

Lipid Profile in Oral Contraceptives User Women

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Combined oral contraceptive pills are the most popular contraceptive method world-wide. 50-60 % of women of reproductive age world-wide use this method for birth control. Dyslipidemia occur in long term oral contraceptives user women. This cross sectional study was done to observe the serum lipid profile in oral contraceptives users' women. A total number of 60 women selected, among them 30 were apparently healthy women without taking oral contraceptives and 30 were combined oral contraceptives user women. Serum total cholesterol and LDL significantly and triglyceride non-significantly increased but serum HDL significantly decreased in long term oral contraceptives user women.

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Introduction

Contraception is the prevention of conception by methods other than abstinence from coitus. Contraception provides a better quality of life by helping families to use their resources for good food, clothing, housing, schooling and medical care.¹ Temporary contraceptive methods are barrier method, natural contraception, intrauterine contraceptive devices (IUCD) and hormonal contraception. Among hormonal contraception most popular methods are oral contraceptives. Combined monophasic oral pill contains the same dose of estrogens and progestin. Combined multiphasic oral pill contains 1 or 2 different potencies of estrogen and 1 to 3 different potencies of progestin. Mini pill contains only very low dose of progesterone. The probable mechanism of oral contraceptives are

inhibition of ovulation, producing static endometrial hypoplasia, stromal oedema, decidual reaction and alteration of character of the cervical mucous and so as too prevent sperm penetration. Permanent method in case of female is tubal occlusion.^{2,3} Combined oral contraceptive pill was introduced in the 1960.⁴ They are popular because of their efficacy, easy to use, good cycle control, reversibility and additional health benefits other than contraception.⁵ Progestin exerts an adverse influence on lipid metabolism. They have ability to counteract the estrogen-induced changes in low density lipoprotein and high density lipoprotein levels.⁶ Women are prone to develop dyslipidemia, atherogenesis and coronary artery disease due to long term use of combined oral contraceptives.⁷

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Methods

This is a cross sectional analytical study conducted in the Department of Physiology, Rangpur Medical College, Rangpur during July 2010 to June 2011. The study has been designed to study the status of blood lipid by measuring serum total cholesterol, serum triglyceride, serum high density lipoprotein and serum low density lipoprotein of long term contraceptives users' women. The ethical committee of Rangpur Medical College, Rangpur approved the study protocol. 20 - 45 years aged 30 women using oral contraceptives for 1 to 5 years attending in outpatient department in Model Family Planning Clinic, Rangpur Medical College and Hospital were selected purposively and included as experimental group B. Age matched 30 women without taking oral contraceptives were selected from the community by personal contact and included as control group A. Subjects suffering from diabetes mellitus, hypertension, kidney diseases, obesity or other chronic diseases and taking other steroids were excluded from the study. After selection of the subjects, the objectives and procedures of the study were explained to them and their informed written consent was taken. A standard questionnaire was filled after taking history and thorough physical examination. The subjects were instructed to be in overnight (8-10 hours) fasting state. Then next day at 8.00AM five (5) ml of blood was collected from antecubital vein from each subject under all aseptic precautions by a disposable syringe. The needle was detached from the nozzle and then blood was immediately transferred into a dry sterilized deionized test tube with a gentle push to avoid haemolysis. The test tubes were kept in slanting position till formation of clot. Serum was separated by centrifuging the blood at 3000 rpm for 5 minutes. The clear supernatant was taken and kept in ependorfs. Tests were carried out by enzymatic colorimetric method as early as possible. It

was done in the laboratory of the Department of Biochemistry, Rangpur Medical College, Rangpur. Data were expressed as mean \pm SD. All the data were recorded systematically in a preformed data sheet and statistical analysis were done by computer based software SPSS 15.0 version for windows. Comparison of serum lipid profiles of oral contraceptives users' women with control group were done by unpaired 't' test. In the interpretation of results, <0.05 level of probability (P) was accepted as significant.

Results

Serum total cholesterol and LDL levels were significantly higher ($P<0.001$) and triglyceride non-significantly increased ($p>0.05$) but serum HDL level was significantly decreased ($p<0.001$) in oral contraceptives users' women than control group.

Table I: Mean \pm SD of serum total cholesterol, HDL, LDL and triglyceride in control group A and experimental group B (n=60)

Variables	Group A (n=30) (mg/dL)	Group B (n=30) (mg/dL)	Significance of difference (A vs B)
Total serum cholesterol	183.53 \pm 27.14	257.93 \pm 61.08	P<0.00
Serum HDL	44.40 \pm 5.01	37.93 \pm 10.63	P<0.001
Serum LDL	124.40 \pm 27.79	197.15 \pm 68.18	P<0.001
Serum triglyceride	92.60 \pm 17.63	103.13 \pm 25.50	P>0.05

LDL – Low Density Lipoprotein

HDL – High Density Lipoprotein

P<0.001 – Highly significant

P>0.05 – Non significant

(Normal level of serum total cholesterol 150 to 220 mg/dL, serum HDL > 40/dL, serum LDL < 180 mg/dL, serum triglyceride < 165 mg/dl).⁸

Discussion

Many authors of different countries reported dyslipidemia effects of long term use of oral contraceptives. They reported increased serum total cholesterol, LDL and triglyceride but decreased HDL.^{5,7, 9 -15} Significantly increased serum total cholesterol in oral contraceptives users' women might be due to impaired lipoprotein metabolism. Oral contraceptives increase apolipoprotein B-100 synthesis and thus increased triglyceride and LDL. Low density lipoprotein in oral contraceptives users' women higher might be due to increase lipoprotein synthesis rather than impaired lipolytic catabolism, in association with accumulation of cholesterol as a result increased LDL. Increased serum triglyceride might be due to increase production and transport of VLDL that endogenously synthesized triglycerides in the blood. Progestin components of oral pill increased hepatic lipase enzyme activity as a result decreased serum HDL level.

Protein and phospholipids component of LDL are susceptible to oxidized in long term contraceptives users' women. Oxidized LDL can damage the arterial endothelium and is more likely to accumulate in the arterial intima, thus contributing to endothelial damage.

Conclusion

Women of our country are usually not aware about the health hazards caused by long term use of hormonal oral contraceptives. These hazards can be minimizing by increasing awareness about the dyslipidemic effects of hormonal contraceptives by regular assessment of serum lipid profile of those women who are taking hormonal oral contraceptives for many years. So the results and observations of this study will be helpful to create awareness and oral contraceptives users women can able to take appropriate preventive measures.

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