

HISTOPATHOLOGY AUDIT OF CERVICAL EPITHELIUM IN NON-NEOPLASTIC CONDITION OF CERVIX

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SUMMARY

Five hundred sixty four specimens of cervix from hysterectomy cases and one hundred fifty two specimens from cervical biopsies were studied for the deviation of the ectocervical epithelium and glands and epithelium of endocervix from cases having complaints related to cervix; from the same without any complaints related to cervical pathology. Assessment was made with the thickness of squamous epithelium, surface keratinisation, presence of basal cell islands, cellular atypia and koilocytes of the ectocervix; and the state of endocervical glandular epithelium and presence of atypia in the metaplastic squamous epithelium in the endocervix.

It was observed that :

a) moderate to severe degree of thickness of squamous epithelium with invariable presence of koilocytes, presence of basal cell islands and half thickness atypia was associated with pathological condition of cervix with or without surface keratinisation;

b) focal ulceration, focal micropolyp formation, inflammatory infiltrate and squamous metaplasia with or without atypia were the most frequent findings.

As ectocervical epithelial change is apparent without any clinical evidence of pathology of cervix, the endocervical pathological changes are more pathognomonic of pathological cervix, which need subsequent treatment and follow-up.

INTRODUCTION

Portio vaginalis of cervical mucosa is

covered by five layers of stratified squamous epithelium (Papanicolaou, 1954). Because of multilayering, the squamous epithelium is resistant to infection or trauma whereas the glandular surfaces are less resistant to infection or trauma of all kinds. Again cervical epithelium is prone to be affected by hormonal changes in the reproductive period as well as to infections.

Histological assessments remain the basis for determination of clinical management and subsequent followup of patients with pathological cervix. Although criteria for the diagnosis and assessment of epithelial abnormalities of cervix uteri have been described, such assessment are usually subjective and prone to inter and intra observer variation (Cocker et al 1968). It is reasonable that effort would be made to establish the degree of confidence which can be given to the histological reporting of cervical biopsy specimens to the advantage of the gynecologists (Robertson et al, 1989).

The present study is an audit of the deviation of the ecto and endocervical epithelium and glands from normal in the cervical biopsy specimens obtained for cervical pathology other than carcinoma and also from hysterectomy specimens

obtained for pathology other than cervical pathology, the later acted as control.

MATERIALS AND METHODS

Materials : The number of specimens of cervix examined for clinically suspected pathology were 152. The malignant lesions of cervix including CIN III were excluded from the study. The total number of specimens of cervix from hysterectomy specimens examined were 564; the hysterectomy was done for noncervical pathology like DUB, fibroid of uterus, prolapse of uterus (2nd degree).

Methods : Histology sections of the cervix were studied by two observers. The mean findings of the two observers were taken wherever applicable. Assessment was done on : a) thickness of squamous epithelium in mm done by using Micrometer eyepiece; b) surface keratinisation, c) presence of cellular atypia, d) presence of basal cell islands, presence of koilocytes, f) state of endocervical epithelium and glands, g) presence of atypia in metaplastic squamous epithelium.

OBSERVATIONS

The thickness of squamous epithelium of cervix (Table I) was 0.25 to 0.5 mm

Table I
THICKNESS OF ECTOCERVICAL SQUAMOUS EPITHELIUM IN MM

Specimens	No	Thickness in mm		
		1/4 - 1/2	1/2 - 1	1 - 2
HySps (Group I)	564	423	94	47
	%	75	16.6	8.33
CxBSps (Group II)	152	90	48	14
	%	60.00	31.57	9.33

HySps (Group I) = Cervix from Hysterectomy specimens

CxBSps (Group II) = Cervical biopsy specimens

Table II
SURFACE KERATINISATION AND PRESENCE OF KOILOCYTES
IN ECTOCERVICAL SQUAMOUS EPITHELIUM

Specimens	Surface keratin present	Koilocytes present	Total
HySps (Group I)	423	395	564
percent of total	75	70	100
CxBSps (Group II)	52	124	152
percent of total	34.21	81.57	100

Table III
BASAL CELL ISLANDS IN THE ECTOCERVICAL
SQUAMOUS EPITHELIUM

Specimens	No	Basal cell islands in No/LPF		
		Less than 10	More than 10	More than 20
HySps (Group I)	564	47	235	282
Percent	100	8.33	41.66	50.00
CxBSps (Group II)	152	20	60	72
Percent	100	13.15	39.47	47.36

HySps (Group I) = Cervix from Hysterectomy specimens

CxBSps (Group II) = Cervical biopsy

Table IV
THICKNESS OF ATYPIA AND MICROINVASION OF ECTOCERVICAL
SQUAMOUS EPITHELIUM
PRESENCE IN NO OF CASES

Specimen	Thickness of atypia				Microinvasion
	1/3	1/2	2/3	Total	
HySps (Group I)	94	141	94	329	94
% of total 564	16.6	25.0	16.6	58.2	16.66
CxBSps (Group II)	68	32	8	108	16
% of total 152	44.83	21.05	5.26	71.14	10.52

i.e. mildly thick, in majority of the cases of both group I (Hysterectomy specimens - HySps) and Group II (Cervical biopsy specimens - CxBSps), being 75% and 60.0% respectively. The mucosal thickness was 0.5 to 1 mm. (moderate) was observed in larger percentage of cases of CxBSps, and the same was the observation in respect of severe degree of thickness i.e. 1 to 2 mm, in the two groups. Thus the present study could correlate moderate to severe degree of thickness (0.5 to 2 mm thickness) with pathological cervix, causing clinical symptoms.

Surface keratinisation (Table II) of cervical squamous epithelium was observed to be present 75% of the specimens of Group I against 34.21% of specimens of Group II.

Thus the present study could not find invariable association of the presence of surface keratinisation with pathological cervix.

Presence of koilocytes (Table II) was noted in 70% of Group I against 81.57% of Group II specimens.

Thus it appeared from this study that though surface keratinisation was not a prominent feature in majority of Group II specimens, presence of koilocytes was almost invariable.

Basal cell islands (Table III) of more than 10 in number in low power field were detected in majority of cases of both the groups having almost equal incidence.

Epithelial thickness atypia (Table IV) in the cervical squamous epithelium was upto 1/2 thickness in majority of cases of group II (65.88%), whereas the same for Group I specimens was only 41.6%. Full thickness atypia was seen in none of Group I and those of Group II showing full thickness atypia were excluded from the study.

Microinvasion was noted with nearly equal frequency (Table IV) in

Table V
CHANGES IN ENDOCERVICAL GLANDULAR EPITHELIUM :
IN NO OF CASES

Specimens	Ulceration	Micropolyp formation	Squamous metaplasia	Inflammatory infiltrate	Cystically dilated Glands
HySps (Group I)	50	50	229	105	400
% of 564	8.8	8.8	40.6	18.6	70.5
CxBSps (Group II)	100	110	115	105	50
% of total 122	81.9	90.16	94.26	86.0	40.9

In 122 or 80% of the biopsy specimens provided adequate endocervical material

HySps (Group I) = Cervix from hysterectomy specimens

CxBSps (Group II) = Cervical biopsy specimens

Table VI
PRESENCE OF ATYPIA IN METAPLASTIC
SQUAMOUS EPITHELIUM

Specimens	Presence of atypia : in nos of cases			
	Mild	Moderate	Severe	No Such
HySps (Group I) - 229	46	-	-	183
% of 229 Sps	20.0	-	-	80.0
CxBSps (Group II) - 155	77	39	-	39
% of 155	49.6	25.2	-	25.2

both the groups.

Adequate endocervical material was obtained (Table V) in 80% of group II against 100% in Group I specimens. Focal ulceration, focal micropolyp formation, inflammatory infiltrate and atypia in the metaplastic squamous epithelium was more prominent in Group II specimens than group I specimens, though cystic dilatation of endocervical glands exceeded in Group I specimens.

The metaplastic squamous epithelium of endocervix (Table VI) showed mild to moderate degree of atypia in only 20% of Group I against 74.8% in Group II.

Thus endocervical pathological lesions were prominently noted in cervical biopsy specimens compared to those of Hysterectomy specimens.

DISCUSSION

The squamous epithelium of the cervix has been studied for its thickness, surface keratinisation, presence of basal cell islands, presence of koilocytes, presence of microinvasion of less than 3mm. and presence of cellular atypia.

Increased thickness of squamous layer and surface keratinisation is seen to occur under some exogenous stimuli (Luesley, 1995). Increased thickness of squamous layer is represented as increase in the cells of superficial zone having small pyknotic nuclei and glycogen rich, eosinophilic and keratinosome containing cytoplasm. The keratinisation is presented as dense eosinophilic layer of variable thickness superficialmost.

Presence of basal cell islands indicate rapid irregular proliferation of epithelial cells and indicate a form of mild dysplasia having altered maturation cellular layer and without atypia (Poulsen et al, 1975). Koilocyte is the cell found in squamous epithelium in which perinuclear halo is present. This is found in normal squamous metaplasia, in normal epithelium of introitus and hymenal ring, and also in a number of infective conditions including trichomoniasis, moniliasis as well as in post-therapeutic reparative processes (Luesley et al, 1995). Certain authors (Ward et al, 1990) claimed

that the term koilocytes should only be used with HPV related change. But Luesley et al, 1995 opined that a significant cytological atypia and perinuclear halo is most important cytological features for HPV related cells. Thus they are of opinion that koilocyte is a descriptive term associated with pathological conditions of cervix and is only one of the morphological features associated with HPV infection.

The Society of Gynaecologic Oncologists (SGO) set forth the following criteria for microinvasion : invasion of stroma in one or more places to depth of 3mm or less below the base of epithelium and no demonstrable stromal lymphatic and vascular space invasion (LVSI) (Yordan et al, 1995). In 1978 Japan Society of Obstetrics & Gynecology included the concept of tongues of squamous epithelium as additional criteria for respective definition of microinvasion. (Noda et al, 1979).

Chronic cervicitis, to be more specific, the chronic endocervicitis is the term used for cervical inflammatory pathology affecting endocervical glandular epithelium and concomitantly with squamous epithelium.

The present study had indicated that squamous hyperplasia may occur without any concomitant endocervical pathology as has been seen in Group I biopsy specimens indicating thereby that the squamous epithelium is sensitive to several factors even in absence of inflammatory pathology.

Squamous epithelium is sensitive to hormonal changes in the body as has been reported in cases of menopausal epithelium responding to oestrogen therapy (Paterson et al, 1982; Luesley, 1995). This epithelium is also probably responding to the circulating growth factors related to benign neoplastic processes of uterine musculature. Thus ectocervical squamous epithelial change only may not signify cervical pathology. Endocervical changes like ulceration, micropolyp formation, squamous metaplasia with mild to moderate dysplasia and inflammatory infiltrate need be detected for declaration of cervical pathology as was seen in the Group II biopsy specimens having clinical complaints in the present study.

Thus the important indicator for any cervical pathology other than cancer causing complaints due to infection and irritation are the endocervical changes like ulceration, endocervical glandular micropolyp formation, inflammatory infiltrate, with or without atypical change in the metaplastic epithelium with or without a change in the ectocervical squamous epithelium.

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