

VAGINAL CYTOLOGY IN ORAL CONTRACEPTIVE

by

KARUNA PANDE,* M.D. (Path.)

and

SAROJ BANAIT,** M.B.B.S., D.G.O.

Systematically taken drugs can give rise to altered cytologic features in the body. This has been repeatedly observed among patients receiving alkylating agents and other chemicals. Whether the wide use of oral contraceptive may also cause changes in the exfoliated cells is a matter of keen interest. The oral contraceptives in current use are composed of synthetic oestrogen and progesterone. It is natural that the use of these compounds affect the endometrium and vaginal epithelium which are both easily accessible organs and react sensitively and characteristically to hormones.

The present study was undertaken to study the effect of oral contraceptive on vaginal epithelium and endometrium. As the women taking oral contraceptive are less in number and very irregular in attending the family planning clinic, we could not get more cases.

Material and Method

This study was done on 30 patients attending family planning clinic of Medical College Hospital, Nagpur. The women were taking oral contraceptive pills, "Ovaral" which contains Norgestrel 0.5 mg. and Ethinylestradiol 0.05 mg. Pills

*Assistant Pathologist, Department of Pathology & Bact. Govt. Medical College and Hospital, Nagpur.

**Medical Officer, Family Planning Training Centre, Govt. Medical College and Hospital, Nagpur.

Received for publication on 5-8-74

were started from the 5th day of menstruation to 25th day i.e. total 21 days. All women were examined clinically and data regarding age, parity, duration of pills was collected. Vaginal smear was collected in each case for cytological examination. The vaginal smear was taken in three different phases, i.e. on 9th day (Ist phase), 15th day (IIInd phase) and 22nd day (IIIrd phase) from the 1st day of menstruation, (Hughes and Dodds, 1968). The aim was to collect the material in proliferative phase, secretory phase and at the approximate time of ovulation. Material was collected from the upper third of lateral vaginal wall with the help of a wooden spatula and a smear was made on clean glass slide. The wet smear was fixed in equal quantity of ether and alcohol and stained by Papanicolaou's method, modified by Wahi, (1950). The stained smears were observed for:

- (1) Cytohormonal effect.
- (2) Abnormal cytology.
- (3) Inflammatory cells.
- (4) Trichomonas or monilial infection.

Endometrial biopsy was taken in every possible phase from the same women, and studied histopathologically.

Cytology in Menstrual Cycle

Normally after menstruation superficial cells increase till ovulation. On 9th to 14th day percentage of superficial cells is 50 to 60 per cent, while on 15th to 16th day smear consists entirely of super-

ficial cells. After 17th day onwards there is a gradual decrease in percentage of superficial cells and increase in intermediate cells. Intermediate cells show cytoplasmic wrinkling, folding and clumping. After 25th day there are mainly intermediate cells. In some patients superficial squamous cells may again appear at this phase. There is an increase in polymorphonuclear cells also. Superficial cells signifies the effect of oestrogen, while intermediate cells denote presence of progesterone.

Effects of Oral Contraceptive Pills

Cyclic 5th to 25th day use of combined

progesterone and oestrogen 'pill' produces early in the cycle the appearance of above mentioned changes. By the 9th or 10th day the smear may show predominance of intermediate cells. This predominance of intermediate cells persists throughout the cycle but is most striking in the first half of the cycle when normally it would not be seen. There is a gradual decrease in superficial cells, (Hughes and Dodds, 1968).

Observations

Clinical data regarding age, parity and duration is given in detail in Table No.

1.

TABLE 1
Table Showing Clinical Data

S. No.	Age in years	Para	Duration	Type of Pills
1	25	3	4 to 5 months	Ovaral
2	28	3	6 to 9 months	"
3	23	2	9 to 1 year	"
4	24	3	11 months	"
5	22	3	1 month	"
6	20	1	1½ years	"
7	22	3	1 month	"
8	22	2	6 months	"
9	32	2	1-2 months	"
10	26	1	1 month—11 months	"
11	27	2	6 months—1½ years	"
12	25	1	1 month—2 months	"
13	35	6	1 month	"
14	32	2	1 month—1 year	"
15	25	3	5 months	"
16	23	3	5 months	"
17	28	2	3 months	"
18	26	3	1 year	"
19	26	2	2 months	"
20	25	3	1 month	"
21	30	3	1 month	"
22	26	2	9 months	"
23	23	2	6 months	"
24	25	3	1 year	"
25	25	3	1 year	"
26	25	3	9 months	"
27	30	1	6 months	"
28	25	2	2 years	"
29	22	1	3 months	"
30	32	3	1½ years	"

Age

Most of the patients (17) belonged to age group of 20-25 years. Minimum age was 20 years; while maximum age was 35 years.

Parity

Maximum number of women i.e. 15 were third para while 9 were second, 5 were primi para and only one woman was Sixth para.

Duration

Duration of taking contraceptive pills varied from 1 month to 2 years.

Cytological Observations

Cytohormonal effect was assessed by a differential count of various squamous epithelial cells in vaginal smears. The cytohormonal effect was arbitrarily classified into four grades, according to the superficial cells present. The grades were less than 10%, 11 to 30%, 31 to 60% and 60% or more. In the Ist phase (i.e. 9th day smear) out of 30 cases, 21 showed 11 to 30% superficial cells, while 5 showed 0 to 10%; one showed 31 to 60% and 3 cases showed 61% or above superficial cells. Smears taken on the 15th day (IInd phase) revealed 11-30% superficial cells in 13 cases, 31 to 60% superficial cells in 4 cases, 0-10% superficial cells in 10 cases and 61% or above superficial cells in 3 cases (Fig. 1).

The third phase, (smear taken on 22nd day) 16 in 0 to 5% superficial cell group and 12 cases in 5 to 10% superficial cell group. Two cases showed 11 to 30% superficial cells while none of the smear showed more than 30% superficial cells. Predominant cells in all phases were intermediate cells. These cells showed folding and grouping. Inflammatory cells were present in 25 smears in viriable

number and at different phases. As no infecting agent was found, they were labelled as non-specific infection. None of the smear showed trichomonas vaginalis, moniliasis or dysplastic changes (Figs. 2, 3, 4).

Histopathological Observation

Total 20 biopsies were taken. Four were taken in Ist phase, twelve were taken in IInd phase and four were taken in IIIrd phase.

Ist phase biopsies showed presence of subnuclear vacuolation indicating early secretory phase. Normal glandular growth was present. Stromal oedema of varying grade was seen. Dilatation of vacuoles were present. IInd phase biopsies showed irregular pattern of glands. Some were small and some were large. They showed increased tortuosity. Glands were lined by cuboidal epithelium. There was no intra-epithelial secretion and in some scattered glands inspissated intraluminal secretory material was seen. Stromal oedema of varying degree was present. None of the slide showed normal secretory pattern. IIIrd phase biopsies showed few atrophic glands lined by cuboidal epithelium. None of the slide showed secretory pattern.

Discussion

Vaginal smears and endometrial biopsies were taken from 30 women taking contraceptive pills to assess hormonal activity. Cytologically it is seen that the maximum number of cases (21) showed presence of 11-30% superficial cells in Ist phase; while 28 cases showed 0-10% of superficial cells in IIIrd phase. It was observed that in general, patients using oral contraceptive showed a tendency to have fewer superficial cells as compared with normal. As superficial cells indicate

oestrogen effect, a tendency of depressed oestrogen effect was observed in vaginal smears of contraceptive users. There was a predominance of intermediate cells in all phases. Our findings are similar to Hughes and Dodds, (1968), Liu, W. *et al.*, (1967), Mali *et al.*, (1971).

Histopathological observations showed that full secretory phase was never achieved. Secretory phase showed early in the form of subnuclear vacuoles on 9th day. Normally in a 25th day cycle subnuclear vacuoles were maximal in size and number from days 16 to 18 (Noyes *et al.*, 1950). The effect of contraceptive pills was characterized by early appearance of secretory phase, with minimal to moderate tortuosity but the stage of fully developed secretory endometrium was rarely, if ever reached. The similar findings are noted by Diczfalusy, (1968), Ellen, C. G., (1967), Maqueo *et al.*, (1963), Pincus, G. *et al.*, (1958); Goldzieher, J. W. *et al.*, (1962) and Ricewray *et al.*, (1962).

Summary

Study of vaginal cytology and endometrial biopsy were done in 30 women taking oral contraceptive. It is seen that there was presence of superficial cells indicating depressed oestrogen effect throughout the cycle. Histopathologically there were early appearances of secretory phase but full development of secretory phase was never reached.

Acknowledgement

Authors are thankful to the Dean, Govt. Medical College and Hospital, Nagpur for allowing to use the material from hospital.

References

1. Diczfalusy, E.: American J. of Obst. & Gynec., 100: 136, 1968.
2. Grant, E. C. G.: J. of Obst. & Gynec., 74: 908, 1967.
3. Goldzieher, J. W., Ricewray, E., Schulz-Contreras, M. and Aranda-Rosell, A.: Am. J. of Obst. & Gynec., 84: 1474, 1962.
4. Hughes, E. and Dodds, T. C.: Hand book of Diagnostic Cytology, E. & S. Livingstone Ltd., Edinburgh and London., 1968, p. 79.
5. Liu, W., Koebel, L., Shipp, J. and Prisyb, H.: Obst. & Gynec., 30: 228, 1967.
6. Mali, S., Kishore, N. and Malik, S.: Proceedings of the First Annual Meeting of the Indian Academy of Cytologists, September 20-21, pp. 8-34, 1971.
7. Maqueo, M., Perez-Vega, E., Goldzieher, J. W., Martinez-Manautou, J. and Rudel, H.: Am. J. of Obst. & Gynec., 85: 427, 1963.
8. Noyes, R. W., Hertig, A. T. and Rock, J.: Fertil. and Steril., 1: 3, 1950. Included in Ref. No. 2 (Ellen).
9. Pincus, G., Rock, J., Gracia, C. R., Ricewray, E., Paniagua, M., Rodrigues, I. and Pedras, R.: Am. J. of Obst. & Gynec., 75: 1333, 1958.
10. Rice-wray, E., Schulz-Contreras, M., Guerrero, I. and Aranda-Rosell, A.: J. Amer. Med. Assn., 180: 355, 1962.
11. Wahi, P. N. and Jain, R. L.: J. Ind. Med. Assn., 19: 441, 1950.

See Figs. on Art Paper VII