Original Research Article

A study to evaluate the performance of colposcopy and conventional cytology in VIA positive women

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Abstract

Background: Cervical cancer is preventable in pre-invasive state when effective programmes are implemented to detect and treat its precursor lesions. Cervical cancer is the most common cancer among Indian women. The present study evaluates the performance of colposcopy vs conventional cytology in estimating the presence and grade of cervical disease against the reference standard of histopathology as a secondary test modality to triage women found positive on primary screening by visual inspection with 5% acetic acid (VIA). **Methods:** This was a prospective observational study. 50 women of of reproductive age who were found VIA positive were subjected to Pap smear and colposcopy, whereas histopathology was done in patients having abnormal findings on colposcopy. Biopsies were taken from the abnormal areas. Data were entered in the institution using standard computer software. Diagnostic accuracy for single test was calculated using 2*2 tables and standard formulae. **Results:** The diagnostic accuracy of Pap smear was found to be 77% and that of Colposcopy was 87%. The accuracy of colposcopy was higher than that of Pap smear. **Conclusion:** It is very important to diagnose the CIN lesions with accuracy once a woman comes to a tertiary care hospital with symptoms or is referred for a suspicious looking cervix. All these women must be screened by colposcopy and directed biopsy must be taken if indicated in the same sitting.

Keywords: Colposcopy, Pap smear, Premalignant lesion of cervix, Suspicious looking cervix

Introduction

Cervical cancer is the 4th most common cancer among women world-wide. It is the most frequent cause of death from cancer in women in developing countries. Cervical cancer is preventable in preinvasive state when effective programmes are implemented to detect and treat its precursor lesions. Conventional cytology based screening programmes currently are not feasible in India where infrastructures and quality assurance requirements are not readily met. In addition to be effective cytology screening needs to be prepared regularly[1-5]. This encouraged visual inspection of cervix by applying 3% to 5% of acetic acid and examination under lamp observing for colour change on the cervix by trained health personnel has been suggested as an alternative to cervical cytology screening in low resource setting.VIA (visual inspection with acetic acid) meets the criteria of good screening test as its sensitivity ranging from 70% to 85% in detecting high grade cervical intraepithelial neoplasia and invasive cancer and specificity ranges from 67% to 85% thus VIA acts as a primary screening modality in low resource setting[6-10]

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The other advantage is patients get result of VIA immediately making it possible to screen & treat women during same visit. So it's "SINGLE VISIT" approach. Colposcopy is very useful in detecting the diseases in its preinvasive form. It also acts as a guide for the selection of biopsy sites from an abnormal area. It has helped in reducing the incidence of over treatment in the form of conisation and hysterectomy, in those cases many could be treated adequately with local ablative methods[11-15]. Thus, adopting VIA as a primary screening modality in low resource settings, we tried to evaluate the performance of colposcopy and cytology testing as a secondary test modality to triage women found positive on VIA test.

Aim and objectives of the study

It is a hospital based prospective study, the aims and objectives of this study is to:

- To evaluate the performance of colposcopy and conventional cytology in estimating the presence and grade of cervical disease, against the reference standard of histopathology, as a secondary test modality, to triage women found positive on primary screening by visual inspection with 5% acetic acid.
- To study diagnostic accuracy of both colposcopy and cytology in VIA positive women

Materials and methods

This is a prospective study of 50 patients aged between 18-50 years who tested positive on VIA. VIA was done on Patients referred for routine cervical screening and during camp visits. All the patients were thouroughly evaluated by taking detailed history and clinical examination was done.

General examination done and then per speculum pelvic examination of cervix and vagina done. Women who are tested positive on primary screening by VIA , further underwent diagnostic evaluation by

cytology and colposcopy and were subsequently subjected to colposcopic directed biopsies. Findings are documented in the proforma.Data were entered in the institution using a standard computer software [EPIINFO software] Diagnostic accuracy for single test was calculated using 2*2 tables and standard formulae.

Inclusion criteria

Women with abnormal symptoms like profuse vaginal discharge, postcoital bleeding, intermenstrual bleeding and post menopausal bleeding.

Exclusion criteria

Pregnant women, women during post natal period (up to 3 months)
Those with previous abnormal results from previous screening
Those with visible mass/lesion without application of VIA on cervix
Post menopausal women

Results

Cytology and colposcopy was done in 50 VIA patients, colposcopic directed biopsy was taken in all patients. Majority of patients (42%) were in 35-45 years of age group and coming from lower socioeconomic class (60%).Most of the patients were multiparous. Discharge per vaginum (76%) was the commonest complain. Majority (36%) of patients accepted permanent sterilization method in which TL was done in 32% and vasectomy in 4%. Cervical cytology reported ASCUS in 12%, ASC-H in 10%, AGUS in 2%, LSIL in 30%, HSIL in 38% and squamous cell carcinoma in 8%. Colposcopy prediction was normal in 10% cases, HPV infection in 6%, CIN I in 20%, CIN II in 30%, CIN III in 18%and invasion in 12%. In Colposcopy directed biopsy 14% had negative, 12% had HPV infection, 20% had CIN I, 24% had CINII, 16% had CIN III and 10% showed invasion. In 87% cases, colposcopy and histopathology were well correlated. Thus diagnostic accuracy with colposcopy proved to be 87% in present study. There is mild discrepancy between cytology and colposcopic directed biopsy histopathology so, diagnostic accuracy with cytology in present study is 77%. Table 1 shows cervical cytology report in which 12% had ASCUS, 10% had ASC-H, 2% had AGC. LSIL was present in 30% of cases , HSIL was present in 38% of cases and Squamous cell carcinoma in 8% of cases. Colposcopy (Table 2) was done in 50 VIA positive patients.10% had normal colposcopic findings, 6% had infection, 20% had CIN I, 30% had CIN II ,18% had CIN III and 16% patients had invasion. As shown in table -3 all 50 patients had undergone colposcopic guided biopsy. Biopsy was negative in 14% of patients, 12% showed HPV infection, 20% were CIN I, 28% were CIN II and 16% were CIN III.

Table 1: Cervical cytology

Cytology report	No.of cases	%
ASCUS	6	12
ASC-H	5	10
AGC	1	2
LSIL	15	30
HSIL	19	38
SQUAMOUS CELL CA	4	8

Table 2: Colposcopic prediction

Colposcopic prediction	No.of patients	%
Normal	5	10
Infection	3	6
CIN I	10	20
CIN II	15	30
CIN III	9	18
Microinvasion	3	6
Invasion	5	10

Table 3: Histopathology report

Histopathology report	No. of cases	%
Negative	7	14
Hpv infection	5	10
CIN I	10	20
CIN II	12	24
CIN III	9	18
Invasion	7	14

Table 4: Colposcopic prediction and directed biopsy histology correlation

Colposcopic prediction	Colposcopic directed biopsy histology					
	Negative	HPV	CIN I	CIN II	CIN III	Invasion
Normal 5	3	2			-	-
Infection 3	1	1	-	1	-	-
CIN I 10	2	1	7		-	-
CIN II 15	1	1	2	8	2	1
CIN III 9	-	-	1	1	5	2
Invasion 8		-		2	2	4

5 cases were predicted to be negative on colposcopic examination. All of the 5 cases were well correlated within 1 degree. i.e 3 were negative and 2 was diagnosed as HPV infection according to histology. 3 cases were predicted to be HPV infection out of which 2 cases were correlated

within one degree i.e 1 pt had negative, 1 pt had HPV infection and 1 pt had CIN II. 10 cases were predicted to be CIN I on colposcopic examination, out of which 2 were negative, 1 was HPV infection, 7 were CIN I. Hence all cases were within one degree correlation with histology. 15 cases were predicted to be CIN II on colposcopic examination, out of which 12 cases were correlated within one degree i.e 1 pt had negative 1 patient had HPV infection and 2 patient had CIN I, 8 patient had CIN II and 2 had CIN III and 1 had invasion according to histology. 9 cases were predicted to be CIN III on colposcopic examination, out of which 8 were correlated with one degree correlation (Table 4). Histology showed 1 was CIN I, 1 was CIN II, 5 were CIN III and 2 were invasion according to histology. 8 cases were predicted to be invasion on colposcopic examination, out of which 1 was HPV infection and 1 was CIN II, 1 was CIN II , 2 were CIN III and 2 were invasion according to histology. Hence 6 were correlated with one degree correlation. It showed that in 87% cases colposcopy and histology were well correlated. Thus diagnostic accuracy with colposcopy proved to be 87%.

Table 5: Cytology and colposcopy directed biopsy histology correlation

Cytology	Colposcopic directed biopsy					
	Negative	HPV	CIN I	CIN II	CIN III	invasion
ASCUS 6	2	1	2	1	-	-
AGUS 1	-	-	-	1	-	-
LSIL 15	3	1	5	3	2	1
ASC-H 5	2	1	1	1	-	-
HSIL 19	-	2	1	6	6	4
Squamous Cell ca 4	-	-	1	1	1	1

6 patients of ASCUS by cervical cytology showed negative in 2, HPV infection in 1, CIN I in 2, and CIN II in 1 patient by colposcopic directed biopsy histology. 1 case of AGUS by cytology showed CIN II by colposcopic directerd biopsy. Out of 15 cases of LSIL , 3 patient had negative histology, 1 had HPV infection, 5 had CIN I, 3 had CIN II, 2 had CIN III and 1 patient showed invasion by colposcopic directed biopsy. Out of 5 patient of ASC-H by cytology, 2 cases had negative, 1 had HPV infection, 1 had CIN I and 1 had CIN II by histology. 19 patients of HSIL by cytology, in which 2 patient showed HPV infection,1 showed CIN I, 6 showed CIN II, 6 showed CIN III and 4 patient showed invasion. Out of 4 patient of squamous cell carcinoma by cytology prediction, 1 pt had CIN I, 1 pt had CIN II, 1 pt had CIN III and 1 pt had invasion by colposcopic directed biopsy. Table 5 showed that there is mild discrepancy in cytology and colposcopic directed biopsy histology so, diagnostic accuracy with cytology in present study is 77%.

Discussion

Organized and frequently repeated cytology screening has resulted in a substantial reduction of cervical cancer burden in developed countries. But in low-resource countries where organized cytology-based cervical cancer screening programs cannot be implemented due to financial, technical, and logistic barriers, low-cost technologies, such as the VIA-based approaches have been successfully tested and proposed to address the need to effectively improve and extend screening services in the country. With the added advantage of the immediate availability of VIA test result, VIA-positive women can be subjected to further investigative procedures to ensure diagnostic and treatment compliance with a "Single Visit" approach. Diagnostic triage of VIA-positive women by cytology or colposcopy directed biopsy are still not very feasible in low-resource country settings where adequate expertise, facility, and infrastructure are still not available for cytology and histopathology confirmation, outside of the city limits[5-9] Also, poor patient compliance for further diagnostic or treatment visits and inadequate patient tracking system creates further barriers in the successful implementation of screening programs. Hence a "Single Visit" screen and treat strategy that uses VIA and colposcopy alone that eliminates the need for repeated visits due to delays in diagnostic results, will be highly attractive in terms of cost-effectiveness and compliance to treatment, which is crucial to bring down the incidence and mortality due to cervical cancer. Thus, in the context of adopting VIA-based approach as a primary screening modality in low-resource settings, we tried to evaluate the performance of colposcopy to estimate the presence and grade of cervical disease vs conventional cytology testing to triage VIA-positive women[8-12]

Summary and conclusion

Organised and frequently repeated cytology screening has resulted in a substantial reduction of cervical cancer burden in developed countries. But in low resource countries where organized cytology based cervical cancer screening programme cannot be implemented due to financial, technical and logistic barriers. So low cost technologies such as VIA based approaches have been successfully tested and proposed to improve screening services in the country. As VIA is easy procedure, paramedical and medical persons can be trained in the periphery. In addition, Immediate availability of VIA test result, VIA positive women can be subjected to further investigative procedures to ensure diagnostic and treatment compliance with a 'SINGLE VISIT' approach. Thus, adopting VIA based approach as a primary screening modality in low resource setting, we tried to evaluate the performance of colposcopy and cytology the endpoint being CIN II and higher lesions on histopathology in VIA positive women. Colposcopy gives immediate results and can be considered as a secondary testing tool to triage women found positive on VIA setting where cytology and histopathology services are logistically and techniqually not feasible. So VIA and colposcopy eliminates the need for repeated visits due to delay in diagnostic results. Colposcopy needs colposcope and skilled colposcopist, and as it is a subjective test so there is interobserver variation. In 87% cases colposcopy and histopathology were well correlated. Thus diagnostic accuracy with colposcopy proved to be 87% in present study. In my study diagnostic accuracy of colposcopy is 87% which is correlated with other studies. Cytology needs skilled cytopathologist and the performance of cytology is also suboptimal outside the centres of excellence or beyond the tertiary care centres in developing countries. Because of above drawbacks, further testing and management has remained biggest challenges in implementing cytology based cervical screening programme in the developing country. There is mild discrepancy between cytology and colposcopic directed biopsy histopathology so, diagnostic accuracy with cytology in present study is 77% which is correlated with other

studies. In present study, diagnostic accuracy of cytology (77%) is lesser than colposcopy (87%). Hence a 'SINGLE VISIT' screen and treat strategy that uses VIA and colposcopy alone is a better option specially in low resource country like us. It also eliminates the need for repeated visits. This approach is highly attractive in term of cost effectiveness and compliance to treatment, which is crucial to bring down the incidence and mortality due to cervical cancer in low resource countries.

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