CYTOLOGY AND CERVICAL FINDINGS OF THE WOMEN HAVING LACTATIONAL AMENORRHOEA

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The implication both in original contribution (Peters *et al* 1958, Soost 1960) and in the cytology text books (Koss 1961, Smolka and Soost 1965) is that there is a definite cell pattern in all women during lactation—the so called postpartum smear. Since 50% of the women attending the family welfare clinics of IRR for contraception have lactational amenorrhoea, this study was taken up to find out the cervical cytology and cervical findings and to correlate dysplasia, age of the women, duration of amenorrhoea with cervical findings.

Material and Methods

Four hundred women with lactational amenorrhoea who came to the family welfare clinics of IRR between 1974-1975 were taken up for this study. They had not used any contraceptive prior to enrolment. Majority of the women were young, below the age group of 25 years. The duration of lactational amenorrhoea varied from 40 days to 1½ years. They were divided into different groups. (Table I). Majority were with 1-3 months of duration of lactational amenorrhoea. The per speculum examination was done in each case and the findings classified as healthy, cervicitis and with erosion, when the erosion was just around the external os and upto one third portion of the cervix it was called small. If two thirds portion of the cervix was covered with erosion it was termed moderate. It was termed large if it covered more than two thirds of the cervix.

TABLE I
Duration of Lactational Amenorrhoea

Duration in months	No. of cases	Percentage
1—3	191	47.7
4—6	105	26.2
7—9	47	11.75
10—12	19	4.75
13 & above	38	9.5

Exocervical smears were collected with wooden spatula in each case. These smears were fixed and stained by Pastakia's modified method of Papanicolaou (Pastakia 1955) read and classified on cytomorphological criteria. These smears were classified as negative, inflammation, and dysplasias mild, moderate and severe according to Riotton and Christopherson (1973). The smears were also examined for the presence of columnar cells nipple like protrusions of the nucleus of endocervical columnar cells and the general cell pattern of the smear was also noted.

Results

The per speculum examination of the cervix revealed 68.5% healthy cervix, 26.75% showed erosion of which 15.5% showed small erosion, 5.5% moderate and 5% showed large erosion. There was a

small percentage of women (4.75%) who were classified as having cervicitis.

Analysis of cytological data (Table II)

TABLE II
Cytomorphological Diagnosis

Cytological Reporting	No. of cases	Percentage
Negative	215	53.75
Inflammation	147	36.75
Mild Dysplasia	4	1.00
Moderate Dysplasia	4	1.00
Severe Dysplasia	—	—
Immature Metaplasia	2	0.5
Invasive Ca.	1	0.25
Inadequate	27	6.75

showed that 53.75% had negative smear while 36.75% had an inflammatory smear pattern. 1% had mild dysplasia and 1% had moderate dysplasia. Out of the 4 cases of moderate dysplasia, 2 cases were lost to follow-up and 2 cases were negative after treatment of infection. 0.5% showed immature metaplasia. There were no cases of severe dysplasia. In 1 case, diagnosis of malignancy was made which on follow-up showed only inflammation with changes suggestive of herpes virus infection. The repeat smears after treatment of infection were negative. Of the 4 cases of moderate dysplasia, 1 case had a small erosion and the other 3 had a healthy cervix.

Majority of them showed a smear pattern consisting of intermediate and occasional superficial squamous cells. Paradoxical smears (Fig. 1) where basal cells along with intermediate and superficial cells were found, in 7% of the cases. Typical postpartum smears (Fig. 2) consisting of numerous postpartum cells i.e. parabasal cells with dense cytoplasmic borders, leukocytes, histiocytes and cell debris, were seen in only 5.8% of cases. An attempt was made to correlate the duration of lactation amenorrhoea, the dominant type of cells in the smears and the age of the women (Table III). No correlation was found between these parameters. Forty two smears i.e. 10.5% of smears showed nipple like protrusions of the endocervical columnar cells (Fig. 3). Nine smears i.e. 2.15% showed the presence of endometrial columnar cells (Fig. 4).

Discussion

The histopathologic changes in the cervix and vaginal exfoliative cytology during pregnancy has been extensively studied (Epperson 1951; Walterson and Reagen 1956) Daro *et al* (1954) in a study related to postpartum cervical carcinoma found that at about six weeks post partum there is a small well defined group of patients who show persistence

TABLE III
Correlation of Duration of LA and Type of Smears

Type of Smears	Duration of LA in months					Total (%)
	1-3	4-6	7-9	10-12	13	
Post partum	17	3	1	—	2	23 (5.75)
Moderate estrogen effect	133	92	37	13	30	304 (76.0)
Good estrogen effect	5	2	1	1	4	13 (3.25)
Paradoxical	18	3	3	3	1	28 (7.0)
Inadequate	18	5	5	2	1	32 (8.0)

of some abnormal basal cellular changes which he relates to the trauma during child birth. Malenconico (1957) investigated 680 patients during pregnancy and the immediate post partum period with successive vaginal smears. He found 7 cases of suspicious smears or positive for malignancy during pregnancy of which only 5 were histologically proved and the rest 12 were diagnosed as cervicities and endocervicites with metaplasia. The marked degree of cervical inflammation seen following delivery and the cervical trauma during child birth can be expected to result in the erosion of the cervix and cellular aberration in many cases. As changes of marked hyperactivity take place in the cervix during pregnancy, increase in size of glands, blood supply and lymphatics is found. Our study shows 26.8% of cases showing erosion. A study of post-partum cases by Kaufman *et al* (1958) showed overall rate of 11% of abnormal smears in their series of 125 cases. They have concluded that cervical trauma following delivery and breast feeding with its resultant ovarian suppression has an effect on cervical cytology. All women included in this study were breast feeding. Only 1% of them showed moderate dysplasia. In general, in our clinics, we have found in overall rate of 2% of moderate of dysplasia in the new cases that come for contraception. In our study, smears are analysed in cases with lactational amenorrhoea beyond six to eight weeks post partum. The local healing process might be more complete and infection reduced.

In this study 5.75% of the cases showed typical post-partum type of smears and this had no relation to the lactational status of the women. According to De Neef, during lactation, parabasal cells predominate and there is a marked suppression of maturation of squamous cells. Butler and Taylor (1973) studied the early post natal smears upto 42 days and have found 28% showing typical post-partum smears. In our study, percentage of atrophic smears was 5.3% at six weeks after delivery. Paradoxical smears have been reported by Peters *et al* as early as 1958. They had also reported of a small number of amenorrhoic women who had nursed for a year or longer, showing this type of smear. Our studies show 7% of the cases with paradoxical smear. A 5% incidence of paradoxical smear has been reported by Mc Lennan and Mc Lennan (1975), This cellular pattern consisting of cells from various layers may occur according to Soost (1960) as a result of epithelial lacerations or of contamination from vaginal interoitus or as a result of hormonal deficiencies of various degrees. The last of the explanation given by Soost looks more convincing as in our studies 72% of the women with paradoxical smears showed healthy looking cervix.

Endocervical columnar cells occasionally show a nipple like protrusion which is called nuclear tit (Koss 1960) peak nuclei (Hughes and Dodds 1968) or described as button-like protrusions. This protrusion (Smolka and Soost 1965) is formed by a peak of nuclear material on the luminal aspect of the nucleus. This was observed by Guillon as early as 1944. These nuclear protrusions according to Koss (1961) are of diagnostic importance and are seen, commonly at the time of maximum estrogen activity at mid-cycle. These peaks are readily recognizable by their constant relationship to the free border of the cells. The mechanism of their formation is unknown. Grace and Durfree (1960) has also observed this phenomenon following administration of estro-

gen to postmenopausal women. Hughes and Dods (1968) have also mentioned such nipple like protrusions in menopausal women. According to Smolka and Soost (1965) these nipple like protrusions are specific for columnar cell types and are the first signs of nuclear dissolution. These nuclear protrusions were seen by us in women having lactational amenorrhoea which may be very early signs of nuclear ageing.

While the squamous epithelium of vagina and cervix present continuous desquamation of the cells layer, endometrial epithelium is characterized by a different desquamation tendency, which exist in normal women only in the menstrual phase. From this biological fact, one can conclude that all endometrial columnar cells seen in the vaginal or cervical smears taken beyond the twelfth day of the cycle (Liu *et al* 1963) considered as evidence of pathological process in the endometrium such as inflammation, hyperplasia, polyp or endometrial cancer (Koss 1961, Pundel 1958). Insertion of intrauterine device can cause an irregular desquamation of the endometrium and smears may show presence of endometrial columnar cells in follicular and secretory phase of the menstrual cycles. The findings of endometrial columnar cells in the cervical smear of lactating women though in small percentage (2.15%) of cases remains to be explained.

Summary

Four hundred women with lactational amenorrhoea were studied for cervical cytology and their per speculum findings were analysed. Duration of amenorrhoea was from 40 days to one and half year. 68.5% showed healthy looking cervix. The predominant type of cells in the cervical smears were intermediate and superficial and only 5.75% of cases showed typical postpartum type of smear pattern. The cytology, the type of smear, endocervical and endometrial columnar cells and their occurrence with respect to the duration of lactational amenorrhoea are analysed.

References

1. Butler, E. B., and Taylor, D. S.: Acta. Cytol. 17: 237, 1973.
2. Carrow, L. A. and Green, R. R.: Am. J. Obstet. Gynec. 61: 237, 1991.
3. Daro, A. F., Primiano, N. P., Gollin, H. A. and Nora, E. Jr.: Am. J. Obstet. Gynec. 67: 15, 1954.
4. De Neef, J. C.: Clinical Endocrine Cytology. Harper and Row, publishers, New-York, pg. 258.
5. Epperson, J. W. W.: Am. J. Obstet. Gynec. 61: 50, 1951.
6. Grace and Durfree as cited by Koss, L. G. Acta. Cytol. 4: 49, 1960.
7. Guillon (1944) cited by J. A. de Brux, Acta Cytol. 4: 50, 1960.
8. Hughes, H. E. and Dodds, T. C.: Handbook of diagnostic-cytology, E. &. S. Livingstone Ltd., Edinburgh and London, 1968, pg. 12.
9. Kamnitzer, M. B.: Vaginal cytology, post-partum and during lactation period. Acta Cytol. 3: 269-270, 1959.
10. Kaufman, R. H., Topek, N. H. and Abott, J. P.: Obstet. Gynec. 12: 189, 1958.
11. Koss, L. G.: Diagnostic Cytology Lippincot Philadelphia pg. 138, 1961.
12. Koss, L. G.: Acta Cytol. 4: 49, 1960.
13. Liu, W., Barrow, H. J., Sphiller, M. F. and Kochi, A. F.: Acta cytol. 7: 311, 1963.
14. Malenoconico, L. L.: Am. J. Obstet. Gynec. 73: 75, 1957.
15. Mclennan, M. T. and C. E. Mclennan: Acta Cytol. 19: 431, 1975.
16. Pastakia, H. J.: Ind. J. Med. Sci., 9: 579, 1955.

17. Peters, H., Israel, S. and Purshottam, S.: Fertil. Steril. 9: 134, 1958.

18. Pundel, J. P.: Acta Cytol. 2: 588, 1958.

19. Riotton, G. and Christopherson, W. N.: Cytology and the female genital trant. Int. Histological classification of tumors no. 8 WHO, Geneva 1973, pg. 19.

20. Smolka, H. and Soost, J. J.: An outline and atlas of gynaecological cytodiagnosis. Edward Arnold (publishers) Ltd. London 1965, pg. 73.

21. Soost, H. J.: Acta Cytol. 4: 199, 1960.

22. Waltters, W. D. and Reagan, J. W.: Am. J. Clin. Path. 26: 1314, 1956.

Seen Figs. on Art Paper III