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Original Research Article

Comparison between colposcopic and biopsy findings to determine the frequency cervical intraepithelial neoplasia I to III in visual inspection with acetic acid

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ABSTRACT

Background: While visual inspection with acetic acid (VIA) is an effective and affordable screening tool, the determination of the severity of cervical intraepithelial neoplasia (CIN) relies heavily on the expertise of healthcare professionals and the interpretation of colposcopic and biopsy findings. The aim of this study is to compare the frequency CIN I-III in VIA positive cases with the help of colposcopic and biopsy findings.
Methods: The prospective cross sectional descriptive study conducted among the VIA positive cases (n=100) who were attending at in colposcopic clinic of department of obstetrics and gynecology, Dhaka Bangabandhu Sheikh Mujib medical university (BSMMU) during 1st June 2010 to 30th August 2010. History includes present and past illness, personal, family history, drug history and blood pressure were done.
Results: The mean duration of married life was 16.8±10.6 years and more than a half (52.0%) of the patients' age was 15-20 years of their first intercourse. More than one fourth (27.0%) of the patients had irregular menstrual cycle and 10.0% patients were menopause. Most (72.0%) of the study patients were multipara and the mean age of 'last confinement was 7.8±6.8 years. Majority 38(38.0%) of the patient was normal, 25 (25.0%) of the study patients had CIN I and CIN II in 13 (13.0%), CIN III in 5 (5.0%), 4 (4.0%) had invasive carcinoma and 15 (15.0%) unsatisfactory colposcopy. The colposcopic related biopsy findings was observed, 27.1% of the study patients had CIN I, 12.9% had CIN II, 12.9% invasive carcinoma, 5.9% had CIN III and 5.9% had inflammatory change.
Conclusions: CIN III in colposcopic-related biopsy findings was associated with a mixture of CIN I and CIN III in colposcopic examinations. Invasive carcinoma in biopsy results was linked to a combination of CIN III and invasive carcinoma in colposcopic findings.

Keywords: Colposcopic, Biopsy, Cervical cancer, VIA, Cytologic

INTRODUCTION

Cancer of the uterine cervix is a global problem.[1] It is most common cancer in women in developing countries and is the second most common cancer in women worldwide, with approximately half a million new cases each year. Cervical cancer has significant morbidity and mortality if it is not detected before it reaches an advanced stage with symptoms.[2] If the disease is detected in an early asymptomatic stage, it is nearly always curable by surgery or radiotherapy. Therefore today, cytological screening is the mainstay for control of cervical cancer.[3] In places where large well-organized programs have been functioning, significant decreases in mortality, in the range of 50-60%, have been observed. The favorable effects result primarily from the removal of intraepithelial lesions preventing the occurrence of invasive tumors.[4]

In a study, the performance of unaided visual inspection evaluated by trained paramedical workers in detecting cervical cancer. A total of 2135 (56.4%) women complied with the invitation. There was good agreement between the visual findings of the paramedical workers and those of a gynecologist. All subjects had a cervical smear. A total of 10 cervical cancers were detected by cytology/ histology. The sensitivity of visual inspection by paramedical workers to detect cervical cancer was 90.0% using the low threshold and 60.0% with the high threshold to define a positive test.[5]

Another researcher estimated the accuracy of colposcopy and VIA while minimizing the effects of misclassification bias, and maximizing ascertainment of disease. Any woman who tested positive on any test had colposcopy, endocervical curettage (ECC) with directed biopsies as necessary and 4-quadrant random biopsies from normal-appearing areas of the cervix. A standard diagnosis based on colposcopy and directed biopsy, and an expanded diagnosis including ECC and 4- quadrant random biopsy were generated for each woman.[6,7]

In 1,839 women, use of the expanded versus the standard diagnostic criteria increased the prevalence of histologically confirmed high-grade CIN and cancer (CIN) from 3.2% (59/1,839) to 4.2% (77/1,839) and decreased the sensitivity of VIA for CIN from 69.5% (95% CI: 56.8-79.8) to 58.4% (95% CI: 47.3-68.8%) with little change in specificity of approximately 89%. Compared with the expanded diagnostic criterion, the sensitivity of a visual diagnosis of high-grade CIN or cancer by a colposcopist was 49.4% (95% CI: 38.2-60.5).[7,8]

The use of an expanded diagnostic criterion in this study yielded more conservative estimates of the sensitivity of VIA and colposcopy.

METHODS

A cross-sectional descriptive study was carried out at the colposcopic clinic of the department of obstetrics and gynecology, BSMMU in Dhaka from November 2010 to January 2011. The study included a purposive selection of 100 VIA positive cases, excluding those with diagnosed cases of carcinoma cervix, unmarried individuals, and women with no history of sexual contact, and those with cervical polyps.

Strict adherence to ethical considerations was maintained throughout the study. The purpose of the research was clearly explained to each participant, and only those who explicitly provided permission were included. Written informed consent was obtained from every patient, and necessary permissions were secured from the relevant department. The study covered various sociodemographic and clinical variables, with sociodemographic variables including age, age of first confinement, and use of contraceptives. Clinical variables focused on intermenstrual bleeding, post-coital bleeding, foul-smelling watery discharge, and irregular vaginal bleeding.

The primary outcome measures aimed to determine the frequency of CIN grades I, II, and III, as well as the frequency of invasive carcinoma. Additionally, the study sought to assess the occurrence of unsatisfactory colposcopy. Throughout the study period, meticulous attention was given to maintaining ethical standards, ensuring patient consent, and obtaining necessary permissions, thereby contributing valuable insights into the prevalence and characteristics of VIA positive cases within the specified population.

Statistical analysis

Statistical analysis, including frequency distribution, percentages, mean, and standard deviation, was conducted using the statistical package for social science (SPSS) for Windows (version 16.0, Chicago, IL, USA).

RESULTS

A total of 100 patients with VIA positive referred cases from different centers of Bangladesh age range from 21 to 65 years were included in the study, in colposcopic clinic of department of obstetrics and gynecology, BSMMU during 1st June 2010 to 30th August 2010.

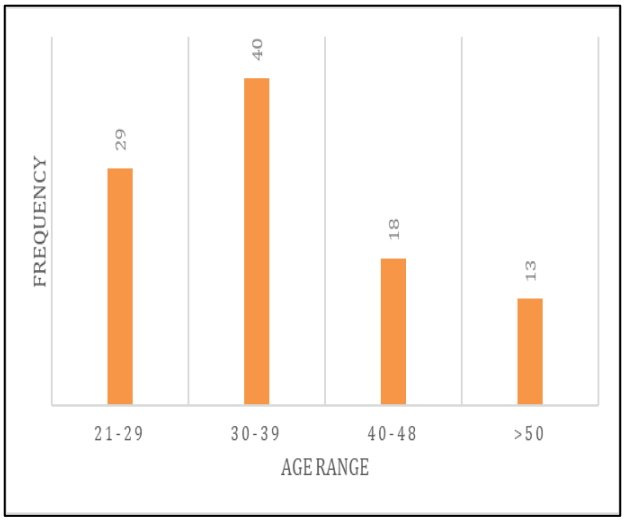

Figure 1: Age distribution of the study patients, (n=100).

The mean age was 35.8±9.9 years with range from 21 to 65 years and maximum 40 (40.0%) subjects were found between 30-39 years age group.

Figure 2 shows the complaints of the study patients. Most 43.0% of the patients had no complain, 12.0% had irregular vaginal bleeding, 10.0% had intermenstrual bleeding, 21.0% had foul smelling watery discharge, 4.0% of the patients had post coital bleeding and 10.0% had backache.

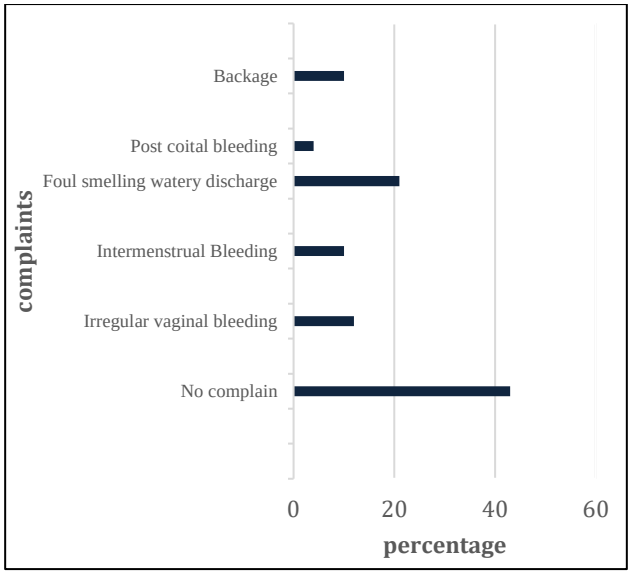

Figure 2: Complaints distribution of the study patients, (n=100).

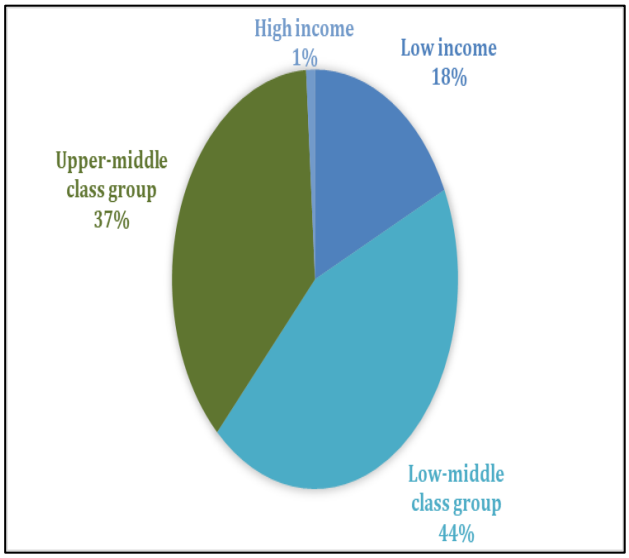

Figure 3: Distribution of patients according to monthly income information, (n=100).

*Low income: <5,000BDT per month, Low-middle class group: 5,000-<10,000BDT, Upper-middle class group: 10,000-<15,000BDT, High income >15,000BDT (Ref. State of the children of the world 2007, UNICEF).

Figure 3 shows the monthly family income of the study patients and they were divided in four income groups. Majority 44.0% of the study patients belonged to the low-middle class group followed by 37.0% belonged to upper-middle class group, 18 (18.0%) belonged to low income and rest 1.0% belonged to high income group.

Table 1 shows the personal history of the study patients and observed that mean duration of married life was 16.8±10.6 years with ranged from 1-45 years and most 30 (30.0%) of the patients were >twenty years of the married life.

Table 1: Distribution of patients according to personal history, (n=100).

Personal history	N	Percentage (%)
Duration of married life (in years)		
1-5	14	14
6-10	23	23
11-15	18	18
16-20	15	15
>20	30	30
Mean ± SD	16.8±10.6	
Range (min-max)	1-45	
Age at 1st intercourse		
15-20	52	52
21-25	48	48
Mean± SD	19.2±2.3	
Range (min-max)	15-25	

Regarding the age at 1" intercourse of the study patients and observed that mean age at 1st intercourse was 19.2±2.3 years with ranged from 15 to 25 years. More than a half (52.0%) of the patients' age was 15-20 years of their first intercourse and rest 48.0% between the 21-25 years of the age.

Table 2: Distribution of the study patients according to the menstrual history, (n=100).

Menstrual history	N	Percentage (%)
Menstrual cycle regular	63	63
Menstrual cycle irregular	27	27
Menopause	10	10
Obstetrics history		
Para		
Nuliparous	28	28
Multi parous	72	72
Age of last confinement (in years)		
1-5	46	46
6-10	28	28
12-20	20	20
>20	6	6
Mean ± SD	7.8±6.8	
Range (min-max)	1-25	

Table 2 shows the menstrual history of the study patients and observed that more than a half (63.0%) of the study patients had menstrual cycle regular followed by (27.0%) had irregular menstrual cycle and (10.0%) patients were menopause. Again, the obstetrics history of the study patients and found that most (72.0%) of the study patients were multi parous and 28 (28.0%) were nuliparous. Regarding the age of last confinement of the study patients and observed that mean age of last confinement was 7.8±6.8 years with ranged from 1 to 25 years and majority (46.0%) of the study patients between 1 to 5 years. Others results are depicted in the above Table.

Table 3 shows the colposcopic findings of the study patients and found that majority (38.0%) of the patient was

normal, (25.0%) of the study patients had CIN I, CIN II in (13.0%), CIN III in (5.0%), 4 (4.0%) had invasive carcinoma and (15.0%) was unsatisfactory.

According to colposcopic finding a total of 38 cases were normal and 15 cases were unsatisfactory. Therefore 47 cases were undergoing colposcopic related biopsy and observed that 5 (10.6%) of the study patients had normal findings, 15 (31.9%) had CIN I, 9 (19.1%) had CIN II, 5 (10.6%) had CIN III, 4 (8.5%) invasive carcinoma, 7 (14.9%) had inflammatory change and the two (4.3%) others.

Comparison between colposcopic findings with colposcopic related biopsy findings of the study patients and observed that 15 (31.9%) of the study patients had CIN I in colposcopic related biopsy, out of which 10 (40.0%) and 5 (38.5%) were CIN I and CIN II respectively in colposcopic findings. CIN II was found 9 (19.1%) in colposcopic related biopsy findings, among them 4 (16.0%) was CIN I and 5 (38.5%) CIN II in colposcopic finding. CIN III was found 5 (10.6%) in colposcopic related biopsy findings, among them 2 (8.0%) was CIN I and 3 (60.0%) CIN III in colposcopic finding. Invasive carcinoma was found 4 (8.5%) in colposcopic related biopsy findings, among them 2 (40.0%) was CIN III, 2 (50.0%) invasive carcinomas in colposcopic finding. Inflammatory change was found 7 (17.9%) in colposcopic related biopsy findings, among them 4 (16.0%) was CIN I and 3 (23.1%) was CIN II in colposcopic findings.

Table 3: Distribution of the study patients according to colposcopic findings, (n=100).

Colposcopic findings	N	Percentage (%)
Normal	38	38
Aceto white area		
CIN I	25	25
CIN II	13	13
CIN III	5	5
Invasive carcinoma	4	4
Unsatisfactory colposcopy	15	15

Table 4: Distribution of the study patients according to colposcopic related biopsy findings, (n=47).

Colposcopic related biopsy findings	N	Percentage (%)
Normal	5	10.6
Inflammatory change	7	14.9
CIN I	15	31.9
CIN II	9	19.1
CIN III	5	10.6
Invasive carcinoma	4	8.5
Others	2	4.3

Table 5: Comparison between colposcopic findings with colposcopic directed biopsy findings of positive cases, (n=47).

Colposcopic directed findings	Coloscopic findings							
Biopsy		**CIN I, (n=25)**		**CIN II, (n=13)**		**CIN III, (n=5)**		**Invasive carcinoma, (n=4)**	
	N	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
CIN I	15	10	40	5	38.5	0	0	0	0
CIN II	9	4	16	5	38.5	0	0	0	0
CIN III	5	2	8	0	0	3	60	0	0
Invasive carcinoma	4	0	0	0	0	2	40	2	50
Inflammatory change	7	4	16	3	23.1	0	0	0	0
Others	2	0	0	0	0	0	0	2	50
Normal	5	5	20	0	0	0	0	0	0

DISCUSSION

This prospective cross sectional descriptive study was carried out with an aim to find out the frequency of CIN I, CIN II, CIN III in VIA positive cases with the help of colposcopic examination, rate of unsatisfactory colposcopic cases, rate of invasive carcinoma, evaluate the association of risk factors of cancer of cervix and to compare the findings of colposcopy with cervical biopsy.

In this current study it was observed that all the 100 cases had undergone colposcopic examination and showed the mean age was 35.819.9 years with range from 21 to 65 years and maximum (40.0%) subjects were found between 30-39 years age group. Nene et al have shown that predominant (29.0%) age group was 35-39 years in their study patients.[9] Cagle et al mentioned that, age eligible women 30 to 49 years were identified by government census data in China.[10] Similarly, Ngelangel et al observed age between 25 to 65 years in their study patients, which are comparable with the current study.[11] On the other hand Cremer et al has observed higher age range in their study. Which maybe stated that the higher age range due to increased life expectancy in their study patients.[12]

The most common presenting complains of the patients in the present study were foul smelling watery discharge (21.0%) irregular vaginal bleeding (12.0%), intermenstrual bleeding (10.0%), backache (10.0%) and post coital bleeding (4.0%). Similar observations regarding the clinical presentations were also made by Nene et al.[9]

In this study most (44.0%) of the study patients came from low-middle class group, 37.0% came from upper-middle class group, 18.0% came from low income and rest 1.0% came from high income group. The mean duration of married life was 16.8±10.6 years with ranged from 1 to 45 years and nearly one third (30.0%) of the patients were >20 years of married life. Regarding the age at 1st intercourse of the study patients it was observed that the mean age at 1st intercourse was 19.2±2.3 years with range from 15 to 25 years. More than a half (52.0%) of the patients' age was 15-20 years of their first intercourse and rest 48.0% between 21-25 years of age. Ngelangel et al observed the mean age of first intercourse was 22.7±2.3 years in their study patients, which is a little higher with the present study.[13]

More than a half 63 (63.0%) of the study patients had menstrual cycle regular followed by 27 (27.0%) had irregular menstrual cycle and 10 (10.0%) patients were menopausal.

In this current series it was observed that more than two third (72.0%) of the study patients were multiparous and 28.0% were nulliparous. However, Cremer et al showed that nulliparous was predominant in their study patients.[12] Regarding the age of last confinement of the current study patients was observed that the mean age of last confinement was 7.8±6.8 years with range from 1 to 25 years and nearly a half (46.0%) of the study patients between 1 to 5 years.

In this current series it was observed that the colposcopic findings of the study patients showed one fourth (25.0%) of the study patients had CIN I, 13.0% CIN II, 5.0% CIN III, 4.0% had invasive carcinoma, 38.0% were normal and 15.0% had unsatisfactory colposcopy. The colposcopic related biopsy findings of the present study patients was observed that nearly one third (31.9%) of the study patients had CIN I, 19.1% had CIN II, 10.6% had CIN III, 8.5% invasive carcinoma, 14.9% had inflammatory change, 4.3% others and 10.6% was normal.

Ivy showed the incidence of CIN III 9.56% and invasive carcinoma 4.41%.[14] Beller and Khatamee showed cervicitis and invasive carcinoma 10.5% and 12.3% respectively.[15,16] Talebian et al showed invasive carcinoma 0.8% and chronic cervicitis 20.3%.[17] The results obtained in present study are comparable with the above authors.

The comparison between colposcopic findings with colposcopic related biopsy of the current study patients was observed that 15 (31.9%) of the study patients had CIN I in colposcopic related biopsy, out of which 10 (40.0%) and 5 (38.5%) were CINI and CIN II respectively in colposcopic findings. CIN II was found 9 (19.1%) in colposcopic related biopsy findings, among them 4 (16.0%) was CIN I and 5 (38.5%) CIN II in colposcopic finding. CIN III was found 5 (10.6%) in colposcopic related biopsy findings, among them 2 (8.0%) was CIN I and 3 (60.0%) CIN III in colposcopic finding. Invasive carcinoma was found 4 (8.5%) in colposcopic related biopsy findings, among them 2 (40.0%) was CIN III, 2 (50.0%) invasive carcinomas in colposcopic finding. Inflammatory change was found 7 (17.9%) in colposcopic related biopsy findings, among them 4 (16.0%) was CIN I and 3 (23.1%) was CIN II in colposcopic findings.

CONCLUSION

This study revealed that a significant proportion of patients with CIN I in colposcopic-related biopsy also showed corresponding findings of CIN I and CIN II in colposcopic examinations. Similarly, for patients with CIN II in biopsy results, there was a distribution of CIN I and CIN II in colposcopic findings. Notably, CIN III in colposcopic-related biopsy findings was associated with a mixture of CIN I and CIN III in colposcopic examinations. Invasive carcinoma in biopsy results was linked to a combination of CIN III and invasive carcinoma in colposcopic findings. Additionally, inflammatory changes in colposcopic-related biopsy results showed a correlation with CIN I and CIN II in colposcopic findings.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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