

## COMPARATIVE STUDY OF CYTOLOGIC AND COLPOSCOPIC FINDINGS IN PRECLINICAL CERVICAL CANCER

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### Summary

Seventy-seven patients who had PAP smear cytology and colposcopic examination in a 2-year period between 1988 and 1989 were reviewed. Those with findings indicative or suspicious of malignancy were subjected to biopsy. All 50 patients thus biopsied were confirmed to have preclinical cancer on histological examination. Compared against histology, PAP smear cytology gave an accuracy rate of 90% (5 false negatives) and colposcopy gave an accuracy rate of 94% (3 false negatives). These results demonstrate that the two techniques are useful as screening tests for preclinical cervical cancer. The results are improved if they are used complementarily. However, there was poor specificity in the categorisation of cervical cancer by both methods. This was probably due to the subjectiveness of the two procedures. The study also raised the possibility of a higher incidence of preclinical cervical cancer in the Chinese ethnic group.

Keywords: Cervix, cancer. PAP smear, cytology, colposcopy.

### INTRODUCTION

Cancer of the cervix is one of the most common diseases affecting women after the fourth decade of life. It is the most common Gynaecological malignancy and is a significant cause of death in women in Malaysia as well as all over the world. In most developed countries, screening programmes for early detection of preclinical cervical cancers have proven to be very useful and have contributed to improved results of treatment. Papanicolaou (PAP) smear cytological examination and colposcopy are the principle methods used in the early detection of cancer of the uterine cervix. Their use depend on how closely their findings correlate with each other and with histology. This paper presents our experience with cytology and colposcopy in unselected cases from a gynaecologic office practice. The main aim of this study is to assess the accuracy of PAP smear cytology and colposcopic examination as diagnostic procedures in preclinical cervical cancer.

### MATERIALS AND METHODS

A retrospective study was carried out on an unselected group of new patients who had undergone colposcopic examination at the Gynaecologic clinic, Universiti Kebangsaan Malaysia (UKM) in a two year period from 1988 to 1989. 40% of these patients were referred from 3 other institutions -the Institute for Medical Research, the National Family and Population Development Board and the Private Clinical Pathology Laboratory. They had all had PAP smear cytological examinations performed at the referring institutions or at the Department of Pathology, UKM.

Cytologic examination was carried out on smears prepared by the conventional Papanicolaou method. The results were classified under two categories: non-malignant and malignant. The non-malignant category

included normal smears and smears with inflammatory changes. The malignant category was divided into 4 groups: mild dyskaryosis (CIN I), moderate dyskaryosis (CIN II), severe dyskaryosis (CIN III), and microinvasive carcinoma.

Colposcopic examination was carried out using the Zeiss colposcope. The colposcopic findings were also classified into non-malignant and malignant categories. The non-malignant category included normal findings and viral wart changes. The malignant category was also divided into 4 groups: CIN I, CIN II, CIN III, and micro-invasive carcinoma.

Patients with malignant findings on colposcopy and suspicious findings on either colposcopy or cytology were subjected to cervical biopsy. The technique of biopsy included cervical punch biopsy and cervical cone biopsy. Histological diagnosis was also classified into 4 groups: CIN I, CIN II, CIN III, and micro-invasive carcinoma.

The results of the PAP smear cytology and colposcopic examination of each patient were correlated with each other and with the final histological diagnosis. Demographic data, i.e. the age, parity, age at first coitus, and ethnic distribution of all patients with malignancy were also analysed.

### RESULTS

In the 2-year period of study, 77 patients with PAP smear examination were seen in the Gynaecologic Clinic, Universiti Kebangsaan Malaysia. 40% of these patients were referred from 3 other institutions as mentioned above. All patients had a colposcopic examination in the Gynaecology clinic, UKM. Table 1 presents the correlation between cytologic and colposcopic findings. Of the 77 patients, 32 had PAP smears reported as non-malignant and 45 as malignant. However, on colposcopic examination, 30 patients were

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**TABLE 1**  
**COMPARISON OF COLPOSCOPY AND CYTOLOGY IN 77 PATIENTS**

PAP smear cytology	Colposcopy		
	Normal	Cervical cancer	Total
Normal	30	2	32
Cervical cancer	0	45	45
Total	30	47	77

assessed as non-malignant and 47 as malignant. Cervical biopsies performed on the latter 47 patients confirmed malignancy. Out of the 30 patients with non-malignant reports on both cytology and colposcopy, 3 were noted to be suspicious and were subjected to biopsy which showed cervical malignancy. Thus, the PAP smear method compared against biopsy diagnosis incurred 5 false negative results, giving an accuracy rate of 90% (45 out of 50 biopsied patients). The colposcopy method incurred fewer false negatives (3 patients), giving a slightly better accuracy rate of 94% (47 out of 50 biopsied patients).

In the 50 patients proven to be malignant on biopsy, 5 (10%) were CIN I, 10 (20%) were CIN II, 30 (60%) were CIN III and 5 (10%) were micro-invasive carcinoma on histology (Table 2). On correlation with PAP smear cytology results, only 3 (60%) out of 5 patients in the CIN I category correlated correctly with the histological diagnosis. The correlation in the CIN II category was 29% (5 out of 17

patients). A large number (10 patients) were underclassified as CIN II when they were histologically shown to be CIN III. The correlation in the CIN III category, was 71% (12 out of 17 patients) and only 17% (1 out of 6 patients) in the micro-invasive category. Again, most of the patients in the micro-invasive group were underclassified as CIN III on cytology. This reflected a difficulty in differentiating between various categories of malignancy on the basis of cytology.

Table 3 shows the correlation between colposcopic findings and histological diagnosis. The correlation was 33% (2 out of 6 patients) in the CIN I category, 21% (5 out of 24 patients) in the CIN II category, 76% (13 out of 17 patients) in the CIN III category. As with cytology, many patients were underclassified from CIN II to CIN I (3 out of 6 patients) and from CIN III to CIN II (15 out of 24 patients) using colposcopic examination. No diagnosis of micro-invasive carcinoma was made on colposcopy.

**TABLE 2**  
**COMPARISON BETWEEN CYTOLOGY AND HISTOLOGY**

Cytologic diagnosis	Histological diagnosis				Total
	CIN I	CIN 2	CIN 3	Microinvasive	
Inflammatory		3	2	-	5
Mild dyskaryosis (CIN I)	3(60%)		1	1	5
Moderate dyskaryosis (CIN 2)	2	5(29%)	10		17
Severe dyskaryosis (CIN 3)		2	12(71%)	3	17
Malignant (microinvasive)			5	1(17%)	6
Total	5	10	30	5	50

TABLE 3  
COMPARISON BETWEEN COLPOSCOPY AND HISTOLOGY

Colposcopic diagnosis	Histologic diagnosis				Total
	CIN 1	CIN 2	CIN 3	Microinvasive	
Normal/viral wart	—	2	1	—	3
CIN 1	2(33%)	3	1	—	6
CIN 2	3	5(21%)	15	1	24
CIN 3	—	—	13(77%)	4	17
Total	5	10	30	5	50

The majority of patients (70%) were in the 30-49 year age group (Table 4). Seven (14%) were under 30 years of age and another 8 (16%) were over 50 years of age. The majority of patients (92%) were multiparous (Table 4) 44% of patients were below 19 years of age at first coitus and another 50% from 20 to 29 years of age (Table 4).

The majority of patients with cervical cancer (84%) were Chinese (Table 5). In contrast, the Chinese constituted only 21% of patients attending the Gynaecology clinic, UKM whereas Malays formed the major group at 58%. From these results, there seemed to be an apparent Chinese predilection for cancer of the cervix, but a proper epidemiological study should be done to verify this.

#### DISCUSSION

The accuracies of PAP smear cytology and colposcopy as methods of diagnosis of preclinical cervical cancer were very good in

this study and compared well with each other. Measured against histology as a gold standard, an accuracy rate of 90% was obtained on cytology which, when combined with colposcopy, increased to 94%. This is comparable to many other reports.<sup>2,3,4</sup>

However, the specificity rate or accuracy of diagnosing the different categories of preclinical cervical cancer using either technique was disappointing. Using cytology, there was great difficulty in differentiating CIN II and CIN III cases and diagnosing micro-invasive carcinoma. Using colposcopy, the difficulty was in differentiating between CIN I and CIN II and between CIN II and CIN III cases. The diagnosis of micro-invasive carcinoma was not made on colposcopy. The poor results obtained here are very likely due to the fact that specific diagnosis in these two techniques is very highly operator dependent and subjective. In either technique there was a tendency to underdiagnose the severity of the cancer. In the case of PAP smear cytology, the patients were derived from four institutions.

TABLE 4  
DISTRIBUTION OF 50 CASES OF PRECLINICAL CERVICAL CANCER BY AGE, PARITY AND AGE AT FIRST COITUS

	CIN 1	CIN 2	CIN 3	Microinvasive	Total	%
<b>Age (yr)</b>						
20-29	3	—	4	—	7	14
30-39	1	5	12	—	18	36
40-49	1	2	9	5	17	34
50-59	—	3	4	—	7	14
60-69	—	—	1	—	1	2
<b>Parity</b>						
Nulliparous					4	8
1-5					34	68
>5					12	24
<b>Age at first coitus</b>						
10-19	2	4	14	2	22	44
20-29	3	5	14	3	25	50
30-39	—	1	2	—	3	6
>39	—	—	—	—	—	—

TABLE 5

## RACIAL DISTRIBUTION OF 50 CASES OF PRECLINICAL CERVICAL CANCER

Racial group	Number	%	% attendance at Gynae Clinic
Malay	4	8	58
Chinese	42	84	21
Indian	4	8	17
Others	—	—	4
Total	50	100	100

This would accentuate the problem of operator dependence.

However, the prime importance of using these techniques as screening tests is to pick up cases that are malignant. This study has demonstrated that the accuracy rate for this is satisfactory. The specificity of diagnosis is of secondary importance because all patients who are screened as malignant will undergo a biopsy and receive appropriate treatment despite inaccuracies in categorisation of the preclinical cancer. This study has demonstrated that PAP smear cytology is a useful screening test for preclinical cervical cancer. It is a safe, easily carried out and relatively cheap procedure with a high pick-up rate. Colposcopy requires more sophisticated equipment and expertise in diagnosis. However, if used as a complementary test to cytology, the accuracy rate can be enhanced as shown in this study.

An interesting finding in this study is the suggestion that preclinical cervical cancer may be more common among the Chinese. This finding compares well with a review of the cervical smear screening programme conducted by the National Population and Family Development Board of Malaysia between 1979 to 1981. In that study 67% of abnormal smears were from the Chinese population.<sup>5</sup> Genetic, socio-cultural and nutritional factors have been postulated to explain a predisposition of the Chinese towards cervical malignancy.<sup>1</sup>

There is as yet no cervical cancer screening programme on a national level in Malaysia. PAP smear cytology is available and is being carried out but in an uncoordinated manner. Colposcopy is available only in the bigger medical centres in the country. Cases are found purely by chance when these women attend the Gynaecology, Family Planning or Postnatal clinics. Women at risk are therefore not routinely screened and this has contributed to late diagnosis and poor results of treatment. This small study has demonstrated the usefulness of these two diagnostic procedures as screening tests in preclinical cervical cancer. There is now a real need to commence a cervical cancer screening programme in Malaysia.

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