Research Article

Comparison of visual inspection of cervix with acetic acid with conventional papsmearin the detection of colposcopicbiopsy proved cervical intraepithelial neoplasia in women presenting in tertiary care hospital

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ABSTRACT

Cervical cancer grows in cervix. Infection from Human Papillomavirus (HPV) is must for the occurrence for cervical cancer. If a Pap test result is abnormal, the patient will have more tests to rule out or diagnose a precancerous condition. Visual inspection of female cervix with acetic acid (VIA) is a non-invasive procedure.The objective of this study was to compare visual inspection of cervix with acetic acid with conventional Papanicolaou smear in the detection of premalignant conditions of cervix in women of reproductive age presenting. It wasa comparative studyconducted at OPD of Department of Obstetrics and Gynecology Lady Aitchison Hospital, Lahore for 6 months i.e. from 30-06-2016 to 29-12-2016 The Non-probability convenient sampling technique was used. After taking the informed consent the acetic acid was applied and wait was done for 1 minute.After this the entire cervix was examined for significant findings like thick and opaque areas and acetowhite having clearly demarcated edges. Colposcopy was also done. The entire collected data was entered and analysis was doneusing version 17 of SPSS. Mean age of the patients was 41.84±13.74 years; the mean value of the marriage age of the patients was 22.26±2.69 years. The sensitivity, specificity, PPV and NPV of VIA for detection premalignant condition was 86.67%, 99.05%, 92.86%, 98.11% respectively vs 66.67%, 98.09%, 83.33%, 95.37% respectively for Pap smear taking colposcopic biopsy as gold standard.According to our study visual inspection of cervix with acetic acid had high sensitivity, specificity, PPV and NPV in the detection of premalignant conditions of cervix in women of reproductive age to detect in its early stages.

Keywords: PAP smear, Colposcopy, Cervical cancer, Premalignant

INTRODUCTION

Cancers of female genital tract are of much concern worldwide. Among them, cancer of cervix is a major cause of death and disability. After breast cancer, the second commonest cancer is cervical cancer in women. A study showed that around 530,000 women were affected by cervical cancer in 2008 and 85% of these were diagnosed in developing countries comprising 13 % of total female malignancies.[1]After the introduction of successful screening programs in developed countries, new cases and death rates caused by cancer of cervix have reduced over 80%. But this trend has not been observed in developing countries.[2]Pakistan was initially a low-risk country but now it is moderate-risk country for cancer of cervix. The number of affected females was doubled from 2002 to 2008. It was

9 per 100,000 women in 2002 but was19.5 per 100,000 women in 2008.[3]Cervical cytology by conventional method is being widely used as a screening test for the detection of cancer of cervix worldwide. Cervical screening programs by cytology have been implemented in developed countries which have led to markedly reduced incidence of cervical cancer.[4] For diagnosing all stages of changes in the cervix and vagina, Papanicolaou smear also known as Papanicolaou smear is an effective method. It is also simple, safe and noninvasive method.[5] Colposcopy is a globally renowned procedure to detect cervical cancer at early stage.[6] but because of the following commonly encountered problems i.e., increased cost, less expertise, problems in interpretation, less willingness for procedure, and unable to follow standard diagnostic protocol is not frequently available in less developed countries.[7]Among developing countries, the procedure of visual examination of the cervix after applying acetic acid, called VIA, is replacing Papanicolaou smear as an alternative.[8] One study found that recently, cytology is the standard screening test to detect cancer of cervix. However, in developing countries, where screening programs based on cytology are not available, VIA is an alternative with promising effects.[9] The advantages of VIA lie in its being simple, rapid, cost effective and in ease of administration. It does not require much infrastructure. Its accuracy is comparable to a good quality Papanicolaou smear, and its results are available without any delay. After finding test result as positive, further planning regarding

investigations and treatment can be carried out in the same setting.[10]

OBJECTIVE:
To compare visual inspection of cervix after applying acetic acid with conventional Papanicolaou smear in the detection of premalignant conditions of cervix in women of reproductive age to detect in its early stages and treat accordingly.

MATERIAL AND METHODS:
It was aComparative Study which was conducted in OPD of Department of Obstetrics and Gynecology Unit V Lady Aitchison Hospital / KEMU. Non-probability convenient sampling technique was used. All women of age 15 to 65 years were included in this study.Women who were having bleeding P/V, PID, Pregnant women, Women >65 years of age and women who were unwilling to participate in study were excluded.One hundred and twenty women of reproductive age, who meet the inclusion criteria, reporting in Outpatient Dept of Lady Aitchison hospital, Lahore were enrolled. After taking informed consent, patients' demographic data (i.e., name, husband name, age, contact number, gestational age) were recorded according to proforma. After taking the consent and explaining regarding study and procedurewasdone according to standard operating procedure. Those females who had these findings and turn positive on smear were enrolled for colposcopy.Biopsy was taken from acetowhite positive areas and specimen was sent for cytological examination.

RESULTS of Study:
In this study, total 120 cases participated. The mean age of the patients was 41.84±13.74 Minimum age was 20 and maximum age was 65.

Table#1: Descriptive statistics of age (years)

Age (years)	N	120
	Mean	41.84
	SD	13.74
	Minimum	20
	Maximum	65

In this study the mean value of the marriage age of the patients was 22.26±2.69 years with minimum and maximum marriage years of 18 & 28 years respectively.

Table#2: Descriptive statistics of marriage age

Marriage age (years)	N	120
	Mean	22.26
	SD	2.69
	Minimum	18
	Maximum	28

Out of 120 cases, the patients with one marriage were 109(90.83%) and the patients with twice marriage were 11(9.17%). **Fig#1**

Fig#1: Frequency distribution of number of marriages

The study results showed that total 18 patients turned out to be positive on screening test (VIA and Pap smear). Of these 18, PAP smear alone was positive for premalignant condition in 4(3.33%) patients while VIA alone was positive in 6(5%) patients. Both VIA and Pap smear were positive in 8(6.67%) patients. Colposcopic biopsy results of these 18 screening positive patients showed 15 positive while 3 were negative

Table#3: Frequency distribution Table

Test		frequency	Percentage
PAP smear only	Positive	4	3.33
VIA	Positive	6	5
Pap smear + VIA	Positive	8	6.67
Colposcopic Biopsy	Positive	15	12.5
	Negative	105	87.5
	Total	18	100

In this study the colposcopic biopsy diagnosed positive premalignant condition in 15(12.5%) patients and it diagnosed negative premalignant condition in 103(85.83%) patients. In this study, the sensitivity, specificity, PPV and NPV of VIA for detection premalignant condition was 86.67%, 99.05%, 92.86%, 98.11% respectively taking colposcopic biopsy as gold standard. Statistically significant difference was noted between the VIA and colposcopic biopsy. i. e., p-value=0.000

Table#4: Comparison of VIA with Colposcopic Biopsy

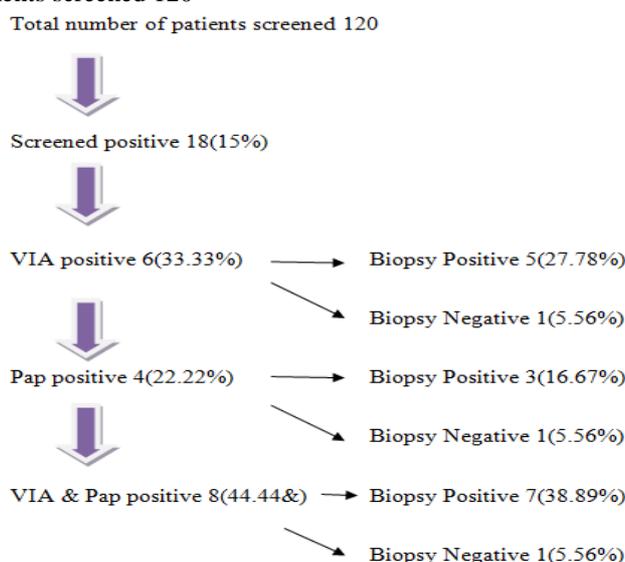|		Colposcopic Biopsy		Total	p-value
		Positive	Negative		
VIA	Positive	13	1	14	
	Negative	2	104	106	0.000
Total		15	105	120	

The results of this study showed that the sensitivity, specificity, PPV, and NPV of PAP for detection premalignant condition was 66.67%, 98.09%, 83.33%, 95.37% respectively taking colposcopy as gold standard. Statistically significant difference was noted between the colposcopy and PAP. i. e p-value=0.000

Table#5 Comparison of colposcopy with PAP

		Colposcopy		Total	p-value
		Positive	Negative		
PAP	Positive	10	2	12	
	Negative	5	103	108	0.000
Total		15	105	120	

The details of the results are summarized in the

Fig#3: Total number of patients screened 120

Total number of patients screened 120

Screened positive 18(15%)

VIA positive 6(33.33%) → Biopsy Positive 5(27.78%)
Biopsy Negative 1(5.56%)

Pap positive 4(22.22%) → Biopsy Positive 3(16.67%)
Biopsy Negative 1(5.56%)

VIA & Pap positive 8(44.44&) → Biopsy Positive 7(38.89%)
Biopsy Negative 1(5.56%)

DISCUSSION

This present Comparative Study was carried out at OPD of Department of Obstetrics & Gynecology Unit V Lady Aitchison Hospital / KEMU to compare visual inspection of cervix using acetic acid with conventional Papanicolaou smear in the detection of premalignant conditions of cervix in women of reproductive age presenting in tertiary care hospital to detect in its early stages and treat accordingly.Cervical cancer remains a major public health problem of female population worldwide and even in India with an incidence of 134,420 cases and mortality of 72,825 cases in the year 2008. VIA is similar to colposcopy so that acetic acid is applied to cervix and any acetowhite areasare visualized, even though there is no magnification in VIA. Only a few organized cervical screening programs exist in our country, even though the disease burden is high. Many studies now provide evidence of the feasibility and cost-effectiveness of screening and treatment approaches for cervical cancer prevention.[11]Premalignant lesions of cervix take about 5 to15 years to progress to advanced cancer. If timely identified, pre-invasive disease has almost 100% cure rate with simple surgical treatment, while survival rates is< 35% in case of invasive disease.[12] According to our study results,the sensitivity, specificity, PPV and NPV of PAP for detection premalignant condition was 66.67%, 98.09%, 83.33%, 95.37% respectively taking colposcopy as gold standard. Similarly, the sensitivity, specificity, PPV and NPV of VIA for detection premalignant condition was 86.67%, 99.05%, 92.86%, 98.11% respectively taking colposcopic biopsy as gold standard. Statistically significant difference was noted between the VIA and colposcopic biopsy. i. e., p-value=0.000. Some of the studies are discussed below showing their results as. VIA accuracy studies have resulted in a range varying approximately 60-90 % of sensitivity and specificity values.[13-17]U of

Zimbabwe et al[8] interpreted that VIA was more sensitive but less specific than cytological examination. Sensitivity was 76.7% for VIA and 44.3% for cytology. Specificity was 64.1% for VIA and 90.6% for cytology. This clearly shows high sensitivity of VIA andpoints out that VIAmay be valuable in detection of early staged lesions of the cervix.

One study found that recently, cytology is the standard screening test to detect cancer of cervix. However, in developing countries, where screening programs based on cytology are not available, VIA is an alternative with promising effects.[9]One study by Shaily Agarwal et al[18] concluded that the VIA is not only useful for detectingearly staged lesions of cervical canal in poor developed countries but it is also in well developed healthcare centers and advanced cancer centers in these poor developed countries. Positive predictive value of VIA has values comparable to the conventional Pap smear, but it has the benefit of reaching the diagnosis earlier, followup and treatment than cytology based screening.Jose Jeronimo et al[19] presented that the VIA is not only useful for detecting early staged lesions of cervical canal in poor developed countries but it is also in well developed healthcare centers and advanced cancer centers in these poor developed countries. Positive predictive value of VIA has values comparable to the conventional Pap smear, but it has the benefit of reaching the diagnosis earlier, follow up and treatment than cytology based screening.A study by NahidKhodakarami et al[20] showed that the sensitivity, specificity, PPV, NPV, and accuracy of the Pap test, the VIA, and the DC were 23.5, 100, 100, 86.5, and 87%; 62.5, 98.8, 90.9, 93.2, and 92.9%; and 46.7, 97.6, 77.8, 91, and 89.8%, respectively, for cervical neoplasia. The Pap test had low sensitivity but high specificity, whereas VIA had a high sensitivity in addition to being easy and low-cost.Mitchell et al (1998) described the specificity and sensitivityof colposcopy (they compared it to biopsy takingas reference standard) doing a meata-analysis of nine different studies. They concluded that sensitivities range from 0.30 – 0.99 and specificities range from 0.39 – 0.93, with a weighted mean sensitivity and specificity of 0.85 and 0.69, respectively.[21]A study by BaharKohli et al[22] demonstrated that PAP smear had a sensitivity, of 80% and a specificity of 64.29%, with PPV of 48.98% and NPV of 88.24% while sensitivity and specificity of colposcopy were 100 and 57.14% respectively and PPV and NPV of colposcopy were found to be 50 and 100% respectively.

CONCLUSION:
According to our study visual inspection of cervix with acetic acid had high sensitivity, specificity and diagnostic accuracy in the detection of premalignant conditions of cervix in women of reproductive age presenting in tertiary care hospital to detect in its early stages and treat accordingly

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