

## SERUM LIPID STUDIES IN WOMEN USING COMBINATION TYPE OF ORAL CONTRACEPTIVES

by

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Oral contraceptives are known to produce changes in various metabolic processes, lipid metabolism being one of them. We have studied lipid metabolism in women on combination type of oral contraceptives.

Serum lipids of 15 women on oral contraceptives for less than 5 years and 39 on oral contraceptives for more than 5 years were compared with each other and also with a control group of 22 women, in whom basal readings were obtained before starting the study.

Significant rise in total serum cholesterol and free cholesterol was noticed in women on oral contraceptives.

No significant change was seen in these women in the levels of total lipids, esterified cholesterol, triglycerides, and L and  $\beta$ -lipoproteins.

### Introduction

Oral contraceptives are known to produce changes in various metabolic pro-

cesses, lipid metabolism being one of them. We have studied lipid metabolism in women on combination type of oral contraceptives.

### Material and Methods

Women attending oral contraceptive centre of Gynaecology Department of K.E.M. Hospital, Bombay, were included in the study. These women were between 22 to 45 years of age and the parity was from 0 to 7. Basal readings obtained from 22 women before starting oral contraceptives, served as the control group—Group A.

Women on oral contraceptives for more than 1½ years were selected and divided into 2 groups—those on oral contraceptive for 1½ years or more but less than 5 years—Group B. There were 15 women in this group. Those in oral contraceptives for 5 years or more formed a third group—Group C. There were 39 women in this group.

The preparations used were either Lyn-diol (1 mg Lynestrenol + 0.05 mg. Ethinyl oestradiol) or Primovlar ED (0.5 mg Norgestrel + 0.05 mg Ethinyl oestradiol) depending upon availability. Twenty ml. venous blood was col-

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lected from each subject after 14 hours overnight fast and following parameters of lipid metabolism were studied. Total serum cholesterol, esterified and free cholesterol were estimated by the method of Carr and Drekter (1958). Triglycerides were estimated by the method of Gottfried and Rosenberg (1973) and B lipoproteins by the method described by Jeneks and Durrum (1955). Total lipids were estimated by the method of Kunkel *et al* (1948).

**Results**

Table I indicates the various lipid changes in women on combination type oral contraceptives compared to control group of women. No significant change was obtained in women on oral contraceptives for total lipids, esterified cholesterol, triglycerides and B lipoproteins. A significant rise (p .05) in total serum cholesterol was observed in women on oral contraceptives for more than 5 years (Group C) as compared to the control group (group A). A significant rise (p .05) was also seen in free cholesterol in both groups B & C as compared to the control group.

**Discussion**

Use of exogenous sex hormones in the form of oral contraceptives by women of geographically diverse areas has been shown to produce increases in plasma cholesterol and triglyceride. Wallace *et al* (1977) found hypercholesterolaemia three times more common and higher triglyceride levels five times more common in women on oral contraceptives. Massive hyperlipaemia was found in 10% of Nigerian women on oral contraceptives as reported by Kuku and Akinyanju (1973). Hyperlipaemia was also observed in 4 women on steroid therapy by Motich *et al* (1974).

Lipid Changes in Women on Oral Contraceptives

Total	Lipid	Total Serum Cholesterol	Esterified Cholesterol	Free Cholesterol	Triglycerides	α Lipoproteins	β Lipoproteins
BASAL	n= 22 AV= 487.55 SD= ±62.26	22 157.73 ±22.51	22 114.1 ±18.75	22 43.64 ±11.57	22 97.95 ±24.86	22 35.41 ±4.51	22 64.6 ±7.18
<5 yrs.	n= 15 AV= 518.47 SD= ±90.81	15 175.67 ±42.50	15 119.3 ±27.31	15 57.00 ±26.51	15 103.33 ±33.68	15 33.47 ±5.01	15 66.5 ±5.07
>5 yrs.	n= 39 AV= 531.8 SD= ±92.01	39 174.34 ±33.01	37 111.5 ±21.24	37 64.05 ±35.14	39 122.81 ±62.11	37 34.03 ±7.48	37 66.0 ±7.48
A & B	n.s.	n.s.	n.s.	Significant *	n.s.	n.s.	n.s.
B & C	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
A & C	n.s.	Significant *	n.s.	Significant *	n.s.	n.s.	n.s.

\* P < 0.05

We failed to find any change in total lipids, and triglyceride levels in women on oral contraceptives, but found significant increase in serum cholesterol. Significant increase in serum cholesterol was reported by Larson *et al* (1970) while Schenker *et al* (1972) fail to find any change in serum cholesterol. According to Steeg and Pronk (1977). Oral contraceptives containing nor-estosterone derivatives will increase cholesterol levels more than triglyceride levels because of their androgenic activity. This may be the reason for increase in total and free cholesterol in our study.

Nigerian group of workers found a significant rise in pre-B lipoproteins and B-lipoproteins whereas, lipoproteins were diminished in women on oral contraceptives. Wynn *et al* (1969) and Steeg *et al* (1977) found significant increase in B-lipoproteins only. We did not find any change in B lipoproteins in the present study

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#### Summary and Conclusions

1. Serum lipids of 15 women on oral contraceptives for less than 5 years and

39 women on oral contraceptives for more than 5 years were compared with each other and also with a control group of 22 women.

2. Significant rise in total serum cholesterol and free cholesterol was noticed in women on oral contraceptives.

3. No significant change was seen in these women in the levels of total lipids, esterified cholesterol, triglycerides and B lipoproteins.

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