

VAGINAL CYTOLOGY DURING ORAL CONTRACEPTION

by

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Oral contraceptive pill in the last decade has made a revolutionary impact as one of the methods of contraception. Vaginal cytology for the assessment of the activity of sex hormones has long been known. The vaginal cytological pattern with the use of oral contraceptives have been noted only recently by Attwood (1966) and Reyniak (1969).

Cytohormonal evaluation is based upon the reaction of cells to their complex endocrine milieu. The vaginal epithelium is a mirror for systemic interplay of clinically important substances, specially sex hormones. The vaginal epithelium specially middle third of lateral vaginal wall is very sensitive to stimulation by the sex hormones. When combined pills are administered the vaginal smear is characterised by absence of cyclical changes. Ferin (1962), Jackson (1964), Rice-Wray *et al* (1965) and Chiaffitelli and Dominguezes (1970) studied the vaginal cytology after oral contraceptives and their findings coincide. No

cyclical variation was found, intermediate type of desquamation was characteristic. Similar findings were observed by Mali, Naval Kishore and Malik *et al* (1971).

Material and Method

Two hundred and fifty-five vaginal smears prepared from 165 women taking combined type of oral contraceptive pill for fertility control were studied. The pill used was either Primovlar containing 0.5 mgm Norgestrel, 0.05 mgm Ethenyl-estradiol. Or Ovral 28 containing 0.5 mgm Norgestrel, 0.05 mgm Ethenyl-estradiol.

Before starting contraceptive pill a detailed clinical history, systemic examination and gynaecological examinations were done. Before taking vaginal smears following points were noted:

1. There had been no sexual intercourse, vaginal examination or local application of any medication for the last twenty-four hours.
2. No vaginal douching at least 24 hours before taking the smears.
3. Patients taking medicines like digitalis, tetracyclins or corticosteroids were excluded from study.
4. Patients with local lesions of the cervix or inflammation of the vagina were not included in the study.

Smears were taken with patient in lithotomy position. A dry sterile Sims speculum was introduced into the

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Accepted for publication on 10-8-77.

vagina and the discharge was collected by an unpowdered gloved finger from middle third of the vagina. The smears were quickly spread over the slide and immediately immersed into a jar containing 95% alcohol. After fixing, the slides were stained by standard method of Papanicolou (1942). Each slide was studied carefully for the maturation index, crowding of cells, presence of Doderleins bacilli, inflammatory cells and back ground of the slide. Counting of cells was done from four corners and central part of smear where it was thick. Total of 100 cells were counted and percentage of parabasal/intermediate/superficial cells was noted to find out the maturation index and to assess the progestational effect. Presence of Doderlein's bacilli and leucocytes was expressed as + to ++++ showing minimum to maximum respectively and as (—) indicating total absence.

Observations

Total of 255 smears from 165 cases taking oral pills were studied for cyto-hormonal changes of the vaginal epithelium.

Duration of use ranged from 1 month to 48 months and distribution of cases according to the duration of use is shown in Table I.

TABLE I
Duration of Use

Duration of use in months	No. of Smears	Percentage
1-12	106	41.56
13-24	68	26.66
25-36	48	18.82
37-48	33	12.94
Total	255	100

Menstrual cycles were regular (28

days) in patients taking oral contraceptives except in those who had breakthrough bleeding in first 2-3 cycles.

Age group of the patients ranged from 19 to 39 years and most of the patients (72%) were between the age group of 25 to 34 years.

Parity of the cases ranged between 1 and 5 and 41% cases were between 1 and 3 para.

Cytohormonal changes of the vaginal epithelium were studied. The characteristic features observed were as follows:

The background of the slides was dirty showing presence of fragments of cervical mucus in 73% of cases. As the duration of use of pills increased the tendency was more and more towards the dirty background.

There was midzonal shift of the maturation index in all the smears. The index varied between 0/60/38 to 0/90/10. No cyclical variation was observed. The characteristic features of the cells present were as follows:

Superficial Cells

These were mature squamous cells, polyhedral in shape with pyknotic nuclei and eosinophilic cytoplasm. Number of these cells was less and ranged between 10 and 38 cells.

Intermediate Cells

These cells were abundant in smears. The size was smaller as compared to superficial cells. The cytoplasm was thin wafer-like mostly cyanophilic; the nucleus was vesicular round or oval.

Most of these cells were navicular, arranged in clusters and as the duration of use of the pill increased there was tendency towards bigger clusters (Photograph 1). Few smears showed even cigarette shaped cells due to marked folding and curling (Photograph 2).

Inflammatory cells were present in about 68% of smears and their number increased with duration of use of pills.

Doderlein's bacilli were present as small rods in 70% of cases and there was no correlation between the duration of use of these pills and the presence of Doderlein's bacilli (Photograph 2).

Discussion

Vaginal cytology revealed predominance of progesterone effect throughout the cycle. The maturation index showed a midzonal shift. Kataria *et al* (1972) reported the variation in maturation index without the use of oral contraceptive between 2/51/47 and 0/22/78 during proliferative phase and between 0/43/47 and 0/73/27 during secretory phase. With the use of combination type of pills the maturation index ranged between 0/90/10 and 0/62/38 throughout the cycle without any cyclical variation.

Predominant desquamation of intermediate cells which increased with the increase in duration of use of oral pills, pregnancy like pattern with big clusters of navicular cells and even presence of cigarette shaped cells was observed. These are in accordance with the findings of Ferin (1962), Jackson (1964), Rice-Wray (1965) and Chiaffitalle and Dominguezes (1970). In support of present finding are also the results of Mali, *et al* (1971).

Background of the slides was dirty due to presence of fragments of cervical mucus and leukocytes. As the duration of use increased there was more and more tendency towards the dirty background and increase in number of inflammatory cells. Watchel (1965) similarly reported that the presence of cervical mucus makes the

slide blurred and simulates inflammatory appearance.

Summary

Present study was undertaken with the view to find out the effect of combined type of oral pills on the human vaginal epithelium by studying vaginal smears.

Total of 255 smears from 165 cases taking combination pills (Ovral-28 or Primovlar) for fertility control were studied. Before putting them on contraceptive pills the women were thoroughly screened for the suitability of the pills.

The cytological pattern was indicative of progesterone effect. The maturation index showed a midzonal shift, most of the cells were intermediate in type. Navicular cells were present and were arranged in big clusters. Pregnancy like pattern was also seen in few percentage of smears and there was complete absence of normal cyclical variation in the cytological pattern.

References

1. Attwood, M. S.: J. Obst. & Gynec. Brit. C'wlth. 73: 662, 1966.
2. Chiaffitali, H. and Dominguezes: Acta. cytolo. 14: 344. 1970.
3. Jackson, M. C. and Liun, R.: Int. J. Fertil. 9: 75, 1964.
4. Mali, S., Kishore, N. Malik, S.: Cytology in response to oral contraceptives. Indian Council of Medical Research. Technical report series No. 17: 34, 1971.
5. Maqueo, M. Becerra, C., Mungiva, W., Goldziehr, J. W.: endometrial histology and vaginal cytology during oral contraception with sequential estrogen and progestin. Amer. J. Obst. & Gynec. 90: 395: 1964.
6. Papanicolaou, G. N.: Science. 96: 438, 1942.
7. Rice-wray, E., Gonzaliz, O, Ferrer, S., Ananda, A., Maquo, M. and Munguia, H.: Am. J. Obst. Gynec. 93: 115, 1965.

See Figs. on Art Paper II