

EFFECT OF ORAL CONTRACEPTIVES ON FAECAL PORPHYRINS

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Summary

A quantitative assay of faecal porphyrins was undertaken by spectrophotometric method of Rimington in forty women of child-bearing age. Thirty women on oral contraceptives constituted the study group and ten on other methods of contraception served as controls. In the study group the mean and standard deviation of faecal coproporphyrins were 6.747 and 7.215 respectively and of faecal protoporphyrin levels 13.549 and 9.509 respectively. It was observed that 10 per cent of the women on oral contraceptives had raised faecal copro and protoporphyrins, which however was statistically not significant.

Introduction

The side effects of oral contraceptives have an important bearing on our family planning programme. The purpose of the present study was to investigate whether contraceptives used by healthy women of child-bearing age had any effect on porphyrin metabolism as evidenced by faecal porphyrin excretion. The investigation comprised of quantitative estimation of levels of faecal porphyrins in forty healthy women of child-bearing age. It included thirty women (study group) who had taken oral contraceptives for at least a period of three months and the control group of ten women who had used other conventional methods of contraception like condom, tubectomy, I.U.C.D., etc.

Materials and Methods

The study area consisted of an approximately 0.2 million populated part of Patiala city and villages surrounding the Primary Health Centre, Bhadson. Forty females from among those who were attending the Family Planning Clinic of Rajendra Hospital, Patiala and Primary Health Centre, Bhadson were selected at random after thorough clinical examination and screening laboratory examination to exclude any known disease. Those on any hepato-toxic drugs (except oral contraceptives) or with history of alcohol consumption were excluded. Data on age, weight, diet, menstrual history and number of children showed that the study group was comparable to the control group. The duration of treatment with oral contraceptives was noted. Routine laboratory tests on blood, urine and stool and liver function tests were performed and those individuals with any abnormality were excluded. The oral contraceptives being used by the study group were primovlar (Norgestrol 0.5 mg and ethinyloestradiol 0.05 mg), Lyn-

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diol (Lynestrenol 1.0 mg and ethinyloestradiol 0.05 mg) and Orlest (Norethisterone acetate 1 mg and ethinyloestradiol 0.05 mg).

The method of Rimington¹ was used for the quantitative estimation of faecal porphyrins. Coproporphyrin was extracted by using 0.1 N hydrochloric acid and protoporphyrin by using 5 per cent hydrochloric acid. This method gives reliable results as shown by previous researchers.

Results

Table 1 shows that the mean of faecal coproporphyrin excretion in ug/gm dry weight for the study group is 6.747 and the S.D. 7.215. The range of the value of coproporphyrin excretion in ug/gm dry weight is 0-27.131. The mean and S.D. for the control group are 3.773 and 3.186 respectively. Thus the mean for the study group is higher than the mean for the control group.

The difference of means of faecal coproporphyrin in the study group is statistically insignificant as the calculated t value of 1.260 is less than 2.020.

Table 2 shows that the mean faecal protoporphyrin excretion in ug/gm dry weight for the study group is 13.549 and the S.D. 9.509. The range of values of protoporphyrin excretion in ug/gm dry weight is 0-33.870. The mean and the S.D. for the control group are 12.714 and 9.661 respectively. Thus the mean for the study group is higher than the mean for the control group.

The difference of mean of faecal protoporphyrin in the study and control group are statistically insignificant as the calculated t value 0.229 is less than 2.020.

Further the effect of the period for which oral contraceptives were taken, was studied. The results of

TABLE 1

Showing comparison of faecal coproporphyrins in thirty women on oral contraceptives (study group) and ten women on other methods of contraception (control group) in ug/gm dry weight

S. No.	Group	Number of cases	Mean	Range	S.D.	S. E.
1.	Study group	30	6.747	0-27.131	7.215	1.317
2.	Control group	10	3.773	0-11.899	3.186	1.007

TABLE 2

Showing comparison of faecal protoporphyrin in study group and control group (in ug/gm dry weight)

S. No.	Group	Number of cases	Mean	Range	S.D.	S. E.
1.	Study group	30	13.549	0-33.870	9.509	1.736
2.	Control group	10	12.714	0-33.224	9.661	3.055

this are given in Tables 3 and 4. Table 3 shows that patients on oral contraceptives for a period of more than six months, showed the mean value for faecal coproporphyrins of 7.223 which is higher than the mean value of 6.336 for those on oral contraception for a period less than six months. Difference of means is however statistically insignificant since the calculated t value of 0.254 is less than 2.05.

Table 4 shows that the mean value for protoporphyrin in patients on oral contraceptives for less than six months is 13.688 with S.D. of 9.311. For those on oral contraceptives for more than six months the mean value is 13.411 with S.D. of 9.691. The difference is statistically insignificant as the calculated t value of 0.064 is less than 2.05.

Table 5 compares the range of faecal coproporphyrin excretion per gm dry weight in the study and control group.

It is seen that 3 women (10 per cent) on oral contraceptives had raised faecal coproporphyrin levels as compared to the control group in which all the women showed levels within the normal limits.

Table 6 compares the range of faecal protoporphyrin excretion per gm dry weight in the study group and the control group. It is seen that three women (10 per cent) on oral contraceptives had faecal protoporphyrin excretion of more than 30 ug/gm dry weight as compared to control group in which all the women showed levels less than 30 ug/mg.

Discussion

Faecal porphyrins levels in fifty normal females was studied by Das² who found mean and S.D. 1.35 and 0.60 respectively for faecal coproporphyrin and 4.07 and 2.53 respectively for faecal protoporphyrin. In the control

TABLE 3
Showing the effect of duration of oral contraceptive administration on faecal coproporphyrin (ug/gm dry weight)

S. No.	Period	Number of cases	Mean	Range	S.D.	S. E.
1.	Less than six months	15	6.336	0-28.105	8.665	2.237
2	More than six months	15	7.223	0-21.754	8.623	2.226

TABLE 4
Showing the effect of duration of oral contraceptives administration on faecal protoporphyrin (ug/gm dry weight)

S. No.	Period of treatment	Number of cases	Mean	Range	S.D.	S. E.
1.	Less than six months	15	13.688	0-33.870	9.311	2.447
2.	More than six months	15	13.411	0-26.235	9.691	2.502

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TABLE 5

Showing faecal coproporphyrin excretion per gm dry weight in the study and control group

Faecal coproporphyrin in ug/gm dry weight Normal 0-20	Study group Number of Cases	Control group Number of cases
0-10	24	9
10-20	3	1
20-30	3	0
30 and above	0	0
Total	30	10

TABLE 6

Showing faecal protoporphyrin excretion per gm dry weight in the study and control group

Faecal protopor- phyrin in ug/gm dry weight	Study group Number of cases	Control group Number of cases
0-10	11	4
10-20	11	4
20-30	5	2
30 and above	3	0
Total	30	10

group the present study gives mean and S.D. for faecal coproporphyrin as 3.773 and 3.186 and the range as 0-11.899. The mean faecal protoporphyrin for these cases was 12.714 and S.D. 9.661. The range of faecal protoporphyrin is 0-33.224. Our results are in fair agreement with the results of Das². Others who did similar studies

were Aronson³, Eales⁴, and Rimington⁵. Considerable variation in values are noted in these different studies. Whereas Rimington and possibly Aronson studied the white races, Eale's report was based on study of coloured race. Our study group showed higher faecal porphyrins than the control group. However the difference of means was found to be statistically insignificant. It is thus concluded that there is no statistically significant effect of treatment with oral contraceptives on faecal coproporphyrins and protoporphyrins excretion.

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