

**DETECTION OF UTERINE CERVICAL DYSPLASIA AND CARCINOMA
CERVIX BY CERVICAL SMEARS—A CLINICOPATHOLOGICAL
ANALYSIS OF 1,181 CASES**

by

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Introduction

Carcinoma of the uterine cervix is the commonest malignancy of Indian women (Luthra, 1976). Clinical, Cytological and histological studies support the concept that carcinoma cervix does not arise *de novo* but is the final step in a chain of cervical epithelial abnormalities in the form of progressive grades of dysplasia (Wahi *et al* 1969; W.H.O. Technical Report Series, 1978). In some instances, however, if left alone the dysplastic changes may regress or persist, thus displaying complex and unpredictable biological behaviour (Luthra *et al* 1969; Koss, 1978). Screening of the female population for cytological evaluation by cervical smears is a useful method for early recognition of dysplastic changes which, in turn, can be helpful in curtailing the high mortality associated with cervical carcinoma. The present study was

undertaken with this objective in mind and the cytological findings were correlated with histopathological study in as many cases as possible. The role of various clinical observations and many socio-cultural risk factors implicated in its etio-pathogenesis have been briefly discussed.

Material and Methods

The study was carried out in 1,181 unselected women belonging to all age groups and covering a period of one year (Dec. 1980 to Dec. 1981). A detailed clinical history regarding the age, age at cohabitation and at first childbirth, number of abortions and full-term deliveries, socioeconomic status, rural/urban background, religion, circumcision of the male partner, contraceptive devices used and the clinical complaints of each patient were recorded on a set proforma. The findings of vaginal and speculum examination done in each case were also included in the proforma.

A 'pancervical' smear by Fast smear technique as recommended by Novak and Woodruff (1979) was collected by a wooden spatula in each case. The smears were stained by modified Papanicolaou's technique.

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Cytomorphologically, the smears were classified into 5 groups on the basis of criteria adopted by Mali *et al* (1969). The interpretation of the three grades of dysplasia was carried out according to the criteria laid down by Wahi *et al* (1969). The diagnosis of positive malignant cells in cervical smears was based on the W.H.O. recommendation (Christopherson and Lunt, 1973).

Cervical biopsy for histopathological correlation was performed in as many cases of dysplasia and carcinoma cervix as possible.

Observations and Discussion

(a) *Cytological Findings:* Of the 1,181 women who underwent detailed clinical and cytological examination, cervical dysplasia and carcinoma of cervix were diagnosed in 11 (0.95%) and 3 (0.25%) patients respectively. The distribution of these cases into 5 classes is shown in Table I. The flagellate, *Trichomonas vaginalis*, was demonstrated in 3 (21.4%) smears positive for various categories of dysplasias and carcinoma cervix, whereas only 56 (4.7%) cases out of the negative smears showed this infection.

The prevalence rate of cervical dysplasia of all categories has been variously reported from other studies in India as ranging from 2.3-7.5% which is higher as compared to its incidence from the present communication (Mali *et al*, 1969; Wahi

et al, 1972; Rao *et al*, 1973). This has been attributed to difference in parameters used in the selection of cases in various studies. The present study, however, was conducted in purely unselected women belonging to all age groups and hence its lower incidence.

The demonstration of *T. vaginalis* in 21.8% of cases with abnormal cytological findings adds weight to the concept that cervical dysplasia and trichomoniasis of vagina are interrelated (Patten *et al*, 1963; Rao *et al*, 1973; Kumari *et al*, 1982).

(b) *Age Distribution:* The mean age of cases positive for cervical dysplasia and carcinoma cervix was 46.6 (range 35-62 years) and 53.3 (range 45-65 years) years respectively. The age of women with negative smears ranged from 16-75 years with a mean of 42.8 years. The highest incidence of various grades of dysplasia (55%) was observed in patients in their 4th decade. Maximum number of cases of mild and moderate dysplasia fell in the age group of 40-49 years, whereas higher number of patients with severe dysplasia and carcinoma cervix were detected in the later age groups.

Various other authors have reported higher incidence of cervical dysplasia of all grades in 3rd decade and above and carcinoma cervix a decade later (Mali *et al*, 1969; Rao *et al*, 1973). The present observation of progression in the grade of dysplasia from mild to severe and then to

TABLE I
Smear Classification into 5 Groups (after) Mali *et al* 1969

	Cases	Percentage
Total No. of smears analysed	1,181	—
Class I (Negative smears)	1,167	98.80
Class II (Mild dysplasia)	4	0.35
Class III (Moderate dysplasia)	3	0.25
Class IV (Severe dysplasia)	4	0.35
Class V (Positive for malignant cells)	3	0.25

carcinoma in situ and invasive carcinoma cervix with advancing age is in conformity with the reports by other workers (Luthra *et al*, 1969; Rao *et al*, 1973).

(c) *Follow-up and Histopathological Correlation*: Attempts were made to follow-up every case positive for dysplasia and carcinoma cervix. However, only 9 (64.3%) out of a total of 14 such patients visited for the second time within a period of 2-6 months of their first examination. A repeat cervical smear was collected in all cases and cervical biopsies performed.

The cytological findings of repeat cervical smears showed persistence of various categories of dysplasias and carcinoma cervix in 6 (66.7%) out of 9 cases and the histopathological examination of these cases tallied with the cytological findings. One case (11.1%) of mild dysplasia showed disappearance of dysplastic changes after 4 months of the first smear examination and cervical biopsy of this case revealed chronic cervicitis. Two cases (22.2%) of severe dysplasia had progressed to show carcinoma cells in the second smear examination after a period of 2 and 5 months and biopsy specimens of these

cases showed changes of carcinoma in situ and epidermoid carcinoma respectively. This supports a complex and unpredictable biological behaviour of cervical cytological abnormalities (Luthra *et al*, 1969; Koss, 1978).

(d) *Cytological Correlation with Clinical Findings*: Table II presents the correlation of cytology reports with the clinical symptoms and findings.

Maximum number of cases of dysplasia (28.6%) and carcinoma cervix (14.3%) came with the complaints of irregular menstrual bleeding, followed by leucorrhoea (21.5%). Two patients (14.3%) with cytological abnormalities were pregnant at the time of study which is in accordance with the higher incidence of dysplasia during pregnancy (5.6-30%) as reported by other workers (Mali *et al*, 1969; Rao *et al*, 1973).

Examination of patients revealed that cervical erosion was present in 35.7% of patients with dysplasia, followed by unhealthy cervix that bled on touch in 21.5% and 7.1% cases of dysplasia and carcinoma cervix respectively.

TABLE II
Cytological Correlation With the Clinical findings

	Dysplasia of all grades		Positive for malignant cells	
	Cases	%age	Cases	%age
<i>Symptoms</i>				
Irregular menstrual bleeding	4	28.6	2	14.3
Leucorrhoea	3	21.5	—	—
Prolapse	2	14.3	1	7.1
Pregnancy	2	14.3	—	—
<i>Findings</i>				
Cervical erosion	5	35.7	—	—
Cervix bleeds on touch	3	21.5	1	7.1
Growth on cervix	—	—	2	14.3
Chronic cervicitis	2	14.3	—	—
Healthy cervix	1	7.1	—	—

(e) *Role of Various Risk Factors*

(i) *Age at cohabitation*—All the women studied were married. The mean age at cohabitation of patients with cervical dysplasia and carcinoma cervix was 16.6 years as compared to 17.8 years of the dysplasia-free population studied.

(ii) *Age at first delivery*—71.4% of patients with dysplasia and carcinoma cervix had their first childbirth before attaining the age of 19 years as compared to 44% in the control group.

(iii) *Parity*—None of the patients with dysplasia and carcinoma cervix was a nullipara. The average number of full term deliveries in such patients were 7 against 5.6 in the control group of women.

(iv) *Abortions*—The average abortion rate in the patients with dysplasia and cervical cancer was also higher (12.5%) than in the control group (10.2%).

(v) *Circumcision of the male partner*—Although 218 women who had circumcised male partners were included in the study, none of them showed changes of cervical dysplasia or carcinoma cervix.

(vi) *Rural/Urban Background*—It was observed that dysplasia and carcinoma cervix were commoner in patients belonging to rural areas (64.3%) than the women coming from urban areas.

(vii) *Socioeconomic status*—Majority of the patients with dysplasia and cervical cancer (85.7%) belonged to poor socio-economic strata of the society. In comparison, 76.4% of women in the control group were of poor socio-economic status.

All these factors have been reported in the literature to predispose women to pre-cancerous lesions and carcinoma cervix (Rao *et al* 1973; W.H.O. Technical Report Series, 1978).

To conclude, three factors must be considered for cervical cytology screening programme to be effective: identification

of a population at risk, achievement of complete coverage and frequency of cervical smear examination by follow-up of patients. Screening of the female population on these principles can help in reducing the number and severity of squamous carcinoma of the cervix.

Summary and Conclusions

1. The prevalence rates of dysplasia of all grades and carcinoma of cervix by cervical cytology were found to be 0.95% and 0.25% respectively in 1,181 women studied.

2. Their incidence was observed to be high in women in or past their 4th decade of life and showed a progression in the severity of intraepithelial alterations with increasing age. Factors like trichomoniasis of the vagina, pregnancy, poor socio-economic status, rural background, lower age at marriage and at first delivery, multiparity and repeated abortions were observed to be directly related to cytological abnormalities.

3. Irregular menstrual bleeding and cervical erosion were the most common clinical findings in cases associated with dysplasias and carcinoma cervix.

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See Figs. on Art Paper II