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Original Article

Colposcopic examination of VIA positive cases for evaluation of unhealthy cervix and their histopathological correlation

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Abstract

Background: Unhealthy cervix can be presented with diverse pathologies like infective, inflammatory, reactive and neoplastic etc. Cervical cancer, having a multifactorial causation, is the second most common cancer in female population.

Objective: Tocolposcopic evaluation of VIA-positive cases and detection of precancerous lesion of cervix for early management.

Methods: This prospective, observational study was conducted from October 2021 to March 2023 on 69 women attending at the "Colposcopy Clinic" of Obstetrics and Gynaecology, Department of Dhaka National Medical College, Dhaka. Only VIA positive cases were taken into consideration. It involved history taking, examination of cervix after acetic acid application (VIA), colposcopic assessment and biopsy for histopathological evaluation.

Results: Most of the patients (49.28%) were in the age group of 30-39 years. Among all the subjects, the majority (86.96%) was housewives. Colposcopy evaluated 43 cases as CIN (CIN I -33.33 %, CIN II- 15.94%, CIN-III 13.04%) and 2.90% as invasive lesions. Biopsy evaluated 33 cases as CIN (CIN I-18.84% CIN II-17.39%, CIN III- 14.49%) and 1.44% as invasive lesions. The sensitivity and specificity of colposcopy were 87.87 % and 55.55% respectively. This suggests the role of colposcopy in the evaluation of CIN and cervical cancer.

Conclusion: Cervical cancer presents as a major cause of morbidity and mortality, especially in developing countries like Bangladesh. In developing countries, the various screening programs are being implemented for its early detection and treatment. It is evident that colposcopy plays a very important role in early diagnosis and treatment of preinvasive and early invasive carcinoma of cervix. So wide use of colposcopy in screening program of Bangladesh can reduce many young women's morbidity and mortality.

Keywords: Unhealthy cervix, Colposcopy, Histopathology, Pap smear.

Introduction

Cervical cancer is the fourth most common cancer in the women worldwide and is entirely attributable to infection with the Human Papilloma virus (HPV).[1] Cervix is the most common cause of malignancy-related deaths among women in developing countries.[2] Mortality due to cervical cancer is also an indicator of health inequalities, as 86% of all deaths due to cervical cancer are in developing, low- and middle-income countries.[3] There are estimated 450,000 new cases worldwide with about 300,000 deaths each year.[4] Of the new cases detected 86% occur in developing countries and 14% in developed countries.[5] Every year, 17686 women in Bangladesh are diagnosed with cervical cancer and 10,364 women die from the disease.[6]

A colposcope is a low-power, stereoscopic, binocular

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field microscope with a powerful light source used for magnified visual examination of the uterine cervix to help in the diagnosis of preinvasive and early invasive carcinoma of cervix. Modern colposcope usually permits adjustable magnification commonly 6x to 40X4.Unhealthy cervix may result from various causative factors. Cervix is constantly exposed to physiological changes, cellular organization with age, infective etiologies along with exposure to environmental factors. All these make cervical tissue prone to infection, inflammation and neoplastic changes.

Cervical cancer may present as unhealthy cervix at an early stage. With improvement in awareness, screening programs and preventive measures, incidence of cervical cancer continues to decrease in both developed and developing countries. However, in developing nations like Bangladesh, it continues to be diagnosed at more advanced stages.

Materials and Methods

This was a prospective observational study. Among married women who had clinically unhealthy-looking cervix attending the VIA and colposcopy clinic of the Department of Obstetrics and Gynecology of Dhaka National Medical College Hospital from October 2021 to March 2023 were included in this study. A total number of 245 women were included in this study having age range between 20-69 years. All women were counseled. Then informed written consent were taken for VIA, Colposcopy and colposcopy directed biopsy. Among them 69 women had positive VIA test. Colposcopy and Colposcopy directed punch biopsy were taken from the abnormal colposcopic appearance of the VIA positive cases and specimen sent for histopathological examination. Colposcopy was performed in the dorsal lithotomy position with a drape covering the patient's legs. The cervix was visualized using a Cusco`s speculum. The colposcopic examination involves the application of three standard solutions to the cervix: Normal saline, 3-5% acetic acid solution and lugol`s iodine. Normal saline applied to remove obscuring mucus and debris, to moisture the cervix. Green filter examination of the cervix enhances the angioarchitecture. Acetic acid applies to cervix using soaked swabs.The abnormal colposcopic findings are acetowhite epithelium, abnormal vascular patterns and negative lugol's iodine test.

Results

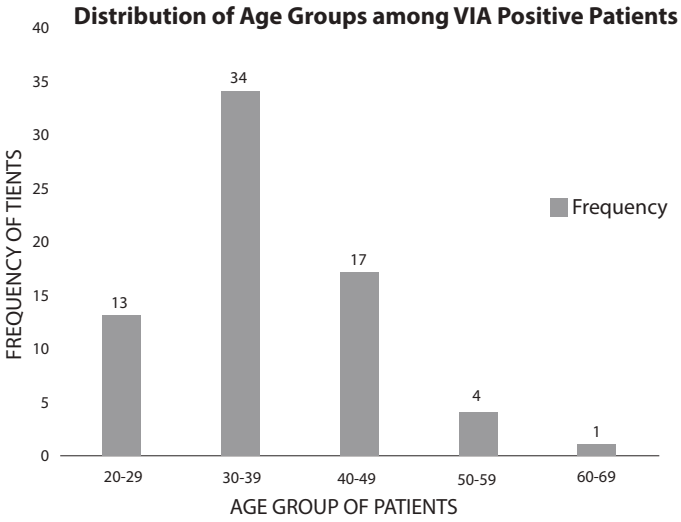

Figure-I: Bar diagram showing distribution of age groups among via positive patients

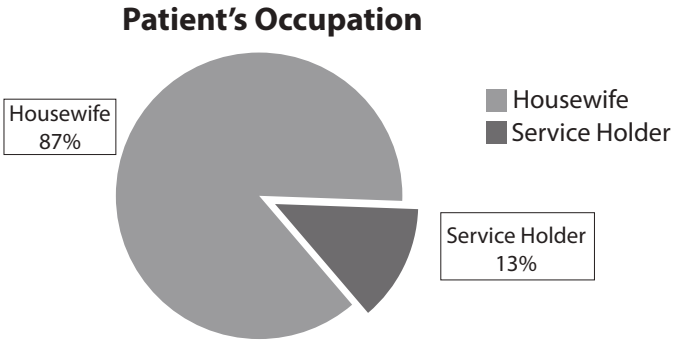

Figure-II: Pie chart showing frequency of patient's occupation

Table-I: Distribution of Husband`s occupation of the patients of unhealthy cervix

Husband`s occupation		
Businessman	27	39.13
Service Holder	13	18.84
Driver	5	7.24
Unemployed	3	4.34
Day laborer	7	10.14
Agriculture	3	4.34
Abroad	7	10.14
Carpenter	4	5.79

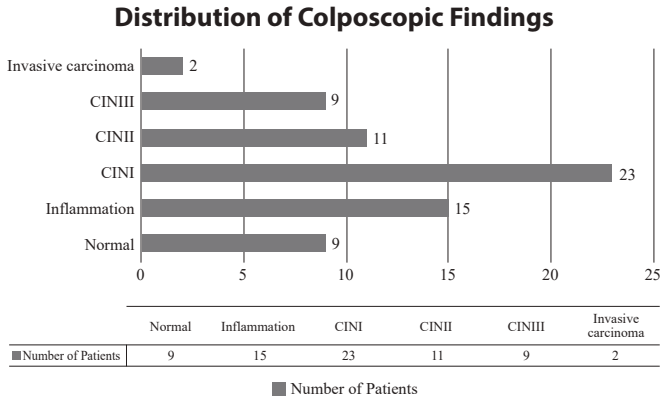

Figure-III: Bar diagram showing distribution of Colposcopic findings.

Table-II: Colposcopy findings and their Colposcopy directed biopsy (CDB) findings

Colposcopy findings of all VIA positive cases		Colposcopy directed biopsy (CDB) findings					
		Normal	Inflammation	CIN 1	CIN II	CIN III	Invasive carcinoma
colposcopi negative (24)	Normal (9)	8	1	-	-	-	-
	Inflammation(15)	2	9	2	1	1	-
colposcopic positive (45)	CIN 1 (23)	2	10	9	1	1	-
	CIN II (11)	-	2	1	7	1	-
	CIN III(9)	-	2	1	3	3	-
	Invasive carcinoma(2)	-	-	-	-	1	1
	Total	12	24	13	12	7	1
				Total Biopsy positive= 33			

Table-III: Sensitivity and specificity of colposcopy in detecting CIN (N=69)

Colposcopic findings	Disease positive	Disease negative	Total
Positive	29	16	45
Negative	4	20	24
Total	33	36	69

Table-III shows 24 colposcopy negative cases 4 patients were found to have CIN or cervical biopsy (false negative) and rest of them i.e.20 cases had no evidence of CIN or malignancy (true negative). In this study sensitivity and specificity of colposcopic examination was found 87.87% and 55.55% respectively

Discussion

Invasive cervical cancers are usually preceded by a long phase of pre- invasive disease characterized microscopically as a spectrum of events progressing from cellular atypia to various grades of dysplasia or cervical intraepithelial neoplasia (CIN) before progression to invasive carcinoma, The purpose of this study is to determine the role of colposcopy in VIA positive cases for the diagnosis of cervical intraepithelial neoplasia, so that those screening tools can be used effectively in the diagnosis of CIN and thereby can prevent the disease progress to invasive carcinoma. Colposcopy is a clinical method of evaluating unhealthy cervix.[6] In this study, the peak age group was 30-39 years (49.28%) with a mean age of 34 years. Almost half of the cases were within 30 to 49 years. As the age advanced, the percent of age group reduced according to this study. It is similar with the findings of other study.[7] Ramesh revealed increased incidence was 30 to 34 years age groups.[8] it is indicative that CIN is more prone to occur in sexually active women. World Health Organization also suggested the priority age group as 35 to 45 years for the screening of CIN.[9] The occupational status expressed that housewives (87%) were mostly suffered. Their husband's occupation was predominantly business, service, driver, and day laborer. Socioeconomic status had always been playing an epidemiological role in genesis of dysplasia.[10] In this study, 77.32% of the respondent's yearly family income was 10,000 to 20,000. Regarding the age of marriage, 74.23% got married at 15 to 20 years of age, which corresponds with the study of Rotkin ID11; 69.07% of the women had their first child at 15 to 20 years; 42.27% of the women had 3 to 4 children, indicating multiparity as a related risk for CIN of the cervix. This observation correlates with the study of Schiffman et al and Rotkin ID.[11,12] Smith believes that poor obstetrical and postpartum care and neglect of the symptoms of a lacerated and ulcerated cervix accounts for the greater frequency of cervical cancer among the poorer classes.[13,14] In this study, out of 69 cases, all had VIA-positive acetowhite areas. But colposcopy revealed that 65.21% had CIN and invasive lesions, while 34.78% had either normal or inflammatory lesions. Colposcopy-directed punch biopsy revealed that 33 (47.82%)cases had positive lesions like CIN or invasive carcinoma and 52.17% had neither CIN nor invasive lesions. Evidence of CIN and invasive lesions in colposcopy-directed cervical biopsy among the VIA-positive patients strongly suggested the need of VIA as an essential screening test. A high number of cases on histopathological examination were those of infection and among them majority had chronic cervicitis (35.05%). Within 69 VIA-positive cases, 55 cases (79.71%) had positive findings by colposcopy and 33 cases (47.82%) had positive findings by biopsy.

True positive cases were 32 and true negative cases were 20. False positives were 23 and false negatives were 4. In this study, sensitivity and specificity of colposcopy examination were found to be 88.88% and 46.51% respectively. Many studies have reported sensitivity of colposcopy as 87 to 99, 96, and 94.4%, which is comparable to this study.[15-17] Specificity of colposcopy in this study was consistent with many studies, which reported specificities of 26 to 87, 57, 50, and 46.42%.[15,17-19] High sensitivity but low specificity of colposcopy may be due to high incidence of unsuspected acetowhite epithelium, which might be due to inflammation, immature metaplasia, and latent HPV infection.[20] In this study, positive predictive value is 58.18% and negative predictive value is 83.33%. The limitation of colposcopy is its dependence on observer variability and relatively weaker performance in differentiating normal cervix from low-grade lesions.[20] Thecolposcopic diagnosis of CIN requires an understanding and recognition of four main features: Color tone, intensity of acetowhitening, margins and surface contour of acetowhite area, vascular pattern, and iodine staining. Variations in quality and quantity of these atypical appearances help in differentiating CIN from other lesions and between grades of CIN.[21,22]

Conclusion

This study concludes VIA and colposcopy as diagnostic tools for the diagnosis of cervical pre-malignancy. VIA is an important method in low resource settings and it is simple and easy to perform. VIA may be used as a tool for screening in underdeveloped countries and may be associated with a referral procedure for further methods like colposcopy and biopsy. Colposcopy is an indispensable procedure in the evaluation of unhealthy cervix, it requires considerable training and experience. In Bangladesh, routine use of VIA and colposcopy in all clinically suspicious cases will play significant role in the detection of early cervical cancer and can prevent their progression to invasive carcinoma.

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