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Original Research Article

Correlations between Colposcopy Findings and Histopathological Results from Colposcopy Directed Biopsy in Cervical Pre-Cancerous Lesions

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Abstract

Introduction: Cervical Intraepithelial Neoplasia is a precancerous condition in which abnormal cells grow on the surface of the cervix. CIN is a symptomless illness that often goes undetected by the naked eye. In most cases, the afflicted cervix appears to be in excellent health. As a result, the illness is detected by chance during cervicological histology or as a result of programs for routine cervical cytology or colposcopy screening. Colposcopy is an extra and valuable technique for identifying cervix anomalies. This study aimed to analyze the correlations between colposcopy findings and histopathological results from colposcopy-directed biopsy in cervical pre-cancerous lesions. ***Methods:*** A prospective observational study was conducted at the Department of Gynecology and Obstetrics, Chittagong Medical College Hospital, Chittagong, from September 2014 to February 2015. VIA-positive 72 women fulfilling all inclusion criteria who attended at colposcopy clinic of CMCH were included in the study. Statistical analyses were done by using the Statistical Package for Social Sciences (SPSS) version 16.0 for Windows. The quantitative observations were indicated by frequencies and percentages. ***Result:*** In the present study, the majority of the participants were over the age of 30 years, with 43.1% being in the age group of 30-39 years. Another 30.6% were from the age group of 40-49 years, while only 15.2% were from the age group of 20-29 years. Colposcopy findings were normal in 9.7% of the participants. CIN I was observed in the majority of the participants (54.2%), while CIN II and CIN III were observed in 29.2% and 6.94% respectively**.** According to the colposcopy-directed biopsy results, 5.6% of patients had normal outcomes, 7.7% had inflammations, 45.8% had CIN I, 30.6% had CIN II and 8.3% had CIN III. The correlation was calculated by reporting the number of cases histologically confirmed to the number of cases of colposcopic diagnosis for each lesion group separately. The correlation was 71.8% (28 out of 39) in the CIN I category, 76.2% (16 out of 21) in the CIN II category, and 75% (3 out of 4) in the CIN III category. The sensitivity and specificity of colposcopy were calculated considering a colposcopy-directed biopsy. Colposcopy findings revealed 65 CIN positive cases and 07 CIN negative cases, while biopsy findings revealed 60 positive and 12 negative cases. The sensitivity of colposcopy was 96.7%, specificity was 41.6%, the false positive rate was 58.4% and the false negative rate was 03.3% according to this study. ***Conclusion:*** This study demonstrated high accuracy and correlation between colposcopy and histology. The sensitivity of colposcopy was 96.7%, specificity was 41.6%, the false positive rate was 58.4% and the false negative rate was 03.3%. Specificity was lower in this study probably because biopsies were performed in all cases during diagnostic workups.

Keywords: Colposcopy, Histopathology, CIN, Biopsy.

INTRODUCTION

The precursors to invasive squamous cell (epidermoid) carcinoma of the cervix are among the most extensively studied lesions occurring in women [1]. Cervical cancer is a global health problem and is the leading cause of death due to cancer among women in developing countries. According to the WHO projections in 2005, there were over 500,000 new cases of cervical cancer, of which over 90% were in developing countries [2]. Cervical Intraepithelial Neoplasia is a precancerous condition in which abnormal cells grow on the surface of the cervix [3]. In cervical cancer screening programs, women are sent to colposcopy for a diagnostic evaluation and biopsy of evident lesions if they screen positive by cytology or,

increasingly, by various combinations of cytology and human papillomavirus (HPV) test results [4]. Cervical cancer is both preventable and curable. It has a long natural history with a prolonged pre-cancerous phase that is easily detectable and treatable. Exfoliative cervical cytology remains the mainstay for screening pre-cancerous lesions (cervical intraepithelial neoplasia, CIN) [5]. Accurate histological grading of cervical intraepithelial neoplasia (CIN) lesions is important for the clinical management of patients because CIN1 and CIN2 and CIN3 lesions are treated differently [6]. It has a long precancerous phase before it develops into invasive cancer. A routine screening program has reduced mortality by more than 70% in developed countries [7]. For women who have abnormal Pap test results, the biopsy under colposcopic evaluation is the gold standard for determining the treatment modality [8]. Ideally, all women with abnormal cervical cytology should have a colposcopic examination. The other diagnostic procedure includes downstaging of cervical cancer, acetic acid visualization, Schiller test, cervicography, endocervical curettage, and cone biopsy of the cervix [9]. Colposcopy does not replace other methods of diagnosing abnormalities of the cervix but is instead an additional and important tool. The colposcopist can see areas of cellular dysplasia and vascular or tissue abnormalities not visible otherwise, which makes it possible to select areas most propitious for biopsy. Stains and other chemical agents are also used to improve visualization. The colposcope has reduced the need for doing blind cervical biopsies where the rate of finding abnormalities was low. The experienced colposcopist is also able to find a focal cervical lesion, obtain directed biopsy at the most appropriate sites, and make decisions about the most appropriate therapy [10]. After defining the abnormal area, a colposcopically directed biopsy is performed with the help of cervical punch biopsy forceps. For a clear understanding and to correlate the underlying histopathology with colposcopic results, multiple biopsies should be taken. A biopsy from the endocervical canal may be obtained with an endocervical curette [11]. Several grading, systems have been devised to increase the objectivity of colposcopic grading and reduce the inter and intra-observer variability. One of the grading systems is the Reid Colposcopic Index [12]. This study aimed to analyze the correlations between colposcopy findings and histopathological results from colposcopy-directed biopsy in cervical pre-cancerous lesions.

OBJECTIVE

General Objective

- To evaluate the correlation between colposcopic impression and histopathological results from colposcopy- directed biopsy in cervical precancerous lesions.

Specific Objectives

- To match the colposcopic prediction by using “MODIFIED REID COLPOSCOPIC INDEX” with histopathological results obtained from the biopsy.
- To formulate a cost-effective cervical cancer screening program.
- To assess the effectiveness of WHO recommended screen and treat approach.

METHODS

A prospective observational study was conducted at the Department of Gynecology and Obstetrics, Chittagong Medical College Hospital, Chittagong, from September 2014 to February 2015. VIA-positive 72 women fulfilling all inclusion criteria who attended at colposcopy clinic of CMCH were included in the study. Informed consent was taken from the study subjects. Data were collected with the pre-tested semi-structured questionnaire and used throughout the study period. The main measures of outcome variables contained the following points: age distributions, presenting sign symptoms, the findings of Colposcopy, and the findings of colposcopy-directed biopsy. All data were kept confidential only to be used for study purposes. Ethical clearance was obtained from the Institutional Ethics Committee. Statistical analyses were done by using the Statistical Package for Social Sciences (SPSS) version 16.0 for Windows. The quantitative observations were indicated by frequencies and percentages.

Inclusion Criteria

- VIA positive cases.
- Patients who had given consent to participate in the study.

Exclusion Criteria

- Patients of carcinoma cervix.
- Patients with post-coital bleeding.
- Patients with an unhealthy cervix.
- Patients with excessive per vaginal discharge.
- Patients with leukoplakia in cervix, vagina, vulva.
- Patients with post-menopausal bleeding.

RESULTS

In the present study, the majority of the participants were over the age of 30 years, with 43.1% being in the age group of 30-39 years. Another 30.6% were from the age group of 40-49 years, while only 15.2% were from the age group of 20-29 years [Table 1]. Colposcopy findings were normal in 9.7% of the participants. CIN I was observed in the majority of the participants (54.2%), while CIN II and CIN III were observed in 29.2% and 6.94% respectively [Table 2]. According to the colposcopy-directed biopsy results, 5.6% of patients had normal outcomes, 7.7% had inflammations, 45.8% had CIN I, 30.6% had CIN II and

8.3% had CIN III [Table 3]. The correlation was calculated by reporting the number of cases histologically confirmed to the number of cases of colposcopic diagnosis for each lesion group separately. The correlation was 71.8% (28 out of 39) in the CIN I category, 76.2% (16 out of 21) in the CIN II category, and 75% (3 out of 4) in the CIN III category [Table 4]. The sensitivity and specificity of colposcopy were calculated considering a colposcopy-directed biopsy. Colposcopy findings revealed 65 CIN positive cases and 07 CIN negative cases, while biopsy findings revealed 60 positive and 12 negative cases. The sensitivity of colposcopy was 96.7%, specificity was 41.6%, the false positive rate was 58.4% and the false negative rate was 03.3% according to this study [Table 5].

Table 1: Age distribution of the participants (N=72)

Variables	N	%
Age in years		
20-29	11	15.2
30-39	31	43.1
40-49	22	30.6
50-59	08	11.1

Table 2: Colposcopy findings distribution of the participants (N=72)

Colposcopy findings	N	%
Normal	7	09.7
CIN I	39	54.2
CIN II	21	29.2
CIN III	5	6.94

Table 3: Distribution of colposcopy-directed biopsy among the participants (N=72)

Biopsy findings	N	%
Normal	4	05.6
Inflammation	7	07.7
CIN I	33	45.8
CIN II	22	30.6
CIN III	6	08.3

Table 4: Correlation between colposcopy and histology (N=72)

Colposcopic diagnosis	Histologic diagnosis						%
	Normal	CIN I	CIN II	CIN III	CIS	Normal	
Normal	02	02	-	-	-	03	07
CIN I	02	28	05	-	-	04	39
CIN II	-	03	16	02	-	-	21
CIN III	-	01	-	03	-	-	04
CIS	-	-	-	01	-	-	01
Total	**04**	**34**	**21**	**06**	**0**	**07**	**12**

Table 5: Sensitivity and specificity analysis of CIN with colposcopy (N=72)

Colposcopy Findings	Biopsy		
	Positive	Negative	Total
Positive	58 (96.7%)	07 (58.4%)	65 (90.3%)
Negative	02 (03.3%)	05 (41.6%)	07 (09.7%)
Total	**60 (100.0%)**	**12 (100.0%)**	**72 (100.0%)**
Sensitivity	96.7%		
Specificity	41.6%		
False Positive	58.4%		
False Negative	03.3%		

DISCUSSION

Almost two-thirds of the incidents included those aged 30 to 39. According to this study, the incidence of participation reduced as the participants' ages increased. Only 15.2 percent of those who took part were under 30 years old. There is presently no clear consensus on the ideal age to begin cervical cancer screening; however, several studies indicate that screening begins around the age of 30. However, other studies have proposed that screening begins around the age of 20 [13, 14]. Colposcopy findings were normal in 9.7% of the participants. CIN I was observed in the majority of the participants (54.2%), while CIN II and CIN III were observed in 29.2% and 6.94% respectively**.** According to the colposcopy-directed biopsy results, 5.6% of patients had normal outcomes, 7.7% had inflammations, 45.8% had CIN I, 30.6% had CIN II and 8.3% had CIN III in this study which was very similar to other studies [15, 16]. The sensitivity and specificity of colposcopy were calculated considering a colposcopy-directed biopsy. Colposcopy findings revealed 65 CIN positive cases and 07 CIN negative cases, while Biopsy findings revealed 60 positive and 12 negative cases. The sensitivity of

colposcopy was 96.7%, specificity was 41.6%, the false positive rate was 58.4% and the false negative rate was 03.3% according to this study. In colposcopy and directed biopsy, sensitivity is 94%, specificity is 91%, false positive is 7.4%, false negative is 5.8% and accuracy is 92.85% according to another study [17]. Sensitivity was similar to this but specificity was low. Specificity was lower in this study probably because biopsies were performed in all cases during diagnostic workups. However, another study showed, the sensitivity of the colposcopic screening test came out to be about 71% while specificity was about 92% [18].

Limitations of the Study

The study was conducted in a single hospital with a small sample size for a short duration. So, the results may not represent the whole community. Moreover, as colposcopy requires a skilled colposcopist, interobserver variation is obvious which may have an impact on findings.

CONCLUSION

This study demonstrated high accuracy and correlation between colposcopy and histology. Specificity was lower in this study probably because biopsies were performed in all cases during diagnostic workups.

FUNDING

No funding source.

CONFLICT OF INTEREST

None declared.

ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee.

RECOMMENDATION

Recommendations for cervical screening tests are presented for women with no symptoms of cervical cancer who are or have been sexually active, regardless of sexual orientation, alongside, further studies can be undertaken including a large number of sample size.

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