

## A Comparative Study of Serum Lipid Profile in Preeclamptic With Normotensive Pregnant Women

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**Abstract: Background:** Preeclampsia is becoming very common complication among pregnant women and higher cause of morbidity and mortality. Maternal serum lipids are significantly elevated during pregnancy. Women who develop preeclampsia experience even more lipid changes as compare to normal pregnant women. **Aims and Objective:** To compare serum levels of lipid profile (STG, TC, HDL-C, VLDL, LDL) in preeclamptic pregnant women compared with normotensive pregnancy. **Material and method:** The study was conducted in Geetanjali Medical College and hospital, Udaipur, Rajasthan. The duration of this study was from January 2014 to December 2014. The total 100 pregnant women were studied in which 50 were preeclamptic and 50 were normotensive pregnant (primigravidae) women of age group between 18-35 yrs. The serum was analyzed for lipid profile by colorimetric method on Erba CHEM 5 Plus v2 in department of biochemistry GMCH Udaipur, Rajasthan. Statistical analysis was done on Microsoft excel. Continuous parameters were expressed as mean  $\pm$  SD. The results were analysed by student's t- test. P value  $< 0.05$  was considered as statistically significant. **Conclusion:** By this study we conclude that serum concentration of lipid parameters (TG, VLDL, LDL, TC) are higher and S-HDL is lower in preeclamptic cases as compare to normotensive pregnant control.

**Keywords:** Dyslipidemia, Endothelium, Hypertension, , Oxidative Stress, Preeclampsia.

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### I. Introduction

Preeclampsia is one of the leading causes of maternal mortality and morbidity and preterm delivery worldwide.<sup>1</sup>. The incidence of preeclampsia in developing countries is around 4-18% and in India is 5-15%.

Preeclampsia is a pregnancy specific disorder, characterized by pregnancy induced hypertension (BP  $\geq 140/90$  mm Hg) on two occasions, at least 6 hours apart and proteinuria of  $\geq 300$  mg/24 hours or  $\geq 1+$  dipstick after 20 weeks of gestation in previous normotensive women. It occurs in about 2-8% of pregnancies<sup>2</sup>.

Women who develop preeclampsia experience even more lipid changes as compare to normal pregnant women. Preeclampsia-dyslipidemic pattern of increased triglycerides, cholesterol, low density lipoprotein cholesterol (LDL-C), and decreased high density lipoprotein cholesterol (HDL-C) concentration<sup>3-6</sup>. Hypercholesterolemia leads to excessive lipid peroxidation and coexistent diminution in antioxidant activity leads to an imbalance between peroxidases and antioxidants, resulting in oxidative stress. Oxidative stress and elevated AI may contribute to atherogenicity in pre-eclampsia<sup>7</sup>

### II. Aims And Objectives

To compare serum levels of lipid profile (STG, TC, HDL-C, VLDL, LDL) in preeclamptic pregnant women compared with normotensive pregnancy.

### III. Material And Method

**Study population:** This study was a case control and hospital based which was carried out in department of obstetrics and gynaecology, and department of biochemistry GMCH, Udaipur from January 2014 – December 2014. Among 100 pregnant women 50 women were preeclamptic (cases) and 50 women were normotensive pregnant (control).

**Inclusion criteria:**

1. Pregnant females with a singleton pregnancy.
2. Age range 18 -35 years.
3. Gestational age: All in the third trimester, the gestational period ranged from 30 to 42 weeks calculated from the first day of the last menstrual period.
4. All primigravidae.
5. All diagnosed to have PIH based on the development of hypertension in the 3<sup>rd</sup> trimester for the first time, proteinuria with or without edema.
6. No history of previous urinary tract troubles and no evidence of UTI.
7. Non diabetic.

**Exclusion criteria:**

1. Pregnancy with renal disease.
2. Multiple pregnancy.
3. Gestational trophoblastic disease.
4. Pregnant ladies with chronic Hypertension.
5. Diabetes.
6. Pregnancy with heart disease

**Sample collection**

A sample of 5 ml was collected following the consent of the patient. Lipid profile were measured by colorimetric method by semi- auto analyser- Erba CHEM 5 Plus v2 in dept of biochemistry, GMCH Udaipur, Rajasthan.

**Statistical analysis**

Statistical analysis was done by Microsoft excel continuous parameters were expressed as mean  $\pm$ SD .The results were obtained by student's t- test. P value <0.05 is considered as statistically significant.

**IV. Result**

During the study period from January 2014 to December 2014, total 100 women were studied in which 50 were preeclampsia and 50 were normotensive pregnant women.

**Fig : 1 Serum Lipid Profile Parameter Of Cases And Controls**

PARAMETER	CASES(MEAN $\pm$ SD)	CONTROLS(MEAN $\pm$ SD)	P' VALUE
STG	260.4 $\pm$ 41.523	222.1 $\pm$ 8.69	<0.0001 *
STC	227.02 $\pm$ 50.308	218.58 $\pm$ 5.99	<0.242
LDL-C	130.54 $\pm$ 50.327	125.02 $\pm$ 4.97	<0.442
VLDL-C	52.16 $\pm$ 8.293	44.48 $\pm$ 1.76	<0.0001 *
HDL-C	44.26 $\pm$ 4.759	47.74 $\pm$ 3.23	<0.0001 *

**V. Discussion And Conclusion**

Preeclampsia is one of the major conditions causing maternal morbidity and mortality throughout the world. Preeclampsia is a common complication of pregnancy in India. Failure of the trophoblastic invasion of the spiral arteries, leading to maladaptation of maternal spiral arterioles, which cause increased vascular resistance of the uterine artery and a decreased perfusion of the placenta<sup>2</sup> leads to placental oxidative stress and this cause dyslipidemia in preeclampsia.

In our study serum TG, VLDL are significantly higher and S-HDL is significantly lower in preeclamptic cases as compare to normotensive pregnant control. This study is also in favour with the study done by Kim YZ<sup>9</sup>, Faruh Khaliq<sup>10</sup> et al, Jayantha De<sup>11</sup> et al, atherogenic lipid profile and oxidized LDL enhanced in pre-eclampsia significantly contributes to endothelial dysfunction and dyslipidemia<sup>8</sup>.

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