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ORIGINAL ARTICLE

COMPARATIVE STUDY OF VISUAL INSPECTION WITH ACETIC ACID AND VISUAL INSPECTION WITH LUGOL'S IODINE FOR MASS SCREENING OF PRE-INVASIVE AND INVASIVE LESIONS OF CERVIX

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ABSTRACT

Background and objective: Cervical cancer is the second most common gynaecologic neoplasm in the world. In India cancer cervix is the 2nd common killer among women. So there is urgent need to control the disease. As it is having a long duration of period to become malignancy from pre-invasive lesion, effective screening of women can prevent the severe form of disease. The present study is aimed to compare the effectiveness of visual inspection with acetic acid and visual inspection with Lugol's iodine. **Material and methods:** This is a prospective study in which 50 women were screened. VIA, VILI first done and if positive in visual inspection methods, cervical biopsy is taken and results are analysed.**Results**:Of the 50 women screened,17 women were positive for VIA, 20 were positive by VILI. one woman dropped from follow up. 19 cervix biopsies taken, of these 16 which were positive in VILI shows chronic nonspecific cervicits. two cases missed in VIA. two cases which showed positive in both VIA and VILI found to be carcinoma. Sensitivity of VIA, VILI individually was 42.6%, 42.9%. Specificity of VIA, VILI was 81.4%, 81.6%. But when both tests were combined sensitivity and specificity found to be 100% and 87.9%.**Conclusion**:The present study showed that VIA, VILI had comparable sensitivity and specificity to Pap smear and can be a suitable screening test in resource poor settings. Also VILI had a role parallel to VIA to enhance the effectiveness of VIA.

Keywords: Cervical screening, visual inspection with 3% acetic acid and visual inspection with Lugol's iodine.

1.INTRODUCTION

Cervical cancer is the second most common gynaecologic neoplasm in the world. 527624 new cases and 265653 deaths occur every year. Mortality ratio was 52%. Developing countries have cancer cervix as the first common cause of malignancies accounts for 88% of cases.

In India cancer cervix is the 2nd most common killer among women. During 2012, 1,22,644 new cases of cancer cervix occurred in our country. Mortality rate was 12.4 per one lakh population. Cervical cancer is most frequent cancer among women between 15 and 40 years and 60 -64 years.

So screening of cervical cancer should begin from 20 years of age. It is an invasive cancer, but preventable cancer because of its long pre-invasive stage and also good treatment modalities are available for pre-invasive lesions.

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Though screening by cytology is an effective method of screening, many developing countries do not have resources to implement Pap smear methods.

In low resource settings, visual inspection with 3% acetic acid and visual inspection with Lugol's iodine are widely used now as these methods also have comparable sensitivity and specificity to Pap smear. The present study is to perform the comparative study of VIA and VILI for mass screening programme of pre invasive and malignancies of cervix.

2.MATERIAL AND METHODS:

Ethical committee clearance was obtained before starting the study. This prospective Study conducted in Department of Obstetrics and Gynaecology OPD of RAJAH MUTHIAH MEDICAL COLLEGE HOSPITAL, Chidambaram. All married women of 21-55 years of age whether symptomatic or not were enrolled in the study for a period of 8 months from February 2016 – September 2016. Women to be screened were explained in detail about the procedure to be

done, written informed consent obtained and relevant obstetric and gynaecological history noted. Women were
that the procedure will be painless.

The external genitalia, perianal skin, and vestibule were examined thoroughly. Then ectocervix and transformation zone were examined. First 3% acetic acid was applied over the ectocervix and waited for 2 minutes and then visualised the cervix. Then Lugol's iodine was applied over ectocervix, waited for 2 minutes and examined thoroughly. The normal squamous epithelial cells have glycogen which takes up iodine and gives the appearance of mahogany brown. The abnormal cells don't have glycogen and so looks yellowish brown colour or saffron yellow. Examination findings were noted in each case proforma. If abnormal findings were found in each test, cervix biopsy taken. Collected data was statistically analysed to determine the sensitivity and specificity, PPV, NPV of VIA, and VILI individually and also for VIA combined with VILI. Patients found to be negative for both tests were advised to come for follow up annually. Women who were positive for either of the test treated accordingly.

3.RESULTS:

This graph correllates the relation between parity and VIA, VILI

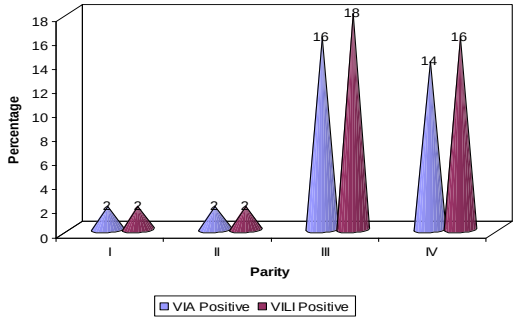

Table 1

Parity	VIA		VILI	
	Negative	Positive	Negative	Positive
I	3(6.0%)	1(2.0%)	3(6.0%)	1(2.0%)
II	14(28.0%)	1(2.0%)	13(26.0%)	2(2.0%)
III	10(20.0%)	8(16.0%)	9(18.0%)	9(18.0%)
IV	6(12.0%)	7(14.0%)	5(10.0%)	8(16.0%)

This table correlates the parity distribution. More number of women positive for VIA, VILI were of parity 3 and 4.Both present study and previous studies indicates as parity increases women are more prone for cervical lesions. During labour cervix gets damaged more and recovers after delivery. So as parity increases each and every time cervix gets damaged, more chances of infection, inflammation and prone for preinvasive lesions.

Correlation of socio economic status and VIA,VILI

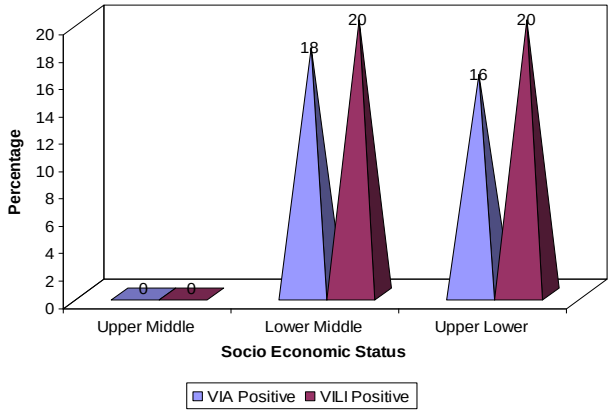

Table 2

Socio Economic Status	VIA Negative	Positive		VILI Positive
Upper Middle	2(4.0%)	0	2(4.0%)	0
Lower Middle	21(42.0%)	9(18.0%)	20(40.0%)	10(20.0%)
Upper Lower	10(20.0%)	8(16.0%)	8(16.0%)	10(20.0%)

More number of positive cases both in VIA, VILI seen in lower middle and upper lower class of Modified Kuppusamy's scale. As these class people have poor hygiene, prone for repeated infection and pre-invasive lesions.

Table 3. Sensitivity and specificity of VIA and VILI

	VIA, VILI
Total number of patients	50
True (+) ve	18
False (+) ve	8
True (-) ve	14
False (-) ve	10
Sensitivity (%)	100.0%
Specificity (%)	87.9%

In VIA sensitivity is 56 – 93% and specificity is 74- 93%. VILI has 86% sensitivity and specificity is 76 – 96% when tested individually. In present study when VIA combined with VILI the sensitivity and specificity is 100% and 87.9% respectively. VILI enhances the performance of VIA so that when both tests are done parallel no cases can be missed.

Table 4. Statistical analysis of findings of VIA and VILI

	VIA, VILI
Total number of patients	50
Total Positive	26
Total Negative	24
PPV	69.23%
NPV	74%

The positive predictive value of Combined VIA, VILI is 69.23% and negative predictive value is 74%. So the negative report is more reliable.

Correlation of cervix biopsy and VIA, VILI

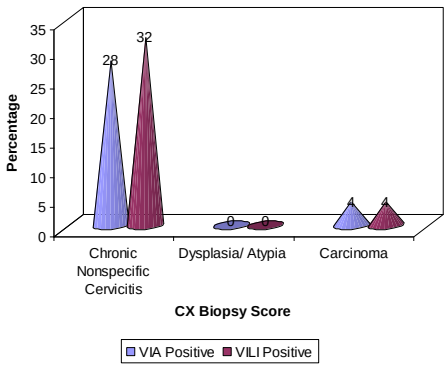

Table 5:

CX Biopsy Score	VIA		VILI	
	Negative	Positive	Negative	Positive
Chronic Nonspecific Cervicitis	3(6.0%)	14(28.0%)	1(2.0%)	16(32.0%)
Dysplasia / Atypia	0	0	0	0
Carcinoma	0	2(4.0%)	0	2(4.0%)

In this group, in 19 women, cervix biopsy taken of which 16 had chronic nonspecific cervicitis. These 16 women also positive for VILI, 14 women positive in VIA which implies benign lesions also mimic pre invasive lesion. So abnormal finding in either of the test should be confirmed by cervix biopsy. 2 women in histology showed malignancy and these 2 cases also positive for VIA, VILI. So no case was missed by VIA and VILI and confirms the sensitivity and specificity of combined VIA and VILI as 100% and 87.9%.

4.DISCUSSION

VIA is useful for detection of precursor lesions of cervical cancer not only in low-resource settings but also in well-equipped health centres and cancer centres. In these non-low-resource settings, VIA has a positive predictive value comparable to the conventional Pap smear, but it is more likely to achieve earlier diagnosis, follow-up, and treatment than cytology-based screening(Jeronima, 2005).

VIA was more sensitive (94.44%) than Pap smear (55.55%), which was statistically significant. However, the specificity of VIA was slightly lower (97.87%) than that of cytology (98.58%)(Begum,2012).

In IARC multicentre study done by Sankarnarayanan, (2004) in India, results showed sensitivity of VIA was 56.10% - 93.90% and specificity ranged between 74.20% - 93.80%.

In study by Avinash Agarval, (2012),sensitivity of Pap smear was 84.20% and specificity was 62.10% .

The present study also similar to the above studies. Combination of VIA, VILI showed sensitivity of 100%, and specificity of 87.9%.

An attempt had been made in present study to increase awareness of women about cervical cancer and preventive measures, screen all women in reproductive age group at least once in a year until 3 negative reports, to provide screening test with high sensitivity as women in India have less follow up.

5.CONCLUSION

Cervical cancer is preventable but not prevented. This is the real situation present today because no screening tests available at present have 100% sensitivity, or specificity. In present study, an attempt was made to analyze VIA, VILI as combination will improve sensitivity.

The present study showed combination tests had 100% sensitivity but with low specificity of 87.9%. But these draw back are of low cost to pay for preventing and diagnosing disease at an early stage for effective management.

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