

COLPOSCOPIC INDEX IN ASSESSMENT OF CERVICAL LESIONS

S M Chua, K C Ching, S T Chan

SYNOPSIS

Colposcopy is interpretive, subjective, and fallible. To add a degree of objectivity to colposcopic diagnosis, a colposcopic index based on the four colposcopic signs of peripheral margin, acetowhitening, vascular atypia, and reaction to iodine, was used to assess cervical lesions colposcopically in 50 patients. The various grades of the four signs and the colposcopic index related significantly to the histologic diagnoses. Predictive accuracy of the colposcopic index was 82%, with no incidence of underestimation of severity of the lesion. Such critical analysis simplifies colposcopic assessment and reduce the risk of underestimation of cervical pathology, thus avoiding local ablation of invasive lesions.

Key Words: Colposcopic Index.

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INTRODUCTION

Colposcopy was first introduced by Hinselmann of Hamburg in 1925. Initially it was ignored by the rest of the world because of the awkward German terminology used. In the 1940s its role was further overshadowed by the introduction of cervical cytology in the screening of cervical cancer (1). However recent years saw a worldwide renaissance in colposcopy because of the disenchantment with cytology especially with its high false negative rate estimated by some to range from 25% to as high as 40% (2). In trained hands, colposcopy had been proven to be accurate and it effectively complements cytology (3). It averts the need for diagnostic cone biopsies in the management of patients with abnormal cervical smears or suspicious looking cervical lesions, and hence avoided the morbidity and adverse effects on subsequent fertility associated with the procedure. However the training of colposcopist is time consuming as colposcopic diagnosis is dependent upon subjective recognition of patterns of colposcopic features; a skill acquired only after much experience.

It is known that colposcopic impression can substantially overestimate or underestimate the underlying

histology. Benign papillomaviral infections, cervical intra-epithelial neoplasias, and carcinoma in situ, all present as acetowhite epithelium and it is difficult to differentiate between the acetowhite reaction of nuclear dense pre-malignant epithelium from that of the acanthotic, para-keratotic areas of papilloma-virus infected epithelium. Immature metaplastic epithelium with its transient acetowhitening may be misinterpreted as abnormal and it may mask subtler lesions (4).

To circumvent these difficulties, and to add a degree of objectivity to colposcopic diagnosis, a colposcopic index based on four basic colposcopic signs (margin, colour, vascular atypia, and iodine staining) was used to evaluate cervical lesions at the colposcopic clinic of A Unit, Kandang Kerbau Hospital, Singapore. This paper reviews our initial experience with the use of this colposcopic index.

MATERIALS AND METHODS

Fifty consecutive patients who were seen at the colposcopic clinic of A Unit, Kandang Kerbau Hospital, Singapore, were studied. All of them had complete colposcopic examinations, their colposcopic findings were graded by the colposcopic index, and biopsies of the most abnormal area of their transformation zones were taken.

The colposcopic index used was based on four colposcopic signs, namely peripheral margin, colour (acetowhitening), vascular atypia, and iodine reaction (see Table 1). Each sign was graded into three grades with each grade given a score from zero to two, giving a total possible maximum score of eight and a minimum of zero.

Margin of the lesions which were condylomatous, micropapillary, indistinct, flocculated, feathered, angular, jagged, or if satellite lesions beyond the transformation zone were found were graded with zero point. A regular, smooth or straight margin would score one point. Margins with rolled or peeling edges and those with internal demarcation between areas of differing appearances would score two points. As for the degree of acetowhitening or colour, a shiny, snow-white appearance, or indistinct acetowhitening would be graded with zero point.

A Unit
Kandang Kerbau Hospital,
Hampshire Road,
Singapore 0821

S M Chua, MBBS MMed (O&G) MRCOG FICS AM, Registrar

K C Ching, MBBS MMed (O&G) MRCOG AM, Senior Registrar

S T Chan, MBBS MMed (O&G), Registrar

Correspondence to: Dr Chua
'B' Unit
Kandang Kerbau Hospital,
Hampshire Road,
Singapore 0821

Table 1.
COLPOSCOPIC INDEX

Signs	Zero point	One point	Two points
Margin	Condylomatous or micropapillary Indistinct acetowhitening. Flocculated or feathered margins. Angular, jagged lesions. Satellite lesions, acetowhitening beyond TZ.	Regular, smooth, straight outlines.	Rolled, peeling edges. Internal demarcation between areas of differing appearance.
Colour	Shiny, snow-white. Indistinct acetowhitening.	Intermediate shiny gray.	Dull, oyster white.
Vessels	Fine calibre, poorly formed patterns. Condylomatous or micropapillary.	Absent.	Definite punctation or mosaic.
Iodine	Positive stain. Minor negative stain.	Partial uptake.	Negative stain.

Those with denser acetowhitening appearing as intermediate shiny gray lesions would score one point. More severe lesion with dull oyster white appearance would score two points. Vascular pattern with fine calibre vessels in poorly formed pattern would score zero point while those with definite punctation or mosaic pattern would score two points. Reaction to iodine is graded with zero point for definite positive staining, one point for partial uptake, and two points for negative stains.

The data were analysed and the significance of the various grades of the four colposcopic signs as well as the colposcopic index in predicting histology of the cervical lesion measured by the Chi Square test.

RESULTS

Each of the colposcopic sign used in the index was analysed with regards to the histologic results and this was tabulated in Table 2. The different grades of peripheral margin were highly statistically significantly

($p < 0.001$) in the differentiation of the various histologic grades. Accuracy of this sign alone in predicting histologic finding was 76%. The various grades of vascular atypia were also statistically significant ($p < 0.005$) in the differentiation of the histologic findings. Its accuracy was 76% too. The various grades of acetowhitening were statistically significant too ($p < 0.005$), and its predictive accuracy was 74%. Reactions to iodine were statistically significant ($p < 0.025$) in predicting various histology but the accuracy was only 58%.

Table 2.
COLPOSCOPIC SIGN VERSUS HISTOLOGY

Histology	Peripheral Margin			Total
	0	1	2	
Cervicitis	3	1	0	4
Viral Warts	9	4	0	13
CIN I	6	10	0	16
CIN II	2	4	1	7
CIN III	0	5	5	10
Total	20	24	6	50

Accuracy = 76% Chi Square = 26.36 ($p < 0.001$)

Histology	Vascular Pattern			Total
	0	1	2	
Cervicitis	3	1	0	4
Viral Warts	10	2	1	13
CIN I	6	4	6	16
CIN II	1	3	3	7
CIN III	0	1	9	10
Total	20	11	19	50

Accuracy = 76% Chi Square = 25.04 ($p < 0.005$)

Histology	Colour			Total
	0	1	2	
Cervicitis	3	1	0	4
Viral Warts	9	4	0	13
CIN I	5	10	1	16
CIN II	2	4	1	7
CIN III	0	5	5	10
Total	19	24	7	50

Accuracy = 74% Chi Square = 23.33 ($p < 0.005$)

Histology	Iodine Staining			Total
	0	1	2	
Cervicitis	2	1	1	4
Viral Warts	5	3	5	13
CIN I	0	6	10	16
CIN II	1	1	5	7
CIN III	0	0	10	10
Total	8	11	31	50

Accuracy = 58% Chi Square = 19.80 (p < 0.025)

When the scores for all the four signs were added together in a weighted colposcopic index, the accuracy of prediction of histologic grade improved to 82% and the differentiation was highly statistically significant (p < 0.001) (Table 3). All cases scoring 2 points and below had CIN I or milder lesions. 13 out of 17 cases scoring between 3 and 5 points had CIN I or CIN II, while 12 out of 17 cases scoring between 6 to 8 points had CIN II or CIN III. There was no incidence of underestimation of histologic severity.

Table 3.
COLPOSCOPIC INDEX VERSUS HISTOLOGY

Histology	Colposcopic Index			Total
	0-2	3-5	6-8	
Cervicitis	3	1	0	4
Viral Warts	9	3	1	13
CIN I	4	8	4	16
CIN II	0	5	2	7
CIN III	0	0	10	10
Total	16	17	17	50

Accuracy = 82% Chi Square = 38.93 (p < 0.001)

DISCUSSION

Colposcopy is interpretive, subjective, prone to whimsical interpretation, and thus fallible. Acquiring competence in colposcopy is time-consuming and generally it had been estimated that it takes 3-4 months of training before one can recognise a cervical lesion colposcopically, 1 year before being competent in selecting sites for biopsies, and several years are required before one attain high degree of accuracy in the prediction of cervical histology (5). The problem is further compounded by the fact that while one of the main aims of colposcopy is to differentiate between invasive and non-invasive cervical lesions, the number of cases of microinvasive or occult invasive cervical lesion seen is so few that it is difficult for one to accumulate sufficient experience in diagnosing such lesions. Accurate colposcopic diagnosis is especially important when local ablation of cervical lesions is practised as the potential for erroneous ablation of invasive lesions exists (6, 7, 8). Thus the need for a more objective colposcopic assessment of cervical lesions is called for.

Our results showed that a degree of objectivity can be introduced to colposcopy with the use of the colposcopic index. As shown in Tables 2 and 3, each of the four colposcopic sign and the colposcopic index related significantly to the histologic grade. Predictive accuracy of the signs of peripheral margin, vascular atypia, and colour were over 74%. Reaction to iodine staining was less accurate and this could be due to the non-specific nature of the epithelial reaction, with negative stains obtained from all grades of lesions ranging from cervicitis to CIN III. Nevertheless iodine reaction has an useful role in demarcating the extent of the lesion.

The colposcopic index allowed a critical assessment of the lesion rather than depending a whimsical intuition. Although we only attained a 82% accuracy in the prediction of histologic severity as compared to 97% attained by others (9), improvement would be expected with increased experience and familiarity with the use of the index. It is comforting to note that we had not underestimated any lesion in this study which is important when local ablative therapy is contemplated.

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