were number of marriage, parity, smoking habits and use hormonal contraception.[5]

In our study, from 1960 participants we performed VIA test, only 67 subjects (3.42%) had positive result, that is lower than the number incidence of other study. Study in Ethiopia showed that the incidence of positive VIA was 12.9%.[7]

From previous study in Rwanda, 1002 women was screened with VIA and showing positive result in 60 women (5.9%). For VIA positive women with minor lesions, cryotherapy was performed to remove pre-cancer lesions. For VIA positive women with larger lesions, the Loop Excision Electrical Procedure (LEEP) was performed by trained medical doctors. 17 subject was found have a cervical cancer.[8] Study in Mianma Maternity Hospital from the 3,600 screened women, 294 (8.2 %) patients had positive VIA results. A total of 209 positive VIA cases underwent cervical biopsy. The prevalence was 5.8 % for cervical lesions, 1.4% for HPV infection alone, 3.3% for CIN 1, 0.84% for CIN 2, and 0.27 % for CIN 3. One hundred and twenty women with negative VIA as control were randomly examined with colposcopy, and no cases suffered cervical lesion.[9] In our study from 17 abnormal colposcopy results, LEEP was performed in 4 patients, and the histopathology result were 1 subject with CIN 1 and 3 subjects with CIN 2.

Study by Pimple et al, 3613 women was screened with VIA and showed 352 positive result (9.7%). From 352 women, then tested for HPV showing 39 women with positive result (11%). This result was slightly similar with our study that found 12% positive HPV test with VIA positive.[10]

Our study showed normal LBC results is 64% and abnormal LBC results is 36%. These results are close to the study in Zimbabwe, of 205 positive VIA patients who were tested for LBC, 145 (70.7%) percent had normal LBC results.[11]

In our study, most of the women had negative VIA results. The limitation of this study, we did not compare all of the positive results with the other screening method. We hope that by conducting this study, we could trigger further larger studies VIA and doing better management of VIA positive result.

Conclusion

The number of subject in Dr. Cipto Mangunkusumo Hospital, Jakarta, Indonesia with positive VIA results is low. Incidence of VIA positive only 3.42%. Further studies regarding the validation of VIA are required to evaluate its diagnostic value.

Conflict of Interest

Authors declare no conflicts of interest.

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